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Dept. of Industry, Trade and Commerce. Ships and Components Division.

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MARINE CANADA

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P. J. Brophy

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INTRODUCTION

Canada, which relies greatly on the whole spectrum of shipping, shipbuilding and marine supplies for external and internal trade and for the harvest of fish and petrochemicals from the waters, has a marine industry second to none for skill, technical expertise and flexibility.

This third edition of *Marine Canada*, the industry's export trade directory, of which *Canadian Shipping and Marine Engineering* are proud to be the Publisher provides shipowners, shipbuilders and designers with a ready reference to this wealth of Canadian expertise.

Canadian shipbuilders, with an output of over 300,000 tons in 1979, still have the capacity to satisfy export markets. Recent buildings for overseas markets include tankers, cargo ships, oil rigs and support vessels, and high speed aluminum patrol craft.

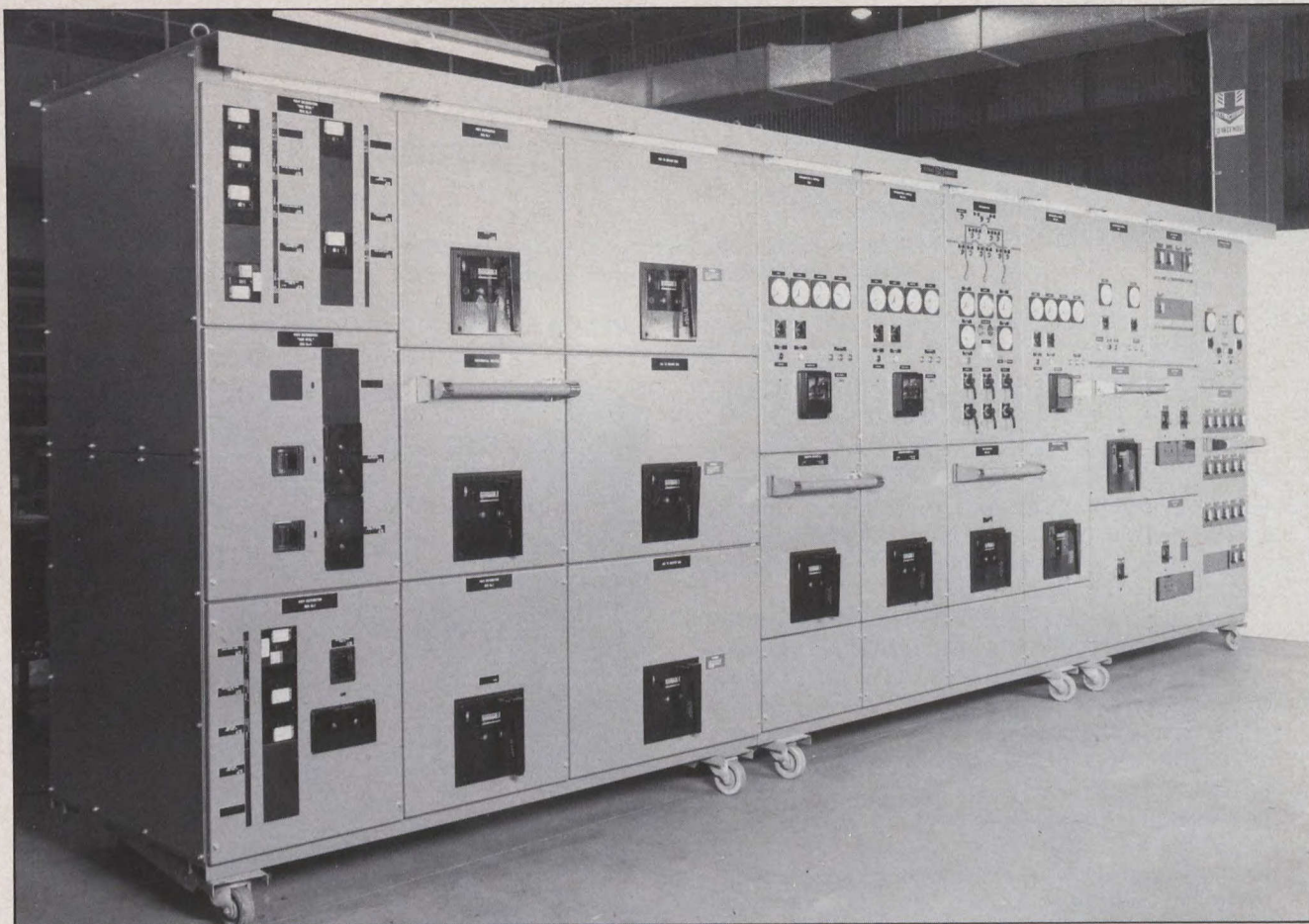
Backing up the shipbuilding industry is a national network of naval architects, engineers and manufacturers offering products and services to the highest civil and military specifications.

If you wish to obtain more information on products or services listed in this directory, we suggest that you contact the companies direct. For information of products or services not listed, please contact the nearest Canadian Government Trade Office or directly to:

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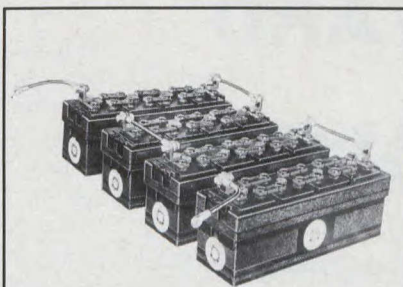
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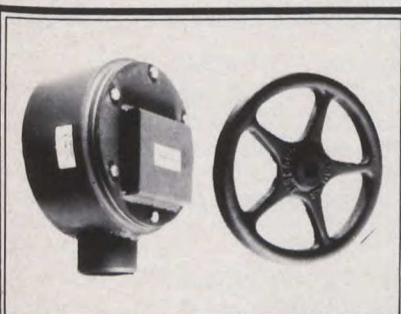
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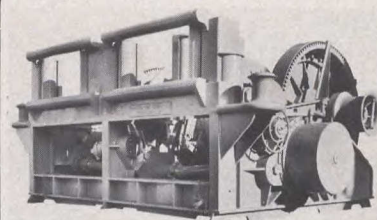
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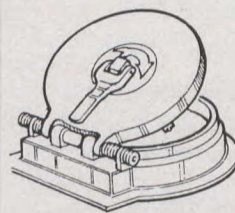
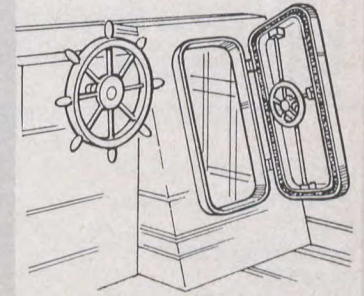
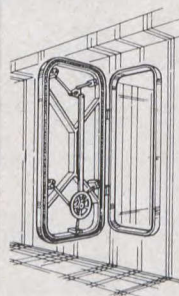
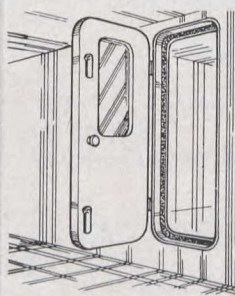
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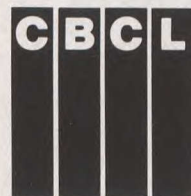
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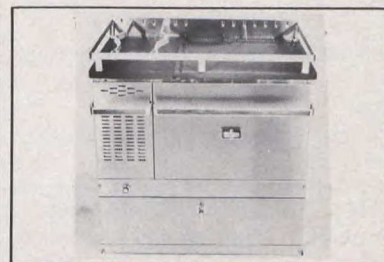
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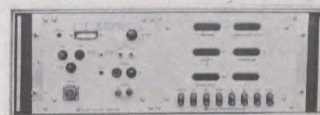


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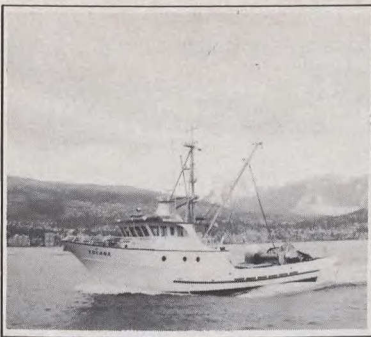
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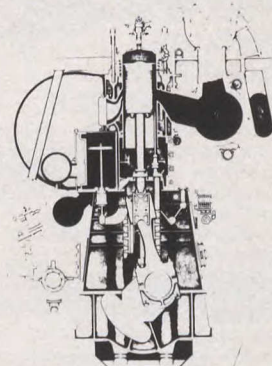
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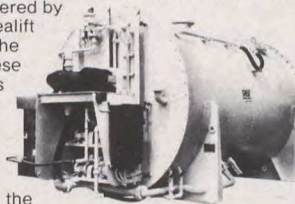
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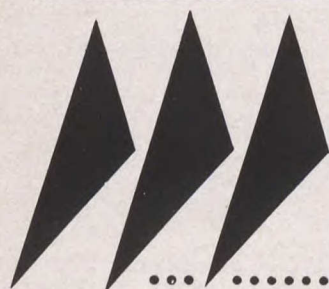
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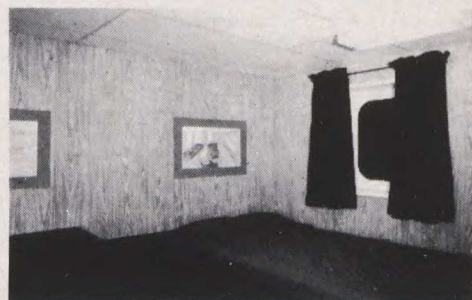
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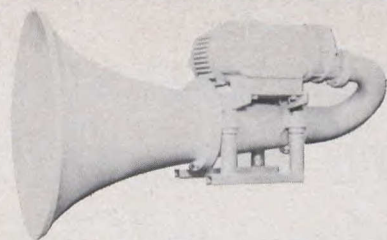


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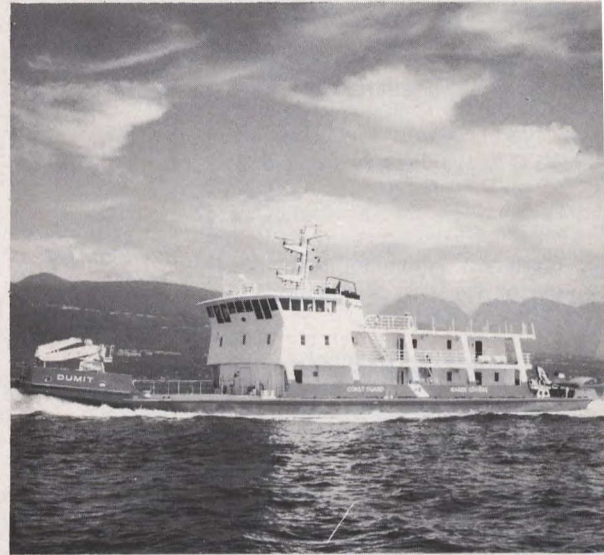
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Canada V3C 1N1
Telephone (604) 942-8812

We are an established aluminum boat builder with an 8500 ft² plant in Port Coquitlam, B.C. Facilities include a completely equipped plant for building and repairing aluminum workboats as well as aluminum fabricating.

We have an in-plant engineering department that will assist in vessel specifications, design of the complete vessel, and supervision of its construction.

Argo specialize in high speed workboats—crew-boats, and water taxi's to 40 passenger and 45 ft. in length complying with the Canada Coast Guard regulations. We also build fish boats, camp tenders, patrol boats and river boats of aluminum construction with a special interest in high speed.

Our vessels are powered with a selection of gas or diesel engines driving inline, 'V' drives, stern drive and jet configurations.



Bel-Aire Shipyard Ltd.,
1667 Columbia Street,
North Vancouver, British Columbia
Canada V7J 1A5
Telephone (604) 935-8781 Telex 043-52678

The growing demands of offshore drilling, as well as those of regular commercial shipping, are served by Bel-Aire Shipyard Ltd. in the port of Vancouver.

Construction and repair of wooden and steel vessels of all types have earned Bel-Aire a reputation for dependability and quality workmanship. Company construction includes offshore supply and survey ves-

sels, tugs, wood chip barges, self-loading cement barges, beach landing craft, commercial fishing vessels, yachts and other pleasure craft.

The company's facilities include two building berths capable of handling craft up to 91.44 m (300 ft.) in length; marine ways; a marine elevator for vessels up to 150 tons and 30.48 m (100 ft.) in length; a full range of service shops; and direct access by water and rail.

To help meet the demand for supply vessels to service offshore drilling rigs, the shipyard has completed four 56.39-m (185-ft.) ice-strengthened supply ships and a further four of 60.96-m (200 ft.) in late 1975. A 58.22-m (191-ft.) ice-strengthened offshore survey vessel is also of recent construction.

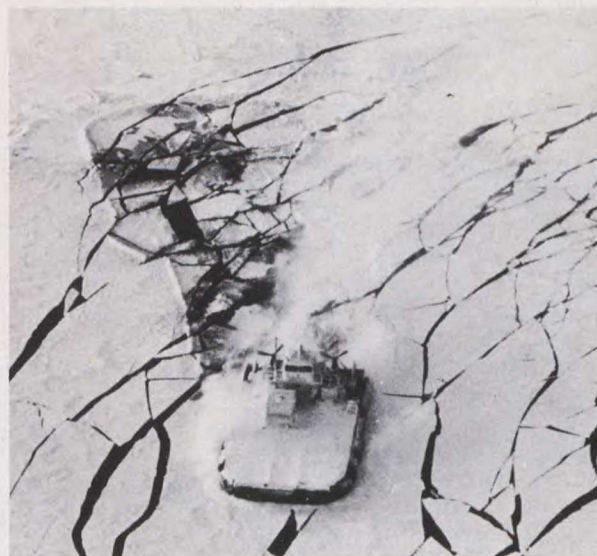
Bell Aerospace Canada Textron,
P.O. Box 160,
Grand Bend, Ontario
Canada N0M 1T0
Telephone (519) 238-2333 Telex 024-7268

Bell Aerospace Canada Textron has worked closely with the Canadian Department of Industry, Trade and Commerce in a programme which has led to the establishment in Canada of a commercially viable air cushion industry to meet the diverse requirements for the Coast Guard, remote area cargo hauling, high speed passenger ferry services, oil industry logistics support, and other specialized applications.

In 1971, the company acquired a 21-hectare (52-acre) site and facilities, including buildings with a total of 3,350m² (30,000 ft²) of floor space, for the development and production of its heavy haul air cushion vehicle, the *Voyageur*.

Four 40-ton *Voyageurs* have been built under a joint agreement between the company and the Canadian Department of Industry, Trade and Commerce.

The *Voyageur* features a basic flatbed hull of all-welded extruded marine aluminium that can be



adapted to a variety of operational needs by adding the required equipment and superstructure.

A "stretched" version of the *Voyageur*, Model 7467 LACV-30, is now in production at Grand Bend.

Breton Industrial & Marine Ltd.,
P.O. Box 2003,
Port Hawkesbury, Nova Scotia
Canada B0E 2V0
Telephone (902) 625-2800 Telex 019-37550

Our facilities enable us to build steel and aluminum service vessels, patrol vessels, fishing trawlers and barges up to 60 meters (200 feet). Our facilities include a 175' x 80' x 50' high building shed equipped with an overhead crane, 500 ton shear, 400 ton brake, arc welders, MIG and TIG welders, plasma arc cutting equipment, profile cutting equipment, compressors etc. We also have a machine shop capable of servicing our shipbuilding and ship repair needs.

A new floating drydock is under construction and when completed in the summer of 1980 will be capable of lifting up to 1600 long tons.

We also have a new 240' steel and concrete wharf with a maximum depth of 30' alongside at low tide.

Our company also has the technical experience to design and engineer all electrical and mechanical systems involved in ship operation.



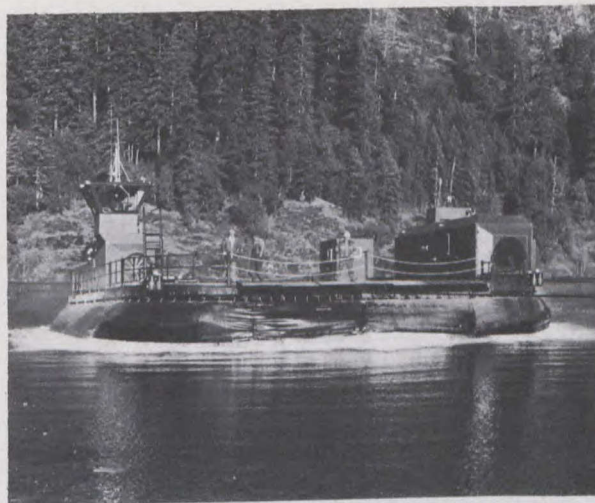
Burrard Yarrows Corporation,
Vancouver Division,
P.O. Box 86099,
North Vancouver, British Columbia
Canada V7L 4J6
Telephone (604) 988-2111 Telex 04-352652

The Burrard Yarrows Corporation operates the largest ship repair and shipbuilding service on Canada's Pacific Coast. The company's two shipyards in Vancouver and Victoria, British Columbia, are fully-equipped with modern facilities to handle all types of repairs and conversions and offer wide-range capability in new construction.

Location of the yards on the busy shipping lanes of the Pacific is ideal for routine dry docking and survey repairs, voyage repairs, emergency repairs and conversions. The Victoria Division has an enviable record in the repairing and conversion of large ships up to 100,000 dwt. using a nearby Canadian government graving dock 358 metres long by 38 metres wide. The Vancouver Division is installing a new floating dry dock—200 metres long by 45 metres wide—with a lifting capacity of 36,000 tonnes and related new on-shore facilities for expanded capability to dock almost all deepsea ships now calling at the Port of Vancouver. It will be in operation by late 1981.

Close to 800 ships have been built by the two shipyards, ranging from highly sophisticated weather ships and marine research vessels, offshore supply vessels, oil barges and oil tankers, icebreakers, passenger liners, passenger-automobile ferries, suction dredges, crane barges, destroyer escorts, cargo vessels, huge self-loading self-dumping log carriers to fishing boats, railcar ferries and tugs of all sizes.

Victoria Division,
P.O. Box 1030,
Victoria, British Columbia
Canada V8W 2S9



Burrard Yarrows has been in business for more than 86 years and its shipyards offer many advantages to customers. The generally mild climate of British Columbia facilitates year-round, all-weather operations. Vancouver and Victoria are modern, cosmopolitan cities with complete amenities for crews and are served by many international airlines. Labour relations are stable with no work-stoppages during the past 15 years, and all classification and salvage societies are represented in Vancouver.

Canadian Shipbuilding and Engineering Ltd.,
P.O. Box 277,
Collingwood, Ontario
Canada L9Y 3Z6
Telephone (705) 445-4040 Telex 068-75545

Canadian Shipbuilding & Engineering Limited operates two shipyards—Collingwood Shipyards in Collingwood, and Port Arthur Shipbuilding Company in Thunder Bay, Ontario.

The Collingwood yard is mainly concerned with the construction of new vessels and specializes in self-unloading bulk carriers for unrestricted and Great Lakes service, tankers and dry cargo service. Vessels are built up to the size limitation of the St. Lawrence Seaway with a length of 223 meters (730 ft) and a beam of 23.2 meters (76 ft). The shipyard is suitably located for building captive Great Lakes bulk carriers in excess of 305 meters (1000 ft). Collingwood has an output capability of approximately 45,000 deadweight tons per year and is equipped with modern fabrication facilities and equipment for all phases of high class construction.

Port Arthur Shipbuilding Company is a service facility for all types of shipping using the Great Lakes and St. Lawrence Seaway system. It contains a large drydock capable of all types of repair and overhauls to hull, machinery systems, electrical equipment and control systems. Major refits and conversions are also carried out.

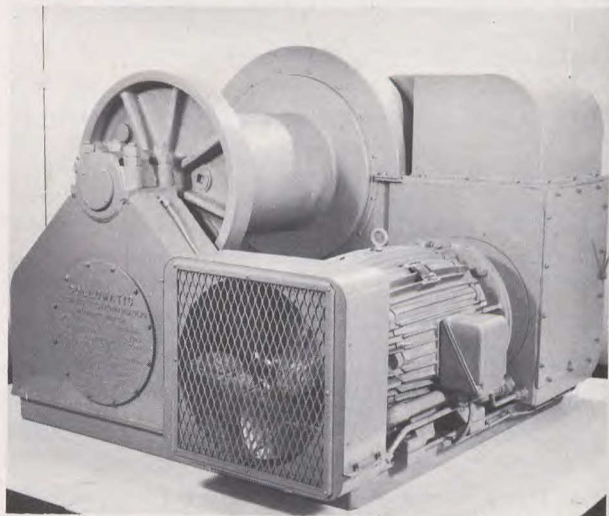
Industrial and heavy machine work is carried out at both shipyards.

Collomatic Electro-Hydraulic Self-Tensioning Mooring Winches are designed and patented in response to the need for a rugged reliable self-contained winch for the rigorous seaway demands.

The two hundred and twenty-five in service, on Canadian, U.S., and foreign flag vessels attest to the viability of the design.

Presently available in 12.5 ton capacity, we will offer five sizes by the end of 1979 ranging from 6.0 ton to 50.0 ton capacities.

Electro-hydraulic towing winches have been designed and manufactured for Canadian and U.S. clients. We have the capabilities if you have the problem.



Hatch Cover Cranes can be custom built to the clients requirements for Great Lakes self-unloaders and bulk freighters.

Caraquet Marine Industry Ltd.,
P.O. Box 610
Caraquet, New Brunswick
Canada E0B 1K0
Telephone (506) 727-3339 Telex 014-24554

L'Industrie Marine de Caraquet Ltée is a comparatively recent addition to Canada's growing marine industry. The company specializes in the construction, repair and refitting of steel vessels up to 46 m (150 ft.) in length and 600 tons displacement.

Caraquet's capabilities include the construction of barges; crew boats; ferries; steel, aluminum and fibre-glass fishing vessels; oceanographic vessels; patrol craft; supply vessels; tugs. The company also provides services for repair and maintenance of vessels.

This compact yard is served by a 600-ton marine



railway and has an enclosed building area so that work can be carried on year-round to ensure delivery times are met.

While the company is young, it has already developed international markets and, has constructed a fish-

eries research vessel for El Salvador in Central America.

It now has three 65 ft. steel Crabber & Scottish Seiners of its own design in operation and two more under construction for local fishermen.

Davie Shipbuilding Ltd.,
P.O. Box 130
Levis, Quebec
Canada G6V 6N7
Telephone (418) 837-5841 Telex 051-2254

DAVIE SHIPBUILDING LIMITED is Canada's largest shipyard, with the capacity to construct ships of up to 100,000 DWT. Davie's diversified product line not only includes ship construction, repair and conversion, but various industrial products and offshore jackup drilling platforms.

Jackups are presently being constructed for the Gulf of Mexico and South American markets.

The quality of Davie's 2,000 workforce and 140 acres of plant facilities have made Davie an international name in marine construction. Within its 600,000 sq. ft. of enclosed shop facilities, Davie has the capacity to construct completed units of up to 200 tons.



Ferguson Industries Ltd.,
P.O. Box 670,
Pictou, Nova Scotia
Canada B0K 1H0
Telephone (902) 485-4313 Telex 019-36535

Located at Pictou, Nova Scotia, on the Trans Canada Highway within 100 miles of the Port of Halifax and an international airport, FIL is served by a wide-gauge rail line and is strategically located on the Atlantic Seaboard. The company can ship heavy fabricated assemblies of up to 40 tons by water, road and rail.

Drawing from a skilled labour force in excess of 400 tradesmen, FIL, along with its associate companies Sydney Engineering and Dry Dock Company Limited and Oxford Industries Limited, has enclosed shops of approximately 200,000 square feet and three Marine Railways of 1200, 2000 and 3000 metric tons.

Over the years FIL has specialized in the supply of steel-hulled vessels for the fishing industry and has supplied various types of fishing vessels such as Side and Stern Trawlers, Herring Seiners, Scallop Vessels, and Long Liners. As an associate company of H. B. Nickerson & Sons Limited of North Sydney, Nova Scotia, FIL has direct access to up-to-date fishing technology related to all species being fished in the North-west Atlantic.

In addition, FIL has supplied Patrol Vessels, Off-



shore Tug/Supply Vessels, Harbour Tugs, Barges, Passenger Ferries and Ro-Ro Vessels. Launchways will accommodate new construction up to 350 feet long.

DAVIE

**The biggest name in
Canadian shipbuilding and
major industrial projects.**

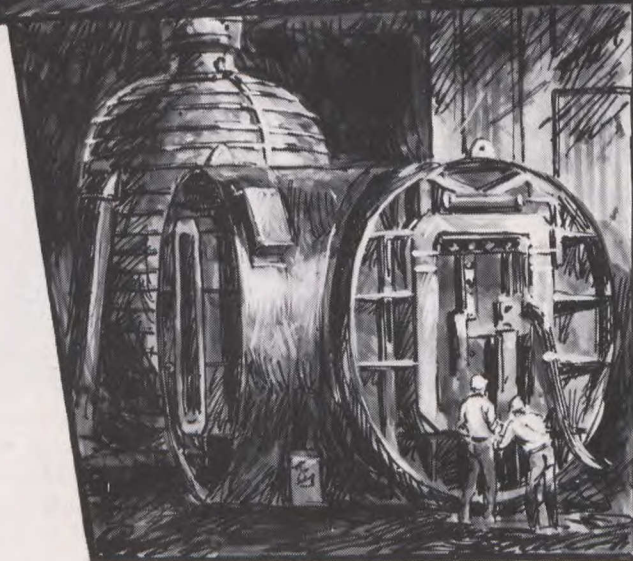
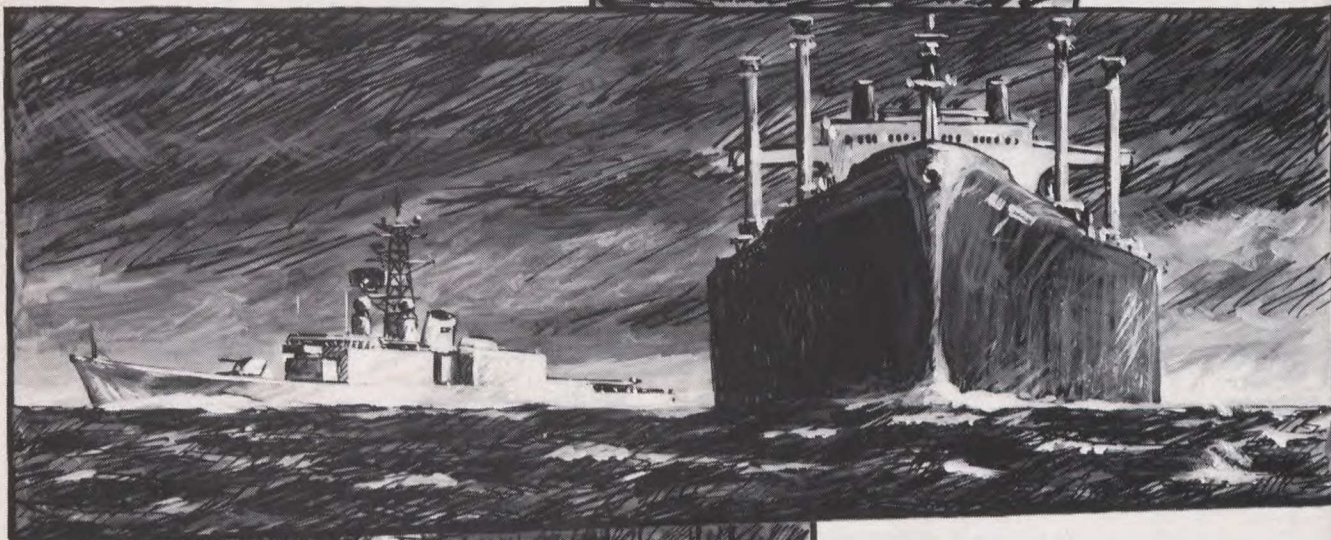
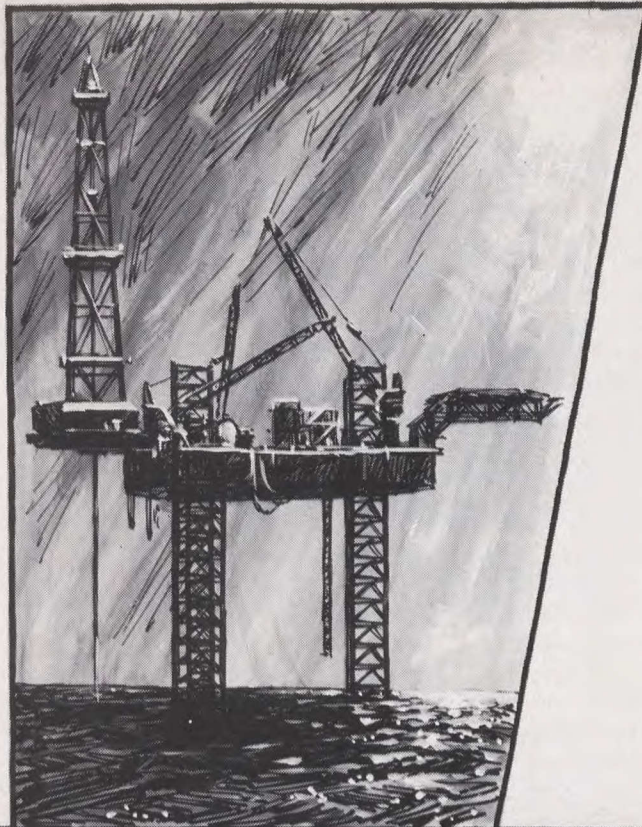
A leading name in offshore rigs.

Davie has been building massive steel structures for a long, long time. Notably ships. Destroyers, tankers, icebreakers. Enormous heavy-walled pressure vessels. Huge components for hydroelectric and petrochemical complexes.

Davie's innovative approach, its vast expertise, plus its large industrial capacity is supported by an energetic and skilled workforce.

No wonder that Davie has been able to respond so capably to the offshore industry's urgent need for rigs, and will be also participating in Canada's east coast exploration and arctic natural gas projects.

These are the many good reasons to put DAVIE onto your ship construction, offshore development or major industrial project.



**DAVIE
SHIPBUILDING
LIMITED**

P.O. Box 130, LÉVIS
QUÉBEC G6V 6N7
TELEPHONE: (418) 837-5841
TELEX: 051-2254



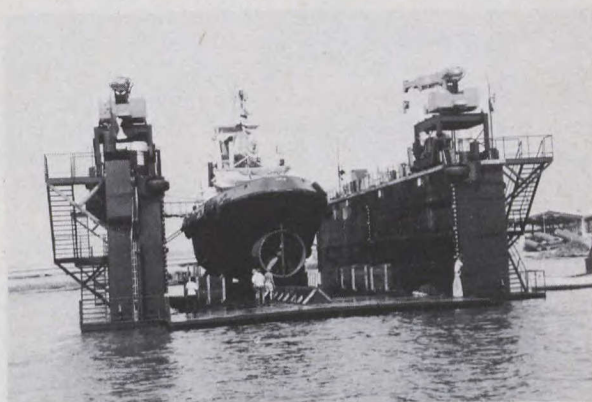
Georgetown Shipyard Inc.,
P.O. Box 220,
Georgetown, Prince Edward Island
Canada C0A 1L0
Telephone (902) 652-2275 Telex 014-44151

Georgetown Shipyard specialises in the construction of small and medium size steel and aluminum hulled vessels. The Company is also experienced in all types of ship refits, conversions and repairs to steel, aluminum and wooden vessels.

The Shipyard is located in the deep water port of Georgetown on the southeast end of Prince Edward Island and is in close proximity to all the major fishing grounds in Atlantic Canada.

A covered and heated building berth, large steel fabrication building and modern outfitting shops permit the efficient construction of custom built vessels up to 40 m (132 ft) in length and 12 m (40 ft) in beam. A planned 1200 tonne marine lift will complement the existing 600 ton and 100 marine railways for carrying out ship repairs.

Recently completed shipbuilding contracts include a 23 m fisheries research vessel, three 29 m har-



bour/coastal tugs for the Department of National Defence, a 20 m multi-purpose fishing vessel, and a 500 tonne floating dock constructed and delivered to the United Republic of Cameroon, West Africa.

Gulf Commander Boats,
1096 Roosevelt Crescent,
North Vancouver, British Columbia
Canada V7P 1M3
Telephone (604) 984-0348

Gulf Commander Boats has developed a line of moulded fishboat hull, deck, cabin kits suitable for the fishing and pleasure boat industry. All hulls have been designed by Ed Monk, a noted northwest marine designer. 45 footers were originally introduced in 1969, subsequently 48 foot and 50 foot models were added to the line. To date sixty units have been delivered as pleasure boats, government patrol vessels and commercial fish boats. In 1979, new models 36'-38' and 40' have been introduced. Fifteen of these boats have been delivered to date and six more are on order.

The new 38' x 13'3" x 3'3" Monk-designed hull has a full keel and has an easily driven, fuel-efficient hull shape. The first boats were finished as gillnetters and later units are being finished as trollers or combination boats.

Gulf Commander Boats has a sales office at 1096 Roosevelt Crescent, North Vancouver, B.C. V7P 1M3. The larger boats are molded at I C L Engineering Ltd.



plant in Richmond, B.C., and the smaller model is produced at Cooper Enterprises Ltd.

Halifax Industries Ltd.,
P.O. Box 1477,
Halifax, Nova Scotia
Canada B3K 5H7
Telephone (902) 423-9271 Telex 019-22672

Halifax Industries Limited owns and operates two ship repair facilities: Halifax Shipyards and Dartmouth Marine Slips, on Canada's east coast adjacent to the heavily travelled North Atlantic shipping lanes.

→

Comprising over fifty acres on both sides of ice-free Halifax Harbour the two yards are presently active in the field of scheduled and emergency repairs, trawler construction, industrial fabrication, conversions and inspections.

Vessels ranging in size from 25,000 dwt to 3,000 dwt can be handled at Halifax Shipyards. The facility includes a graving dock (173 m x 24 m), a newly commissioned floating dock, Scotiadock (185 m x 25 m) and, in late 1981, a "Panamax" size floating dock will be in place. There is over 485 m of berthing space. A well equipped machine shop, plate, pipe, sheet metal and joiner shops ensure that all repairs are handled quickly and efficiently.

At Dartmouth Marine Slips there are five marine railways to provide quick turnaround for vessels under 3,000 dwt. Dartmouth Marine Slips also operate a fully mobile crew capable of repairing vessels anywhere in Atlantic Canada.

Since the two facilities were purchased by Halifax Industries Limited from the Province of Nova Scotia



in August 1978, extensive renovations have taken place as part of a five year fifty million dollar capital expansion programme.

Hike Metal Products Ltd.,
P.O. Box 698,
Wheatley, Ontario
Canada N0P 2P0
Telephone (519) 825-7394

Hike Metal Products & Shipbuilding in its 30 year history has produced steel vessels of various types and sizes ranging from 40 to 130 ft. in length.

Based in a commercial fishing harbour 45 miles East of Windsor on Lake Erie, it has rendered itself most favourably to the construction and repair of fishing vessels, biological and ecological research vessels, tow tugs, push tugs, barges, party boats and sightseeing boats.

Hauling out and launching capabilities consists of a 120 ton mobile travelift over a slipway.

The company also provides services as naval architecture and marine engineering, marine surveying and consulting.



Hi-Line Aluminum Welding Ltd.,
13060 No. 2 Road,
Richmond, British Columbia
Canada V7E 2G1
Telephone (604) 274-0222

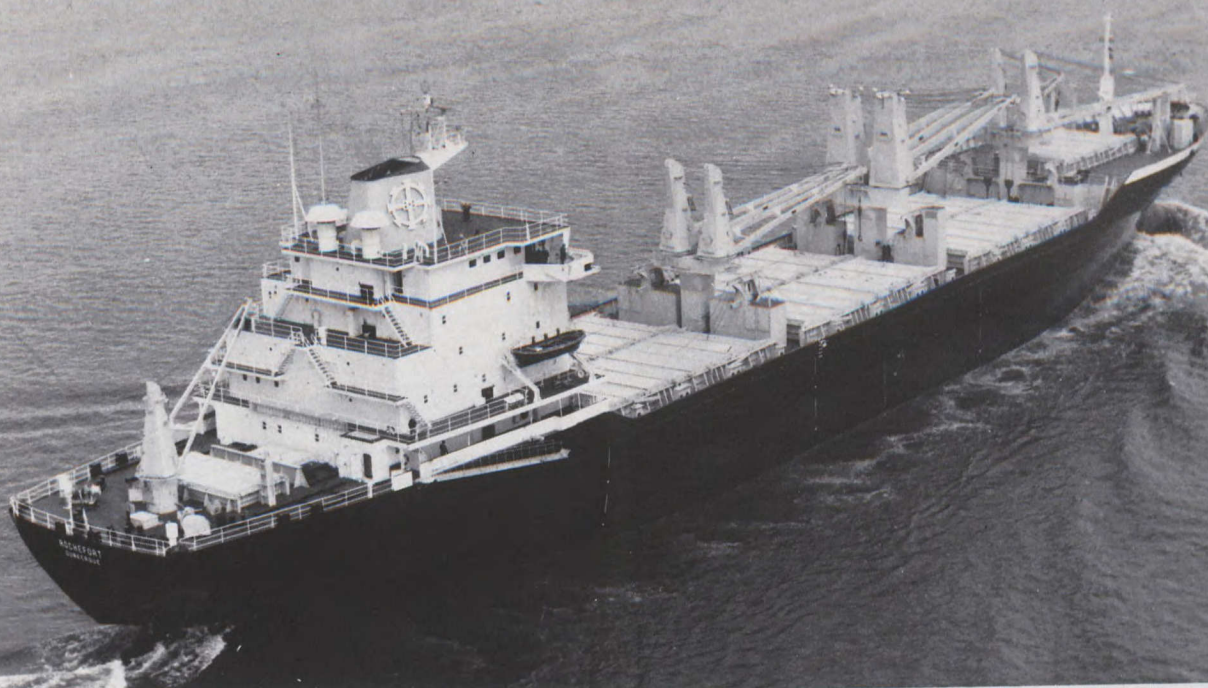
Our facilities include: 10,000 sq. ft. building area, 2000 sq. ft. storage & machining facilities, plus large blacktop work yard. Waterfront launching access.

We are devoted almost entirely to marine industry, especially smaller boats in the commercial fishing field. Our manager and several workmen have a combined experience of over 40 years as commercial fishermen, giving us insight into, and expertise with, the special needs of the industry. We are constantly working to develop safer and more efficient boats and equipment.

We have developed:

A heavy-duty combination Gillnet-Herring style boat,





...SHIPS THAT DEMAND COMPARISON!

MARINDUS CARGO LINERS

- High deadweight and container capacity
- Low fuel consumption
- Versatility
- Efficient cargo handling gear
- High quality for economic operation
- 21 vessels already built
- Designs from 12000 to 17000 DWT

MARINDUS TANKERS... SERIES II

- A proven work-horse for your fleet
- Eight series II already in service
- High reliability and low maintenance
- Designs from 5000 to 12000 DWT
- Options for ice reinforcing and chemical cargoes
- **NEW** ultra-shallow draft variant for coastal trades

We invite you to compare these
Marindus Vessels with others...



MARINE INDUSTRIE LIMITÉE

P.O. Box 550 Sorel, Quebec, Canada J3P 5P5 Tel.: (514) 743-3351 Telex: 055-61081

utilizing twin inboard-outboard Volvo motors, specifically for the Pacific West Coast and Alaskan fisheries.

Our fabricated products include all essential items for

Gillnet and Troll vessels, such as masts, poles, tanks, power rollers, anchor winches and net drums. We also stock aluminum and S.S. Butt-Weld fittings, and have a complete line of marine hardware.

Marine Industrie Ltée.,

P.O. Box 550,

Sorel, Quebec

Canada J3P 5P5

Telephone (514) 743-3351 Telex 055-61081

A shipyard has been operating in Sorel, P. Quebec, since 1917. First known as Manseau Shipyard, in 1937 the company was incorporated under the trade name of Marine Industrie Limitée.

The company expanded considerably and strengthened its productive capacity during the Second World War. The shipyard area increased from 24 to 100 acres during this period with production including corvettes, minesweepers, supply ships and tankers for the merchant marine during wartime.

The management of Marine Industrie Limitée has since diversified its sources of revenue to compensate for the peaks and valleys of the market in some fields of activity.

The company ventured into another area in 1965 by supplying turbines, generators, power station butterfly valves and electric motors for major projects in Canada and abroad. In Canada, the major projects for which Marine Industrie Limitée built important equipment are: Manic V, Outardes IV, Churchill Falls and Bay James' LG2, LG3 and LG4.

The company built for the Canadian Navy the all-aluminum prototype hydrofoil, anti-submarine vessel which attained 60 knots on trials. The company also produced the giant self-propelled floating crane "Hercules" for the St-Lawrence Seaway Authority with a lifting capacity of 275 tons.



Marine Industrie Limitée, as the lead yard, assisted in the development of a series of helicopter-carrying DDH class destroyers that were equipped with gas turbines and built and commissioned two of these ships in 1972.

The Marine Industrie Limitée's designed "Marindus 17/17"—(a multi-purpose cargo liner) really put Marine on the map and M.I.L. soon became known internationally as builders of a well-designed and versatile type of cargo liner in the 15,000 to 17,000 t.d.w. range. In the last few years, the company completed the delivery of twenty-one of these ships for various owners. More recent orders included four 16,000 t.d.w., 20 knot cargo liners for Polish Ocean Lines, a new Marindus design specifically developed to suit the diversified cargos to be carried by these ships.

Marystown Shipyard Ltd.,

P.O. Box 262,

Marystown, Newfoundland

Canada A0E 2M0

Telephone (709) 279-1200 Telex 016-3140

Marystown Shipyard Limited is a Crown Corporation situated on the South Coast of Newfoundland at Marystown on the Burin Peninsula.

The yard was completed in 1968 on reclaimed land in Mortier Bay and, in facilities and concept, is one of the most modern yards of its size in the world.

The two main features of the yard are the construction of vessels under cover in the steelwork sheds and a Syncrolift system for raising, lowering, and transferring vessels ashore.

The Main Assembly and Erection area is 383' long x 100' wide and includes two Building Berths to accommodate vessels up to 250' long.

The maximum annual steel throughput is approximately 3,000 tons and the facilities in the Preparation Shops are geared to match this. Included in this facil-

ity is a 1/10th Scale Flame Planer, 600 T Plate Rolls, 300 T Brake Press, 100T Gap Press, and a 200 T Frame Bender. Annexed to the Preparation Shop is an Auto-



matic Shotblasting and Paint Spraying system.

Craneage: In Preparation Shop—a 5 ton Magnetic Crane and in the Assembly and Erection Shops—one 5 ton Overhead Electric Travelling Crane and two 25 ton Overhead Electric Travelling Cranes.

The Engineering, Pipefitting, Painting, Electrical and Joiner's shops are situated adjacent to the Fitting-Out and Repair berths and, in keeping with the steel-work facility, have all the modern equipment necessary for the fitting-out and repair of all types of vessels.

The Machine Shop is one of the most versatile of its kind and includes a Vertical and Horizontal Boring Mill, a 26' Gap Lathe, and 18' Lathe and various other machines necessary for marine and general engineering work.

The Electrical Shop has the capacity for repairs and rewinding of transformers and electric motors up to 200 h.p.

The Joiner Shop is fully equipped for the manufacture of all types of furniture for marine and commercial markets. Special equipment is installed for the bonding of plastic laminates for paneling and furniture finishes.

The Syncrolift Marine Elevator can drydock vessels up to 270' long x 59' beam and has a maximum lifting capacity of 3,000 tons. Vessels can be lifted and transferred ashore by means of the Transfer System. Up to six maximum size vessels can be ashore at any one time, and, with smaller vessels, more can be accommodated.

Alongside the Marine Elevator are two wharves, the North wharf being 450' long and the South wharf 250' long.

The wharves and repair berths are served by mobile cranes.

Expansion projects recently completed by the Yard are a new 200' long Fitting-Out Quay, a Sub-Assembly Shop and Sheetmetal Shop annexed to the Main Sheds and an extension to the Syncrolift Side Transfer system.

The yard, since it commenced production in 1968, has built twenty four vessels of various designs and tonnage. We are, at present, constructing four Diving Support/Supply Ships for Norwegian interests and a 205' Fisheries Patrol Vessel for the Government of Canada.

**Newfoundland Dockyard,
P.O. Box 97,
St John's, Newfoundland
Canada A1C 5H5**

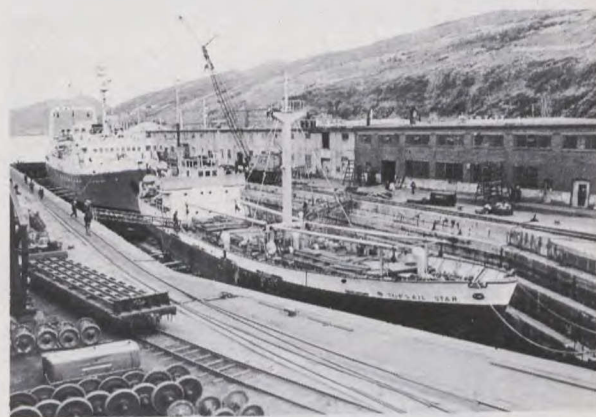
Telephone (709) 737-7800 Telex 016-4796

Strategically located close to north Atlantic shipping lanes, the Newfoundland Dockyard at St. John's has been serving the industry for nearly a century. It offers full facilities to undertake major and minor repairs, conversions, and refits, on all types of vessels.

The graving dock is capable of handling vessels up to 570 feet in length with a 70 foot beam. Deep water berths and a full complement of shops are available to outfit and repair afloat any size and type of ship.

To meet the growing demand of the deepsea fishery and offshore oil exploration, a modern ship elevator with three repair berths is being constructed. On completion, it will be possible to drydock vessels up to 300 feet in length very quickly and at short notice. This will also increase availability of the graving dock for larger ships.

The yard has specialists in the repair of steel or alu-



minum hulls, who can renew, part renew, or fair in place all hull plates normally found on any kind of ship, including icebreakers. Craftsmen and equipment are also available to handle any kind of machinery repair. Cranes, workboats, and diving equipment are at hand to meet virtually any need.

**Omnimar Ltd.,
2 Charlotte Street,
Sorel, Quebec
Canada J3P 1E9**

Telephone (514) 743-7969 Telex 05-24128

Omnimar Limited offers the world-wide marine industry a complete facility of small vessel construction, either in Steel or in Aluminum, such as Tugs, Work Boats, Deck Scows, Dredge Scows, Manitowoc Dump Scows, Yard Box Cars, Dumping Box Cars, at competitive prices.

We also offer services for all ship repairs afloat, propeller repairs, rental of heavy lift equipment, floating crane (100 T) and towing.

We are very conveniently situated at the meeting point of St. Lawrence River and the Richelieu River and we possess our own dock (560 ft.) at 15 ft. draft.



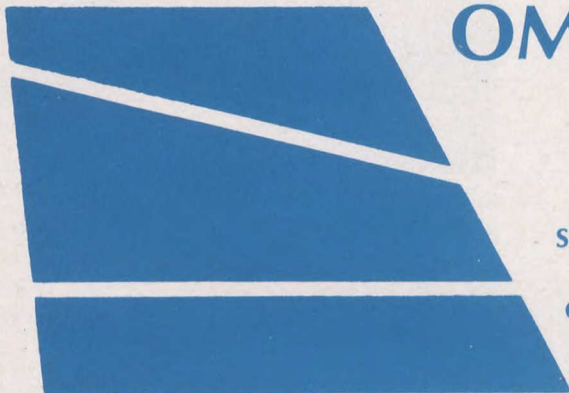
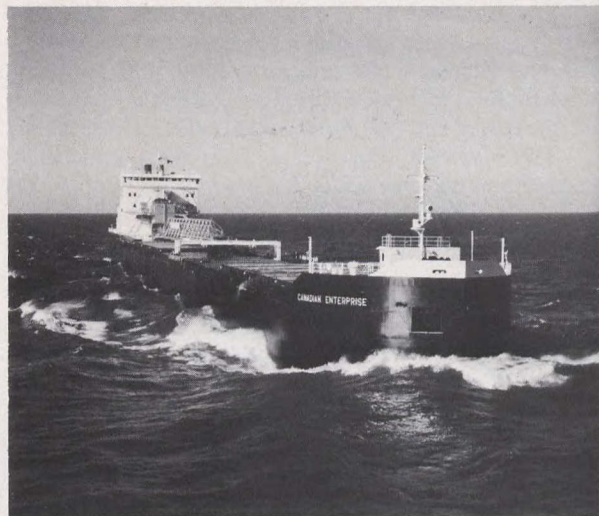
Port Weller Dry Docks,
P.O. Box 3011,
St. Catharines, Ontario
Canada L2R 7C1
Telephone (416) 934-2581 Telex 061-5136

Port Weller Dry Docks (A Division of Upper Lakes Shipping Ltd.) has the largest ship building and repair dry docks on the Canadian Great Lakes. The Company is located above Lock One of the Welland Ship Canal and can accommodate vessels up to the maximum dimensions permitted by Canal regulations.

The Company specialises in building self-unloading bulk carriers for inland waters and ocean trade, icebreakers and ice stiffened ships. It also builds tankers, ro/ro ships and rail and car ferries with optional ice capabilities.

Port Weller is known for its leadership in computerized lofting and numerically controlled machines for fabricating steel plate and piping systems.

Enquiries should be addressed to the President, the Technical Manager, or the Repair Manager.



OMNIMAR LIMITED

SHIP AND PROPELLER REPAIRS — TOWING
— BARGE RENTAL — TUG AND BARGE
CONSTRUCTION — COMPLETE MACHINE
SHOP — FLOATING CRANE — ENGINE
REPAIRS — SHIP DELIVERIES

We have certified welders, fitters and mechanics and we will do all we can to solve your problems. □ We answer the phone 24 hours a day every day of the year and we can be working on your ship in a jiffy. □ We are the talkable people. □

OMNIMAR LIMITED, 2 RUE CHARLOTTE, SOREL, QUE., CAN. J3P 1E9
TEL: 514-743-7969, TELEX: 05-24128

RivTow Shipyards Ltd.,
 2724 S.E. Marine Drive,
 Vancouver, British Columbia
 Canada V5S 2H1
 Telephone (604) 430-4444 Telex 04-55394
 Branches: BC Marine Shipbuilders Div., 101
 N. Victoria Drive, Vancouver, B.C., V5L
 3C6 • John Manly Shipyards, Western Pro-
 peller Div., 2052 E. Kent Ave., Vancouver,
 B.C., V5P 2T2 • John Manly Shipyard Div.,
 2052 E. Kent Ave., Vancouver, B.C., V5P
 2T2 • West Coast Salvage Div., 2150 E. Kent
 Ave., Vancouver, B.C., V5P 2T2.

RivTow Straits Limited is a diversified service organization based in Vancouver. The company has four operating divisions: RivTow Marine Ltd., RivTow Equipment Ltd., RivTow Shipyards Ltd., and Pacific Rim Ready-Mix Ltd.

The marine fleet comprises 80 tugs and a large fleet of both general and special purpose barges. The company is one of the largest Canadian operators in marine towing and salvage.

RivTow Shipyards Ltd. controls three yards in the Vancouver area: B.C. Marine, West Coast Salvage and John Manly. B.C. Marine Shipbuilders specializes in steel construction and repairs with two marine ways in Vancouver Harbour. They also do custom forging.

John Manly Shipyards builds and repairs medium sized tugs, fish and patrol boats for both industry and government. Experts in aluminum fabrication, John Manly is known world wide for their manufactured ships doors, windows and hatches. Propeller construc-

RivTow Equipment Ltd.,
 2724 S.E. Marine Drive,
 Vancouver, B.C.
 Canada V5H 2H1
 Branches: RivQuip Div., 8410 Main St.,
 Vancouver, B.C., V5X 3M2 • Purves Ritchie
 Div., 503 E. Pender St., Vancouver, B.C.
 V6A 1V4



tion and repairs are also handled by this yard through a subsidiary, Western Propeller Ltd.

West Coast Salvage are builders of speciality vessels for resource industries (especially forestry) throughout the world.

**Saint John Shipbuilding & Dry Dock
 Co. Ltd.,**
 P.O. Box 970,
 Saint John, New Brunswick
 Canada E2L 4E5
 Telephone (506) 693-9941 Telex 014-47243

Saint John Shipbuilding has equipped its yard with the most modern facilities and uses the latest techniques for the design, construction and outfitting of new ships.

The steel construction facility includes a 433 m (1,420 feet) straight line, fully mechanised panel line which incorporates plate preparation and priming, N/C cutting, and automatic butt welding and stiffener welding machines of the latest design.

Recently completed is a totally enclosed blasting and painting facility which provides controlled temperature and humidity for the application and curing of corrosion control systems for finished hull units.

The company builds, repairs, converts and refits ships in either its main or tidal docks:

Main Dock: Length 350.5 m (1,150 feet), Width 38.10 m (125 feet), Depth of water over blocks 12.8 m (42 feet). This dock is divided into two sections by a floating gate and has a crane capacity up to 175 tons.



Tidal Dock: Length 134.1 m (440 feet), Width 18.3 m (60 feet), Depth of water over blocks 6.7 m (22 feet).

The yard specializes in series construction of crude and products tankers up to 95,000 tons deadweight. During the past few years Saint John Shipbuilding has delivered more than 500,000 D.W.T. in the 30,000 to 40,000 ton range, and is currently building four tankers. Under construction also is an ice-breaking rail car, automobile and passenger ferry.

In addition, the company is experienced in the

design and construction of ships for many other marine requirements as illustrated by recent deliveries which include passenger/vehicle ferries, tug and barge systems, bulk carriers, operational support vessels for the Canadian Armed Forces, processing plant barges, and most recently, the Arctic Class AML-X4 "Canmar Kigoriak" presently operating in the Canadian Arctic.

The sheltered harbour and docks are free of ice throughout the year which makes the yard ideal for hull, machinery and electrical repairs, and various types of refits and conversions.

Shore Boat Builders Ltd.,
2351 Dyke Road,
Richmond, British Columbia
Canada V6V 1E3
Telephone (604) 524-1341

Shore Boat Builders, with modern yard and docking facilities located on the Fraser River of Canada's Pacific Coast, has established a reputation for seaworthiness, quality of construction and rugged performance.

Over the past fourteen years, the company has specialized in the design and production of aluminum alloy hulls to meet the quality control and inspection standards of the Canadian Ministry of Transport. Recently completed have been 4 large 20.75 m. drum seiners, 4—17.7 m. drum seiners, 5—16.5 m. drum seiners and numerous smaller (10-11 m.) gillnet fishboats for both local and offshore use.

Shore Boat Builders production in welded aluminum alloy has included cargo vessels; work, passenger, and crew boats; utility launches; high speed naval police craft; rescue, patrol, inspection and pilot boats.

An integrated design and construction service is



available for aluminum alloy craft from 7 m. to 30 m. in length, of full displacement, light displacement—high speed, or fully planing, single chine or catamaran form. Design is by the company's naval architects, Mr. David I. Moore and Mr. Brian Henshall, or to a design supplied by the customer.

Tur-bec Boats Inc.,
505 Sherbrooke Street, Room 2400,
Montreal, Quebec
Canada H2L 1K2
Telephone (514) 844-2841 Telex 05-27116

Tur-Bec are a company rapidly being known for quality construction and timely delivery.

The naval construction yard is established in Ville Ste-Catherine, opposite Montreal's South shore with direct access to the St. Lawrence Seaway complex.

Specializing in fast all-aluminum craft powered by diesel engines, it has the experience skilled personnel and sheltered facilities to build all-aluminum vessels up to 62 m. in length. It can also repair steel and aluminum craft of equivalent size.

To date, Tur-Bec's experience includes amongst others, hydrometric survey boats, a workboat in use by the Canadian Coast Guard, a large all-aluminum luxury craft, three 27 m. fast patrol vessels built to Bureau Veritas classification for the Republic of Senegal, and a 47 m. steel car and passenger ferry for the Government of Quebec.

Shipyard: 705 1st Avenue,
Ste. Catherine, Quebec
Canada J0L 1E0



Vancouver Shipyards Co. Ltd.,
50 Pemberton Avenue,
North Vancouver, British Columbia
Canada V7P 2R2
Telephone (604) 988-6361 Telex 04-352740

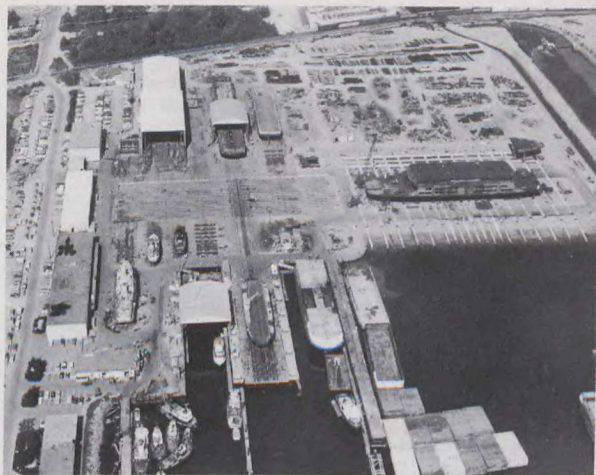
Vancouver Shipyards Co. Ltd., a Genstar Company, established since the turn of the century, is located in the Port of Vancouver, B.C. Canada's gateway to the Pacific, and is a modern shipbuilding and repair yard.

Facilities for new construction include a level shipbuilding berth and side launchway enabling the construction of two vessels of 160.0 meters long and 30.0 meters beam, simultaneously. The "Syncrolift" all-tide marine elevator can accommodate vessels up to 90.0 meters long, 21.0 meters beam and 1,500 metric tons displacement.

In addition to repairs, overhauls and conversions, capabilities include the construction of all types of vessels up to 15,000 DWT including jack-up and semi-submersible drill rigs, drill ships, working platforms, supply vessels, tugs, ferries, fishing vessels and all types of barges and cargo vessels.

Vancouver Shipyards carries out voyage repairs to deep sea vessels while at loading berths, anchorage or while vessels are on the run, and are repair representatives on the West Coast of Canada for Sulzer and M.A.N. engines.

Vessels which cannot be accommodated on the Syncrolift are dry docked by Vancouver Shipyards in the Government Graving Dock in Esquimalt, British Columbia (drydock dimensions 1173 ft. x 135 ft.).



Repairs and scheduled maintenance are continually being carried out on tugs, barges, fishing vessels, ferries, naval vessels, government vessels and yachts.

All marine trades are employed by Vancouver Shipyards to enable quick turnaround time on repairs, overhauls, conversions and to ensure delivery deadlines are met on all types of new construction.

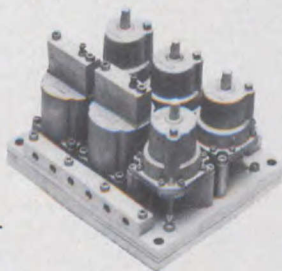
Vancouver Shipyards also has a capable and efficient engineering and drafting staff.

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60 Riverside Drive
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Telephone: (604) 929-5451
Telex: 043-52686 bennpoll vcr

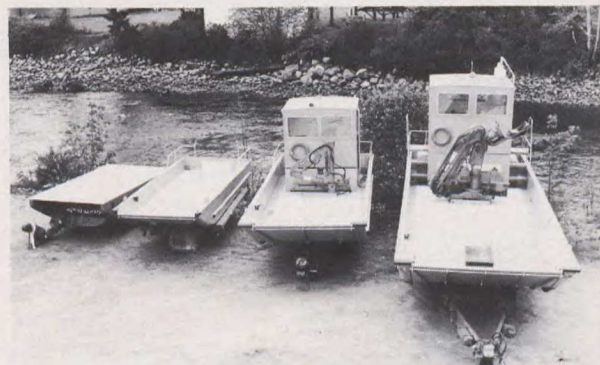
Versatile Environmental Products,
Division of Burrard Yarrows Corp.,
60 Riverside Drive,
North Vancouver, British Columbia
Canada V7H 1T4
Telephone (604) 929-5451 Telex 043-52686

Four standard sizes are available for the SeaLander range of high speed landing craft workboats. 37 ft (eight tons), 27 ft (four tons), 22 ft (two tons) and 18 ft (one ton); other sizes are built to special order.

This unique craft has a shallow draft, ability to land on a beach to take on, and discharge cargo, plus high speed over water even when loaded.

All models are trailerable and are available as a hull only, or hull with fold-down control console with windscreen and an optional fabric-shelter. They are also available with factory installed inboard/outboard gas or diesel motors or outboards.

SeaLanders are built specifically for commercial use incorporating rugged design features to ensure long and reliable service and offer the unique advantage of forward ramps for beach loading and easy recovery of swimmers, divers, and other objects while at sea.



The SeaLanders front loading heavy duty ramp permits the load to be driven, slid or rolled on easily from beach or float. The loading ramp is raised and lowered by a hand winch. Rugged aluminum fenders and strakes assure hull protection at dockside. The bottom is beach protected with double thickness of extra heavy fiberglass reinforced plastic and metal reinforcing rubbing strips. The SeaLander can be converted to a water taxi or crew boat by securing a removable passenger cabin to cargo rings on the foredeck.

Bennett has been supplying the oil industry with self-propelled skimmers since 1970. The skimming system is a two-stage process combining the advantages of both the absorbent belt and weir types of skimmer.

Vickers Canada Inc.,
5000 Notre Dame Street East,
Montreal, Quebec
Canada H1V 2B4
Telephone (514) 326-2651 Telex 05-828735

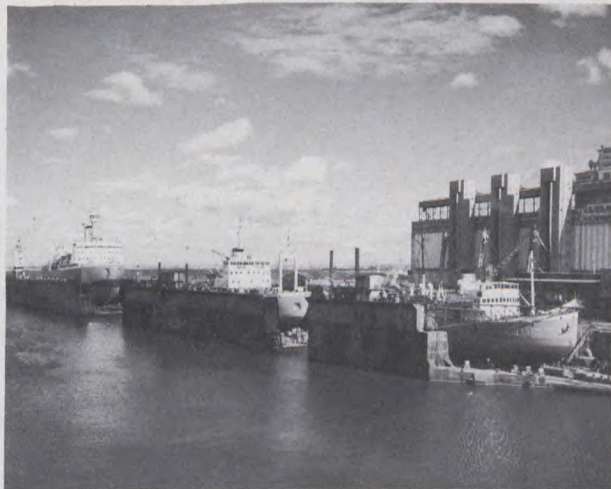
A port cannot claim major status unless facilities exist capable of performing all types of ship repairs. In this respect the Port of Montreal is well served by Vickers Canada Inc. (Marine Division).

The company's ship repair facilities are equipped with three floating dry docks, as shown in photo, 1800 feet of repair jetties and spacious machine shops containing all essential tools and equipment. A crane with a lifting capacity of 275 tons is available. Ships up to 27,000 tons dead weight and up to 750 feet in length can be drydocked.

All machinery and equipment are modern and heavy enough to handle the largest ship repairs, conversions or inspection projects with the utmost efficiency. Destroyer refits, mid life updating and drawing office facilities are also available.

The location of the shipyard is such that it has direct access to water, rail and highway transportation.

Since its establishment, Vickers Canada Inc. has contributed to the development of the Port of Montreal and to the manufacturing expertise of the Canadian economy.



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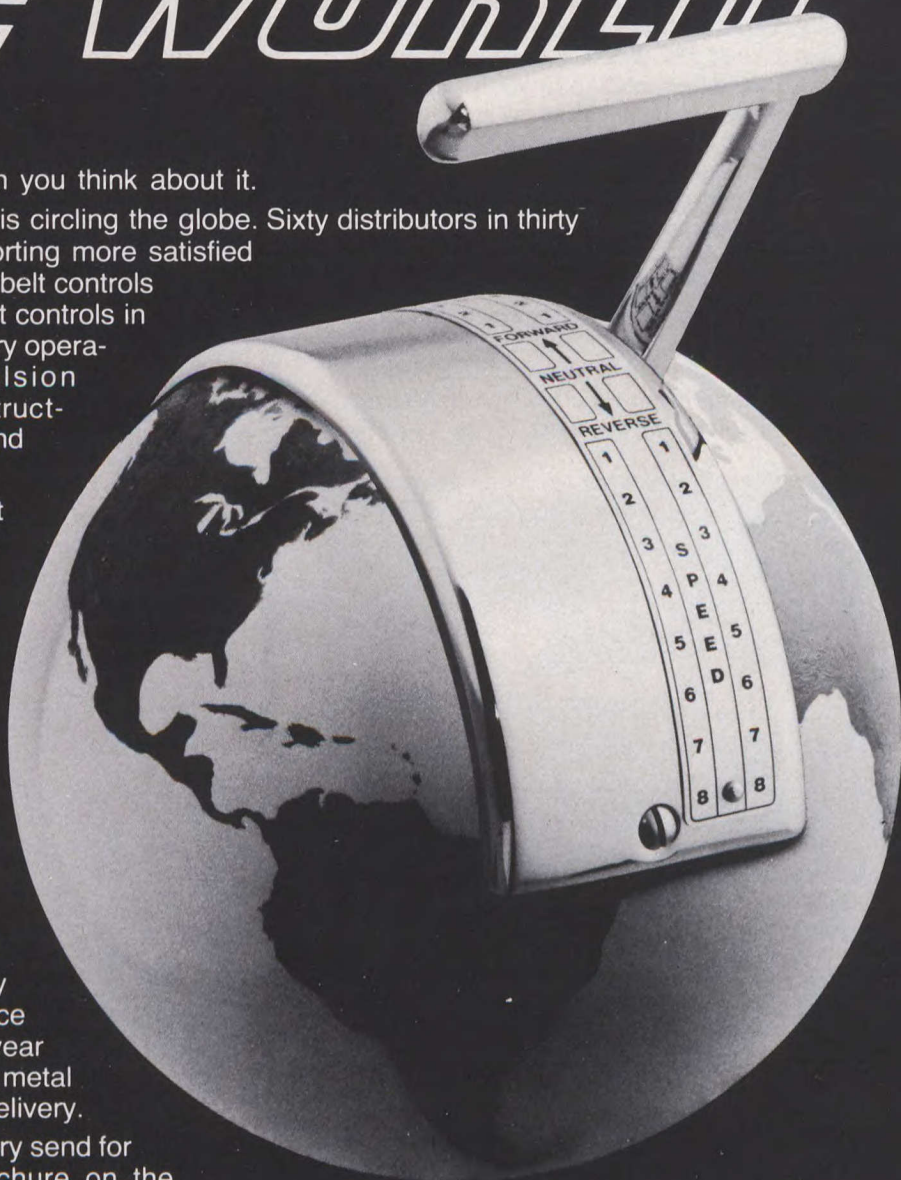
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Branches: 1112 West Pender Street,
Vancouver B.C. V6E 2S1 • c/o Enviroquatic
Developments Ltd., 223 McLeod Street,
Ottawa, Ontario K2P 0Z8

The A.C.C. Group Limited is a consulting company which specialises in the development, planning and engineering of fishing and marine industries throughout the world. Using the services of a number of affiliated companies, known and respected individually for their own expertise, we can provide a complete consulting service for any marine related project. Specifically, these affiliated companies act as Economic Planners, Fisheries Biologists, Marine Wharf and Harbour Engineers, Fish Plant Engineers, Marine Architects and Engineers, Architects, Urban and Regional Planners and Municipal and Civil Engineers. Collectively, the Group has specialists in the following fields to assist your fisheries development from sea to consumer:

- ▶ economic planning,



- ▶ assessing your fish resources,
- ▶ engineering harbours, docks and processing plants,
- ▶ designing fishing boats,
- ▶ providing engineering support services in such fields as housing, roads and industrial parks.

Because of our world wide experience, we are conscious of the need to encourage local involvement at all levels of development. We work closely with local people in the host country.

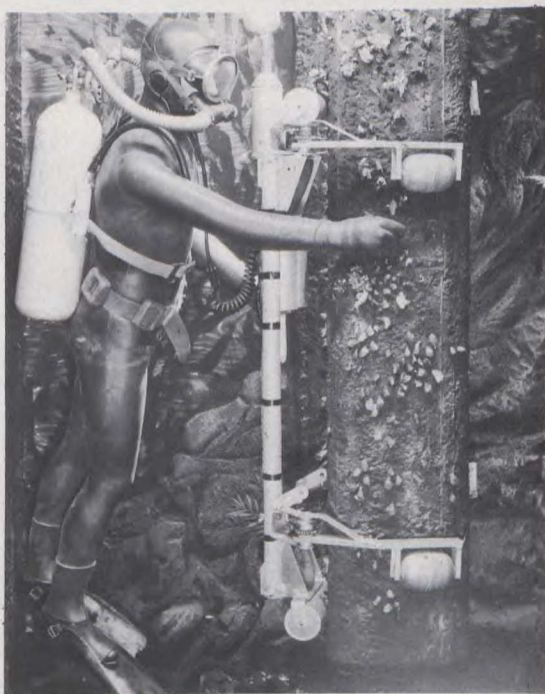
J. Agi & Associates Co. Ltd.,
1626 Duranleau Street,
Granville Island,
Vancouver, British Columbia
Canada V6H 3S4
Telephone (604) 688-7804

J. Agi & Associates provides services in the area of inspection, maintenance and repair of foreshore marine port and harbour facilities. These services consist primarily of nondestructive in-place testing and structural evaluation of wood, steel and concrete piling and other structures.

The company has acquired all capabilities of the B.C. Research, Marine Structures Consulting Programme. This includes exclusive use of all patented instrumentation and processes.

The service provides a detailed quantitative evaluation of the location, type and degree of deterioration of structural members. The information provided forms the basis for structural analysis and maintenance planning.

During the past twenty years the programme has carried out approximately 500 projects for 100 individual clients throughout North America. Our services are available worldwide.



Albery Pullerits Dickson & Associates,
29 Gervais Drive,
Don Mills, Ontario
Canada M3C 1Y9
Telephone (416) 441-2920 Telex 06-966717

APD are consulting engineers specialising in heavy civil engineering and marine works, including the planning, design and inspection of construction of harbours, breakwaters, dredging, land reclamation, berthing and terminal facilities for general cargo, containers, dry bulk and liquid bulk cargoes, transit sheds, railways, roads, bridges and other port services, including marine salvage.

Other services provided by APD are:—the planning and design of shipyards, including drydocks, marine elevators, marine railways, ship transfer system and shipyard services:—marine transportation and economic studies:—the design of special offshore structures in ice-infested waters such as drilling platforms, production platforms, artificial islands and sea bed oil storage.

APD are members of the Marine Technology Socie-



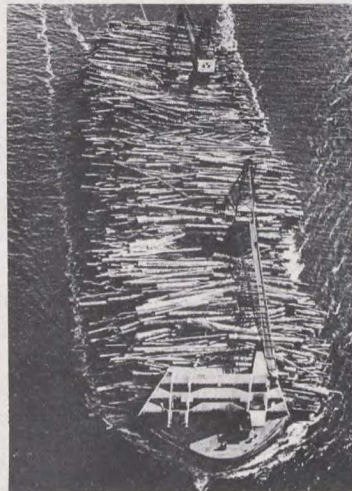
ty, the Permanent International Association of Navigation Congresses and the International Cargo Handling Association.

Robert Allan Ltd.,
1496 West 72nd Avenue,
Vancouver, British Columbia
Canada V6P 3E2
Telephone (604) 266-6285 Telex 04-55435
Branch: Seaconstruct Private Ltd., 1008-
1010 Orchard Towers, 400 Orchard Rd.,
Singapore

Robert Allan Ltd. is a design consultancy organisation, providing complete ship design and marine engineering services to ship owners and shipyards alike, with particular emphasis on those fields where requirements are of an unusual or innovative nature.

Other services provided include: Shipyard construction supervision—Scheduling and quality control—Preparation of detail working drawings—Transportation economic analyses—Special studies—Maritime consultancy to the legal profession—Model and full scale testing programmes.

To further Company involvement in the Southeast Asia area, Robert Allan Ltd. has entered into a joint



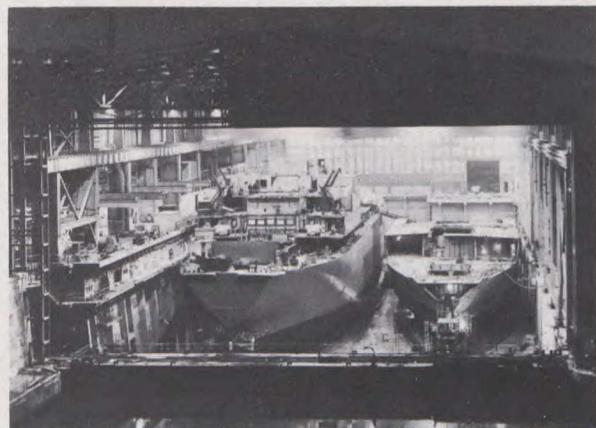
venture with two Singapore based companies to offer a complete design, financing and technical representation service for new vessel construction, through a new company known as Seaconstruct Private Limited.

A & P Appledore Canada Ltd.,
1402-1809 Barrington Street,
Halifax, Nova Scotia
Canada B3J 3A3
Telephone (902) 422-1689 Telex 019-21828

A&P Appledore Canada Limited (APAC) is the Canadian branch of A & P Appledore International, who provide key specialist services to shipbuilding, shiprepair and related industries. APAC are able to offer a full range of services to Canadian clients.

Services offered include:

- shipbuilding and shiprepair yard design and production technology
- shipyard plant and equipment specification, quotation evaluation and detailed engineering
- shipyard services design and detailed engineering



- shipbuilding and shiprepair production control and operating systems both manually and computer processed
- computer based accounting systems
- management development and manpower training
- project management of shipyard developments
- equipment procurement services

- operational management assistance
- market research both for newbuildings and ship repair

A & P Appledore have worked in Canada for 7 years and internationally have worked in over 40 countries. Major clients include shipyards, government departments, oil companies and heavy steel fabricators.

Arctec Canada Ltd.,
 311 Leggett Drive,
 Kanata, Ontario
 Canada K2K 1Z8
 Telephone (613) 592-2830 Telex 053-4730
 Branches: 13-6125 12th Street South East,
 Calgary, Alberta T2H 2K1 • 24 Gear Street,
 St. John's, Newfoundland A1C 2J5

Arctec Canada Limited provides design, research and engineering services to organizations engaged in Northern exploration, construction and navigation operations.

The specialized services which the firm provides include:

- applied research and engineering studies to develop design criteria for ships and structures to be used in ice covered waters;
- economic feasibility studies for Arctic Transportation Systems;
- planning, outfitting and conducting field projects for assessing icebreaking ship performance, determining ice cover bearing capacity, characterising breakup and freezeup times and measuring ice forces on existing structures.

The firm possess the capability to perform model tests of marine vehicles, drilling platforms and ice control structures in simulated ice conditions in either their synthetic ice basin or their 30 m refrigerated saline ice tank.



The laboratory facilities also include a 185 m³ cold room in which equipment may be tested at temperatures down to -40°C, a wavemaker for open water basin tests and a comprehensive inventory of recording instrumentation.

Arctec Canada Limited's highly qualified staff of naval architects, electrical, mechanical and civil engineers, provide engineering design, research and consulting services in high technology Naval Architecture and Marine Engineering including specialised services in the fields of hydrodynamics, propulsion system design, and simulation, structural analysis, shipboard instrumentation and computer-aided ship design.

Arctic Offshore Design Ltd.,
 630 Millbank,
 Vancouver, British Columbia
 Canada V5Z 4B7
 Telephone (604) 873-1878 Telex 04-51407

Arctic Offshore Design Ltd. was incorporated to specialise in designing vessels for frontier environments.

Involvement in this challenging field is one that requires innovative, cost-efficient naval architecture and marine engineering; and to date Arctic Offshore Design Ltd. have designed many forward-thinking, advanced and economical vessels for the offshore oil industry, some of which have been radical departures that have resulted in vessels with superior performance for far less cost than existing conventional vessels.

Completed projects for Arctic Offshore Design Ltd. include icebreakers, icebreaking supply vessels, seismic research vessels, beach landing ro-ro supply vessels, turret moored drillships, core drilling vessels, ice class tugs, Arctic Class 10 oil tankers and L.N.G. carriers.

Their services cover conceptual design studies, de-



sign tender packages, detailed working drawings and shipyard supervision.

**B.C. Research,
3650 Wesbrook Mall,
Vancouver, British Columbia
Canada V6S 2L2**

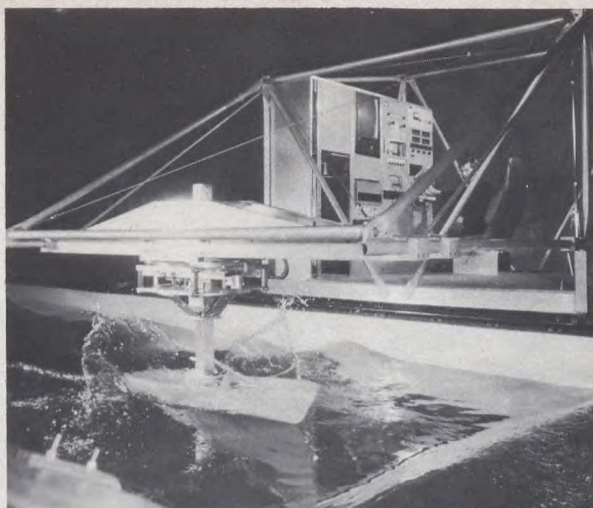
Telephone (604) 224-4331 Telex 04-507748

The Ocean Engineering Centre at B.C. Research offers diverse services to the marine industry, with emphasis on ship-model testing. Facilities include a towing tank 67 m by 3.6 m. by 2.4 m. deep, a shallow water tank 67 m. by 4 m. by up to 0.75 m. deep, and a manoeuvring basin 30 m. by 30 m. by 2.4 m. deep.

In the towing tank, a manned carriage provides speeds from 0.5 to 6 m./sec., and regular and irregular waves can be generated. A full range of instrumentation can measure forces, moments, accelerations, and motions. Typical services are resistance testing, sea-keeping tests, flow-visualization, and towed directional stability evaluations.

The manoeuvring basin allows observation of general manoeuvring characteristics using radio-controlled models; Kempf, Dieudonne spiral, and turning circle tests may also be performed. In addition, wave and mooring forces on structures can be measured.

The shallow water tank may be used with the tow-



ing tank carriage for measurement of shallow water resistance, and manoeuvring in restricted channels can be evaluated using radio-controlled models.

Back-up facilities include complete model-making shops, photography section, Amdahl 470/168 computer, and technical staff cable of theoretical and applied research.

Camat International Transportation Consultants Ltd.,

7270 Torbram Road, Suite 205,

Mississauga, Ontario

Canada L4T 3Y7

Telephone (416) 677-5728 Telex 06-968855

Branch: PO Box 846, Place d'Armes,

Montreal, Quebec

Canada H2Y 3J2

Camat International Transportation Consultants Ltd. is a Canadian Company of Naval Architects and Marine Engineers providing complete marine consulting services to shipbuilders and shipowners not only in Canada but around the world.

Camat specialises in design of Tankers, Bulk Carriers, Cargo Liners and Arctic Class Vessels as well as



hydrodynamic and Marine Engineering research and development.

Case Existological Laboratories Ltd.,

783 Cave Street,

Victoria, British Columbia

Canada V9A 5T6

Telephone (604) 233-5223 Telex 053-3195

Case Existological Laboratories Ltd. (CELL) employs a nucleus of professional naval architects and engineers with widely diversified experience, including a considerable number of years of practical sea experience.

This company offers to clients a broad range of expertise in the marine field:

Complete marine design services, from the conceptual and feasibility stages to the construction contract document stage.

Research, development, and equipment services in the general field of ocean engineering.

Engineering services, including construction supervision, operational training programmes, and planned maintenance programmes. Project management, with



turnkey capability on marine system assignments of almost any kind.

One of the more notable projects undertaken by CELL is the Seabus System now operating in Vancouver, B.C.

The Seabus System is more than a simple passenger ferry. It is a complete marine mass transit complex, consisting of ferries, floating passenger terminals, terminal to shore interface and shore servicing facilities.

CBCL Ltd.,
6100 Young Street,
Halifax, Nova Scotia
Canada B3K 5H4
Export Division: 223 McLeod Street,
Ottawa, Ontario, Canada K2A 0Z8
Telephone (613) 238-1318 Telex 053-3279

CBCL services include:
Feasibility Studies—Conceptual Design—Detailed
Design and Engineering—Project Co-ordination—
Product Procurement—Research and Development—
Turnkey Contracts.

We specialise in:

- A. The design and development of small high speed military and regulatory craft to 30 metres in length.
- B. The design and development of inshore/near off-

shore vessels up to 30 metres for the fishery or specialised uses. Also design of fishing gear and fish processing and handling equipment.

C. Complete planning and engineering services for:

- 1. Pollution Control and Clean-up Systems
- 2. Energy Systems and Conservation
- 3. Small Ship Refits and Conversions
- 4. Port Infrastructure and Services
- 5. Environmental Control Craft
- 6. Suction Dredging Equipment
- 7. Inland Water Transport
- 8. Alternate Energy Systems

GENERAL INFORMATION

We have divisional offices in all Atlantic Provinces and Ontario. Associated companies providing chemical and biological laboratories, university facilities and specialists in all fields related to water, its use, development and control.

Cleaver and Walkingshaw Ltd.,
630 Millbank,
Vancouver, British Columbia
Canada V5Z 4B7
Telephone (604) 873-1878 Telex 053-51407

Cleaver and Walkingshaw Ltd. is a Consulting Naval Architecture and Marine Engineering company with a wide range of experience in the marine industry in both Canada and overseas.

Services include initial feasibility studies, concept designs, preliminary cost estimates, preparation of tender documents including design drawings and specifications, calling for tenders, tender analysis, contract awards, preparation of construction drawings, construction supervision, quality control, classification society and regulatory body approvals, dock trials and sea trials.

Clients range from individual vessel owners to large international marine transportation companies, exploration companies, government departments and ministries both in Canada and overseas, and international agencies.

Projects cover the broadest spectrum of the marine field from 12 metre inshore fishing vessels to ocean going carriers. Included in their range of vessel designs are research vessels, car ferries, ocean going tugs, supply boats, fishing vessels, self-unloading barges,



bulk carriers, patrol boats, crew boats and rail car ferries.

Cleaver and Walkingshaw Ltd. have in the past few years emerged as one of the leading naval architects in Canada with a reputation of producing innovative designs to suit the owners' requirements. Their expertise is also acknowledged overseas resulting from vessel designs produced for the Philippines, Malaysia, Ghana, Thailand, Indonesia and Hong Kong through the Food and Agriculture Organisation of the United Nations, Canadian International Development Agency, World Bank, Asian Development Bank and the South China Sea Fisheries Development and Co-ordinating Programme.

Cove Dixon Co. Ltd.,
402-545 Clyde Avenue,
West Vancouver, British Columbia
Canada V7T 1C5
Telephone (604) 922-3996 Telex 04-352578

Cove, Dixon and Company Ltd., have been actively engaged in the design of small commercial vessels for the past twenty years.

The company specializes in tug and barge transportation systems, fishing vessels, ferries and floating equipment for the construction and offshore oil industries.

Vessels of our design have been built and operate on the Atlantic and Pacific coasts of Canada and in Chile, the Orient, Guatemala, Nigeria and New Zealand. The company, therefore, is experienced in translating the needs of other countries.

Geomarine Associates Ltd.,
P.O. Box 41,
Halifax, Nova Scotia
Canada B3J 2L4

Telephone (902) 422-6482 Telex 019-21828
Branch: P.O. Box 7247 West End Post Office,
St John's, Newfoundland A1E 3Y4

Geomarine Associates Ltd. is a Canadian company with major research and operational experience in marine and petroleum geology and geophysics. Based in the Atlantic port of Halifax, the company has been associated with geological and geophysical projects throughout Canada.

Some of the more recent projects carried out or where significant contributions have been made include: Geological examination of sub-sea cable routes—Seafloor studies of nuclear power plant intake and outlet tunnel routes—Study of seafloor sediments along marine pipeline routes in the Canadian Arctic—Geophysical search for undersea construction aggregate

deposits—Mapping of bedrock distribution on and beneath the seafloor at deep-sea terminal sites—Side-scan sonar and seismic investigation of numerous offshore petroleum exploration well sites with water depths up to 300 m (1,000 ft.)—Side-scan sonar investigation of submarine sandwave dynamics—Studies of iceberg scouring of the seafloor in the Beaufort Sea and Canada's east coast offshore areas.

In marine geological and geophysical studies, the staff of Geomarine plans and carries out marine surveys and completes integrated and thorough interpretations of the survey data. This data typically includes bathymetry, low-frequency echograms, side-scan sonograms, seismic reflection profiles, seafloor cores and photographs. Further services include provision of maps and reports illustrating and describing seafloor conditions, the distribution of sediment types and the depth to bedrock.

German + Milne Inc.,
1010 St. Catherine Street West, Suite 401,
Montreal, Quebec
Canada I3B 1G2
Telephone (514) 866-7373 Telex 05-268812
Branch offices: St. John's, Newfoundland •
Halifax • Saint John, New Brunswick

German + Milne, marine transportation consultants, marine engineers and naval architects, established in 1922, provide a range of services beyond those firms traditionally connected with ship design.

In addition to conceptual and contract design, professional activities include valuations, sale and purchase, expert testimony, field test programmes, research and development, contract design and plans, specifications and working drawings, supervision of construction.

The staff includes marine surveyors engaged in condition surveys, ship and cargo surveys, vessel deliveries and other specific services for ship operators and underwriters.

In the field of marine technology, German + Milne has assisted in many projects ranging from icebreaking air cushion vehicles to undersea habitats for the opera-



tion and control of offshore wells, special pulp handling and sorting equipment, simulators, etc.

As a member of Northern Associates Reg'd., German + Milne offers a broad range of resources and experiences for northern operations.

Wholly owned subsidiaries offer computer services and environmental data (particularly for Arctic zones) and specially designed electronic devices and instruments for particular Ship's use.

Total transport programmes assisted by other professional organizations, including the design of terminals and the operation of ships, access and feasibility studies, optimization programmes, risk and reliability reports etc., is a German + Milne specialty.

Harford Kennedy Wakefield Ltd.,
1727 West 2nd Avenue,
Vancouver, British Columbia
Canada V6J 1H7

Peter S. Hatfield Ltd.,
1230-355 Burrard Street,
Vancouver, British Columbia
Canada V6C 2G8
Telephone (604) 683-4441

Peter S. Hatfield Ltd., Naval Architects and Marine Consultants, provides services to industry and government engaged in marine transportation, ocean engineering, resource exploration and extraction activities, fishing and fisheries services and projects related to the

Telephone (604) 736-2952

marine environment.

Company expertise is available for preparation of conceptual, preliminary and contract level new designs or conversions of existing equipment; for investigations, studies and reports concerning structures, propulsion, stability, traffic and cargo flow patterns, construction cost estimates and operational aspects of all types of marine equipment.

The Company's principal and staff's design and consultative responsibility has included all type of commercial and special purpose vessels using various

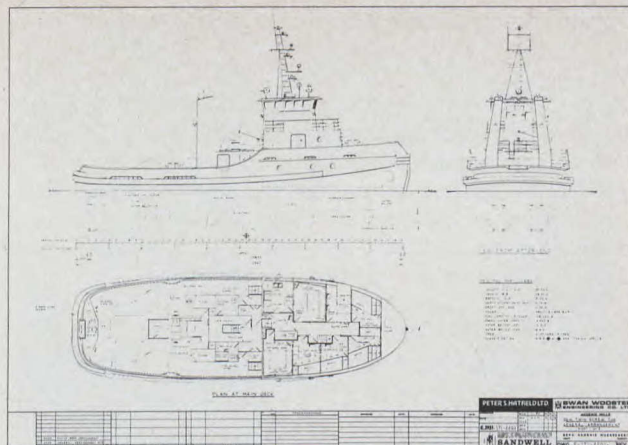
materials. Vessels embodying their direct design, conversion and construction participation are in use on the Eastern Seaboard, West and Arctic Coasts of Canada, the U.S.A. and other locations worldwide.

The vessels include tug boats ranging in power from 400 BHP to over 7000 BHP and in size from 40 ft. to 155 ft.; fishing vessels from 40 ft. wood trollers to a 125 ft. steel fully refrigerated seiner and intermediate sizes embodying complete modern equipment, latest fishing gear and techniques.

Barges include a wide variety of cargo carriers such as rail car, bulk chemical, bulk distillate and heavy oil, limerock, aggregate, log and lumber deck cargo carriers. Sizes range from 60 ft. and a few tons capacity to 350 ft. and 10,000 tons capacity.

Construction materials include steel and wood, fiberglass single skin and sandwich construction, aluminium and ferro concrete. Completed work is offered in feet and inches or metric units of measurement or both.

Specialised projects have included design and con-



struction consultation of planing type patrol craft, seine skiffs, oil spill cleanup vessels, towing tank sea-keeping, resistance and stability investigations, fleet equipment evaluation, economic analysis and cargo traffic flow reports.

Kris Kristinsson & Associates Ltd.,
5895 Falcon Road,
West Vancouver, British Columbia
Canada V7W 1W5
Telephone (604) 922-8942 Telex 04-352578

Kris Kristinsson & Associates Ltd, offers a full range of Naval Architectural and Marine Engineering Consulting Services to the marine industry on a domestic and international basis.

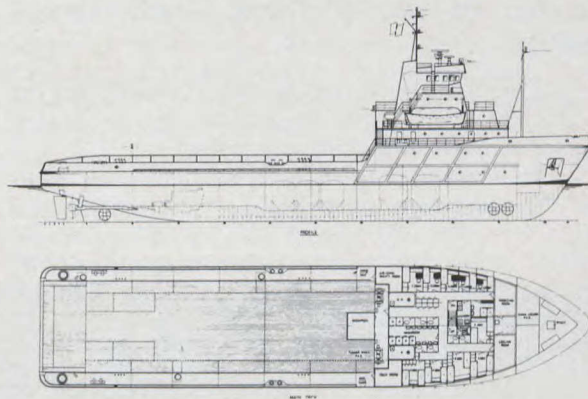
The services are fully integrated and are provided from the recommendation stages through the implementation.

The basic organisational structure of the Firm is designed to derive maximum benefit from the talent of each associate and to the widest extent possible, all problems are approached from the point of view of a total system concept.

The Firm extends its problem solving techniques on a flexible basis and welcomes conceptional and operational input from clients.

Fields of activity are:
—Merchant Ships—Fishing Vessels—Special Vessels—Material and Cargo Handling.

Consultation to the maritime industry including technical services for determining economic feasibility,



optimized equipment selection and inter-relationship between ship and shore facilities including specialized cargo handling equipment selection and ship design.

Conceptional design, contract design, marine engineering, construction contract administration, construction supervision of vessels through to completion and placement in operation.

Marine Consultants & Designers (Canada) Ltd.,
39 Queen Street,
St. Catharines, Ontario
Canada L2R 5G6
Telephone (416) 684-6080 Telex 061-5232

Marine Consultants & Designers (Canada) Ltd. offers a design and drafting service to the marine industry.

Since the company was formed in 1964, ship owners, operators and shipyards have employed its services to assist in the many aspects of ship construction and repair. With a staff of shipyard-trained engineers

and draftsmen with a wide variety of experience, the company's services have included the preparation of shipyard working drawings, contract plans and specifications, feasibility and economic studies, plan checking, surveys and salvage operations both in Canada and the United States.

The company was involved in the design, construction and production of working drawings for the first 305-m (1,000-ft.) vessels for Great Lakes service. Working drawings have also been prepared for various tugs and barges, re-powering and bow thruster installations and major conversions of bulk carriers to self-unloaders. Design projects have included lengthenings, conversions of existing bulk carriers and tankers to self-unloaders, and have involved tankers of 7,000 and 30,000 tons, barges and tugs.

Marine Consultants & Designers is equipped and has the acknowledged experience to act as owner's representative during design or construction stages. It is also capable of acting as a shipyard's engineering staff, in whole or in part, for the preparation of drawings to meet the requirements of Lloyd's, ABS, the Canadian or U.S. Coast Guards.

Marine Design Associates Ltd.,
493 Garbally Road,
Victoria, British Columbia
Canada V8T 2J9
Telephone (604) 384-4191
Branch: 106 East 14th Street, North Vancouver, B.C.

Marine Design Associates Ltd. (formerly Robert C. McHaffie Ltd.) offers a complete service to ship owners throughout Canada and abroad.

The company's experience in application engineering and design, supervision, project analysis and evaluation more than qualify it for the design of specialized vessels. Designs have included tugs up to 1,000 shp, barges of 3,000 tons capacity, passenger and automobile ferries up to 50-auto capacity and specialized fishing vessels up to 24 m (80 ft.) in length.

National Research Council Canada,
Marine Dynamics and Ship Laboratory,
Ottawa, Ontario
Canada K1A 0R6
Telephone (613) 993-9101

With more than 30 years in marine research and development the Marine Dynamics and Ship Laboratory of the National Research Council Canada and its staff have built a solid and growing international reputation.

Expert knowledge and services are available in the following areas: Propeller hydromechanics and design; General ship hydromechanics and preliminary ship overall design; Ocean waves, response motions and seakeeping qualities of ships and ocean platforms; Computer calculations, computer and instrumentation systems for laboratory and ship use; Full scale speed, power, manoeuvring and seakeeping trials; Calculations and full scale trials for Arctic vessels; Yacht model testing.

Main installations in the laboratory include a towing tank 137 x 7.6 x 3 m; a manoeuvring tank 122 x 61 x 3.7 m; a cavitation tunnel with a working section 2.5 x 0.5 x 0.5 m; advanced computer equipment and

Marine Design Associates' 24-m (80-ft.) fishing vessel design has proved extremely stable in a wide range of conditions and is adaptable to most types of fishing. Two of these vessels, produced with steel hulls, are operating as dragger/packers while another, of fibreglass construction, is used in shrimp fishing.

The passenger/auto ferry was pioneered by Marine Design Associates to meet the requirements of the British Columbia Department of Highways for an economical ferry suitable for operation in Home Trade IV waters. This K class ferry is an open decked, double-ended shallow draft vessel suitable for fast loading and unloading at dock terminals. It was designed to reduce construction costs by about one-third from those of a conventional ferry and cut construction time to four months.



instrument systems.

The models used are typically from 2.5 to 6 m in length, depending on the type of vessel, and satisfy the minimum size requirements for self-propulsion tests without undue wall or blockage effects. Models are cut and lines drawn automatically. A unique computer "elastic batten" technique is used to define the ship's surface while ship frames can be defined and automatically drawn from computer-stored data.

Projects are undertaken by the laboratory at competitive rates under the National Research Council Canada schedule of fees with close cost and time estimates being given in advance.

Nautican Research & Development Ltd.,
1065 Heritage Boulevard,
North Vancouver, British Columbia
Canada V7J 3G7 Telephone (604) 980-1263

Nautican Research & Development offers a full spectrum of consulting, design and management services to ship designers, ship builders and ship owners.

Standard programmes available are: Hydrostatics and cross curves of stability; Intact stability and stability booklet; Damage stability with symmetrical and unsymmetrical flooding; Bending moment/shear forces calculations and plotting; Tank capacities/deadweight scale; Propeller optimization and performance prediction for optimum efficiency; Ship lines mathematical fairing and lofting.

Custom made computer programmes for a variety of clients include: Propeller design and optimization programmes (open and shrouded) for minimum fuel consumption; Propeller design drawing programmes for propeller manufacturing shop; Ship-wave and ship-ice interaction programmes predicting ship's behaviour in open water and ice; Large real time simulation programmes simulating physical behaviour of ship and its motions.

Another type of service offered is research and development oriented towards higher efficiency, lower fuel consumption of marine vehicles supported with model tests and successful full scale experience. Up to date developments include: Patented HYDRALIFT skegs for barge directional stability and fuel perform-



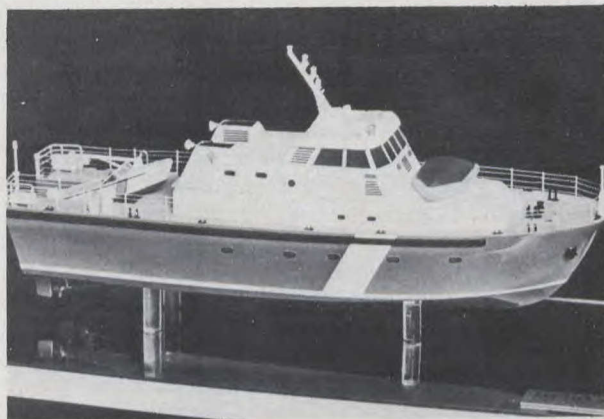
ance improvement; Nozzle propeller and multiple rudders system design and implementation for improved performance and manoeuvrability; Nozzle design for improved performance at higher speeds; Special hull form developed for arctic duties.

Nautican offers also management of research projects from quotation requests, to sea trials and ship commissioning including: Tank testing; Prototype development and manufacturing; Full scale testing; Research report writing; Consulting, design and implementation of microcomputer systems for shipboard data acquisition and processing.

Navtech Inc.,
126 St Pierre,
Quebec City, Quebec
Canada G1K 4B9
Telephone (418) 694-0534

In 1973 Navtech Reg'd was bringing to term its activities and these were rapidly extending beyond the original regional framework. In 1976, due to the volume of work, the increase in staff and members of the consulting team and due to the need for efficient administrative structures, legal procedures were taken to incorporate Navtech.

Now a well-established naval architecture and engineering consulting firm, with principal operations on the North American Continent and whose international activities are increasing rapidly, Navtech is mostly specialized in vessel design up to 60 metres long.



Navtech personnel have always been recruited with care. The quality of the work provided is a proof of this and the outstanding progress in the activities of Navtech is its direct consequence.

F. J. Reinders & Associates Ltd.,
P.O. Box 278,
Brampton, Ontario
Canada L6W 3J9
Telephone (416) 457-1618 Telex 06-97830

F.J. Reinders and Associates Limited offers a complete and comprehensive range of consulting engi-

**Branch: P.O. Box 2305, Station 'B',
St. Catharines, Ontario L2M 7M7**

neering services to meet the specific requirements of clients concerned with marine industries.

Involved in marine technology for the past twenty-five years, the services offered include: feasibility studies; production and systems analysis; economic

evaluation; planning analysis; design and contract preparation; cost estimates; scheduling and construction management.

The company's services cover: Shipyards—design and layout, production technology, equipment, operating systems, plant design, drydocks and project management; Harbours and ports including breakwaters, navigational aides, wharfs, docks, lighthouses, and moorings; Hydraulics and hydrology studies—model studies, analysis of waves, currents, tides, scour and silting conditions, land reclamation and shore protection; Material handling facilities—warehouses, cranes, roll-on and roll-off facilities, solid and liquid bulk handling systems; Dredging, pile-driving, cofferdams, intake and outfall structures, underwater inspection and appraisals.

Samson Marine Designs,
1775 Pine Street,
Vancouver, British Columbia
Canada V6J 3C7



Telephone (604) 273-5121

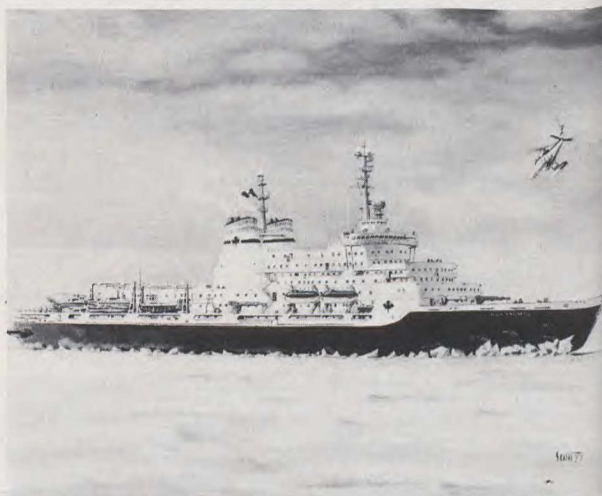
W. G. Scott,
12 Guy Street,
Dartmouth, Nova Scotia
Canada B3A 2P5
Telephone (902) 463-5794

W. G. Scott, F.R.I.N.A., C.Eng., P.Eng., offers services as a Marine Artist and Ship Illustrator in the production of custom marine art renderings.

Assignments are produced in various media as artist's impressions of proposed projects based on ship plans or models, research and visual presentation of historical marine craft or events, technical illustration items such as cut-away and exploded renderings, advertising formats, ceremonial gifts for launches and retireals, logo design, Christmas cards, calendars, book illustrations, among other requirements.

With more than 25 years experience as a Naval Architect in Canada and U.K., Mr. Scott has worked in design, construction, modification and operation capacities for commercial and military vessels with his most recent post serving the Canadian fishing industry.

Among Mr. Scott's clients have been German & Milne, Petro Canada, Drummond McCall, Gourock Industries, as well as numerous other marine and non-



marine assignments.

Artwork can be produced in all popular media such as oils, gouache, pen brush and ink, watercolours, pencil line and tone, dry markers, depending on end use and the client's requirements.

Seimac Ltd.,
1600 Bedford Highway,
Bedford, Nova Scotia
Canada B4A 1E8

Seimac Limited is an electronics consulting and design company. The company activities range from the provision of overall systems engineering in marine electronics to the design and construction of custom microprocessor based devices to meet non-standard customer requirements in data collection, monitoring, storage, distribution and display.

Company projects have included ship inspections and subsequent specifications for vessel conversion; specifications, installation layouts, system interfacing

Telephone (902) 835-9686

and trials for research vessel electronic and computer systems; system studies and software preparation for ship-to-shore communications and navigation; satellite navigation/computer interface design and fabrication; engine-room data logging design and the design of a shipboard data bus system.

The Company operates its own microprocessor development facility. The Company engineers have sea-going experience in Naval, research and fishing vessels.

T. W. Spaetgens,
156 West 8th Avenue,
Vancouver, British Columbia
Canada V5Y 1N2
Telephone (604) 879-2974 Telex 04-55188

Consultants since 1947 to commercial and military marine industry in field of mechanical vibration, with emphasis on Torsional Vibration (but including related fields of Flexural and Longitudinal Vibration) in power transmission systems.

Ancillary specialties include crankshaft damper design, pendulum detuner design, crankshaft balancing, crankshaft flexural and longitudinal vibration, Torsional vibration of Diesel engine entablatures, fatigue stress analysis, integrity and life predictability of marine gear components under Torsional vibration conditions, coupled Torsional vibration phenomena in soft-mounted engine and/or gearing components in propulsion systems, vibration isolation of propulsion engines, and flexible coupling design.

Elaborate computer facility provides forced-damped Torsional Response calculations in the largest

transmission systems (10 branches, 50 masses, 10 gear meshes), accommodating damping factors at each system mass and for each section between, and for excitations at any number of masses. Each torque harmonic can be searched throughout a portion of or an entire working speed range and can be compounded with other harmonics in the correct phase relationships.

Compound vibratory stresses, vibratory torques, and vibratory amplitudes can be both tabulated and plotted for any section of the system. Propellor excitation can be included.

A large percentage of this firm's work is now in the area of preventative design, and for certification purposes, although problem solving is still significant. A substantial percentage of the consulting work is for foreign clientele with almost all of this being of an analytical nature.

Tri-Ocean Engineering,
808 4th Avenue South West,
Calgary, Alberta
Canada T2P 0K4
Telephone (403) 264-7320 Telex 03-822798

Tri Ocean Engineering Ltd. is comprised of a highly skilled group of professionals providing comprehensive engineering and project management services to the petroleum industry on a worldwide basis.

Our experience and expertise are primarily related to offshore and onshore exploratory drilling systems; structural and mechanical design of permanent drilling and production platforms and facilities; pipe lines; gas and oil gathering, treating and secondary recovery systems; heavy oils facilities; general feasibility studies; and final design of Arctic offshore and onshore exploration and development programmes.

Our professional project teams are able to assist clients through all stages of a project from preliminary engineering and economic evaluation through detail design, installation and start-up. The full scope of services can be made available under a project management arrangement.

Tri Ocean is a 100 per cent Canadian company headquartered in Calgary, Alberta, Canada, the heart of the Canadian oil and gas scene. From this base Tri Ocean has provided engineering and project management services on a worldwide basis. Countries in which projects have been carried out include the United States, South America, United Kingdom, The Netherlands, Norway, Iran, Indonesia, Japan, Africa, Singapore and Vietnam.

Recent projects overseas include the engineering design and project management of the drilling system modules for three North Sea production platforms, Brent "D", Cormorant "A" and Statfjord "B" and the complete project management and engineering for an offshore exploratory drilling programme in the Socialist Republic of Vietnam.



Vickers-Stanwick Systems Inc.,
560 Rochester Street,
Ottawa, Ontario
Canada K1S 4M2

Telephone (613) 238-2963

Branches: Canada, Vickers Canada Inc.,
5000 Notre Dame E., Montreal, Quebec •
USA, Stanwick Co., 3661 E. Virginia Beach
Blvd., Norfolk, Virginia • UK, Y-ARD Ltd.,
Charing Cross Tower, Glasgow G2 4PP

Vickers-Stanwick Systems Incorporated was formed in 1979 to bring to the Marine Industry a combination of design, engineering and management resources based upon the past experience of its constituent companies and operating as one entity with its head office in Ottawa.

The Engineering Division of Vickers-Stanwick Systems Inc. offers consulting and design services at the conceptual, preliminary, contract and detail design phases of off-shore structures, merchant ships and warships. Associated services include specification writing, procurement, estimating, onsite supervision and representation. While Project Management is a predominant feature of the Engineering Division, the technical support staff within the group offers transportation studies, ship surveys, trials management and support. Drawing office services are also available on a sub contract basis for designs generated by Vickers-

Stanwick Systems Inc. or others.

The Logistics Division of Vickers-Stanwick Systems Inc. responds to five distinct areas in the marine field; they are maintenance systems, logistics engineering, reliability engineering, technical services and technical communications.

The Maintenance Systems Group specializes in planned maintenance systems for all types of marine activity, such as oil-rigs, merchant vessels and warships as well as associated shore-based marine facilities such as repair establishments, workshops, dry-docks and shipyards.

The Logistics Group offers maintenance and spares engineering, manning and documentation systems and training courses.

Reliability and maintainability analysis is carried out by the Reliability Engineering Group while the Technical Services Group has personnel available for maintenance, repair, cleaning and preservation activities, quality assurance monitoring, warehousing, machinery monitoring and stand-by for test and trials.

The Technical Communications Group offers graphic arts services, word processing, editing, publishing, writing and proof-reading for manuals, specifications, training aids and other technical documents.

Through its associated offices across Canada, United States and Europe, Vickers-Stanwick Systems Inc. is ready to respond to all marine enquiries, consultation design, construction, operation, management of life cycle support.

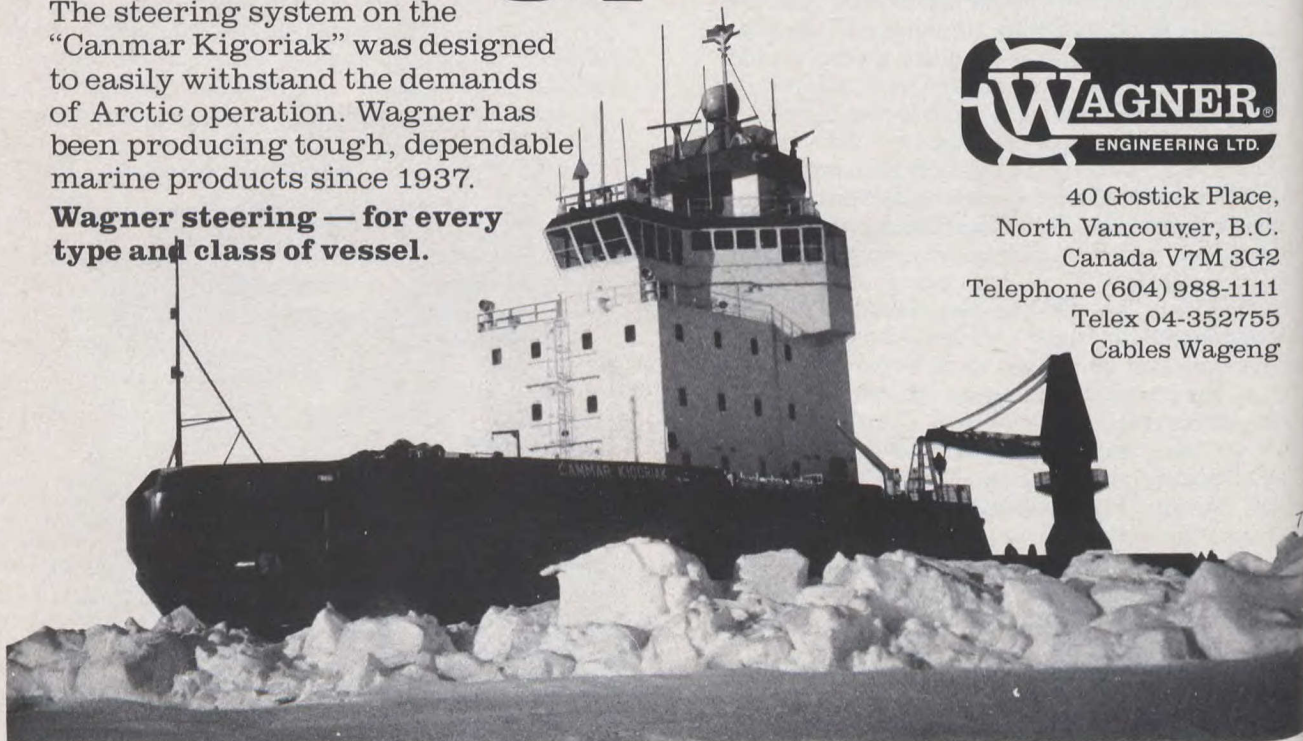
Steering power

The steering system on the "Canmar Kigoriak" was designed to easily withstand the demands of Arctic operation. Wagner has been producing tough, dependable marine products since 1937.

Wagner steering — for every type and class of vessel.



40 Gostick Place,
North Vancouver, B.C.
Canada V7M 3G2
Telephone (604) 988-1111
Telex 04-352755
Cables Wageng



MARINE PRODUCTS & SERVICES

ABCO ACADIA,
Division Atlantic Bridge Co. Ltd.,
210 King Street,
Bridgewater, Nova Scotia
Canada B4V 1A2
Branches: Clark's Harbour, N.S. B0W 1P0 •
9 Glebe St., Yarmouth, N.S. B5A 3A2 • She-
diac, N.B. E0G 3H0 • Welshpool, Campo-
bello Island, N.B. E0G 3H0

ABCO ACADIA originally began in 1908 as Acadia Gas Engines Limited and is now a Division of Atlantic Bridge Company Limited.

Today, ABCO ACADIA Division's marine equipment activity is based on marinising of both gasoline and diesel engines and the manufacture of underwater equipment for inshore boats. Engine blocks are purchased from various manufacturers and then are designed and engineered into complete ABCO ACADIA marine engines.

The Division's Foundry casts propellers, stern bearings, stuffing boxes, and other marine equipment which then are machined and finished in the manufac-



turing shops. The Division manufactures hydraulic line haulers and sells and services many other types of equipment and electronics for the marine industry.

Another department of this Division is involved in the manufacture of fishing nets for the offshore trawler fleet of Eastern Canada. This operation is now the largest trawler net-manufacturing business in Canada.

ABCO ACADIA supplies both inshore and offshore fishing fleets providing fishing nets, lines, twines, hardware, all-weather clothing and a full line of equipment for the fishing industry.

Acoustex of Canada Ltd.,
83 Sunrise Avenue,

Toronto, Ontario
Canada M4A 1B1

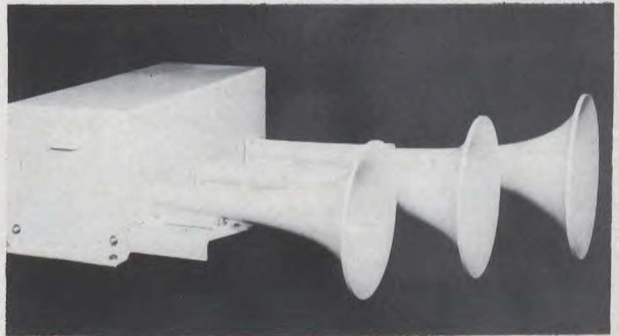
Airchime Manufacturing Co. Ltd.,
6939 East Hastings Street,
North Burnaby, British Columbia
Canada V5C 5P3
Telephone (604) 291-8295 Telex 043-54713

Airchime Manufacturing Co. Ltd. is a completely Canadian Company which has been developing and manufacturing air whistles since 1948.

Five basic models with over 30 variations are manufactured to serve the railroad, marine and industrial trades.

There is an Airchime for use on the smallest pleasure craft to the largest ocean going tanker. Built under strict quality control to meet both Canadian and U.S.A. Coast Guard regulations and built to comply with I.M.C.O. standard covering International Regulations for Preventing Collisions at Sea 1972 which came into force internationally in 1977.

Airchime's Burnaby, B.C. plant and related facilities are geared to provide good delivery and excellent service to anywhere in the world.



Instructions and installation data are available for all models with experienced personnel on hand to provide prompt reliable answers to inquiries and questions.

We are dedicated to maintain the service and quality of product we have built over the years and we welcome new customers to take advantage of what we have to offer.

Aircraft Appliances & Equipment Ltd.,
152 East Drive,
Bramalea, Ontario
Canada L6T 1E1
Telephone (416) 791-1666 Telex 069-7540

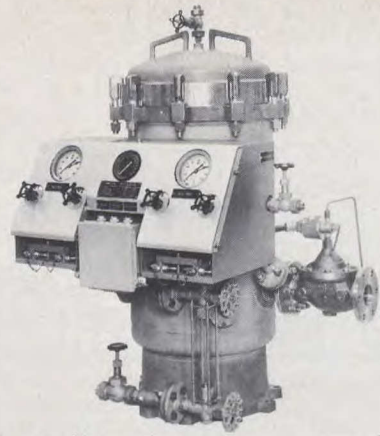
The present AAE facility comprises 120,000 sq. ft. which provides capability for expanding product lines.

Potentially, AAE has room to more than double in size as production requirements dictate. The facility is located in Bramalea—a new community which is one of the fastest growing in Canada in both the industrial and residential sectors and is only four miles from the Toronto International Airport.

Initial AAE production experience was primarily in military products for the Canadian and United States

Armed Forces. This experience thoroughly indoctrinated management, quality control, manufacturing, and engineering with the stringent quality requirements associated with military equipment. As a result AAE's overall quality control procedures are those that meet government requirements.

AAE has pioneered the development of coalescers for the separation of water and solid contaminants from lubricating and fuel systems for marine gas turbine power plants. Over twenty years of research and development has resulted in many U.S. and Canadian Naval ships having AAE equipment installed. This equipment ranges all the way from simple in-line filters to duplex coalescers which automatically change-over from clogged filter elements to clean ones. They come complete with heaters, service indicators, automatic water level controls, pressure and temperature gauges, safety interlocks etc. Flow rates from 0.1 GPM to 1000 GPM can be accommodated. Many designs have been approved to MIL-F-15618, MIL-F-8901 and qualified to the shock requirements of MIL-S-901 and the vibration requirements of MIL-STD-167. Micronic fil-



ters and pipeline strainers have been manufactured for the most advanced navies in the world. Several patented designs are available in many different alloys to meet the most demanding shocks from arctic vessels to the high frequency vibrations of hydrofoils and surface effect ships.

Allied Enterprises Ltd.,
655 Montée de Liesse,
St-Laurent, Quebec
Canada H4T 1P5

Allied Enterprises Limited designs and manufactures marine doors and hatches for a wide range of shipping:

Hollow metal doors—interior types are made from light gauge (14, 16 or 18) steel. Exterior doors are usually 12 gauge steel. Both types are normally supplied with hardware to individual specifications and have a baked enamel finish with choice of colour.

Non-tight plate doors—manufactured from 4.8 mm or 6.3 mm plate (3/16 inch or 1/4 inch), windows, locks, clips, etc., are optional.

Watertight plate doors—usually produced from

Telephone (514) 341-3816 Telex 05-268570

6.3 mm (1/4 inch) plate with 9.3 mm (3/8 inch) frames, buyer's choice of hardware and paint finish.

Watertight plate doors—manufactured to all the usual marine codes and specifications, with individual dogs or quick-acting mechanisms and additional hardware as required; choice of paint finishes.

Hatches—a wide variety is available, individually dogged, drop bolt secured, quick acting with or without spring balancing. Flush, raised coaming or bolted access plate types are available, with hinges or eye bolts for lifting clear. Oil cargo hatches can be provided with ullage access. All types are painted to customer requirements.

Allied Enterprises also produces a miscellaneous marine line of sheet metal products.

AWSM Enterprises Ltd
3905 Boulevard Leman
Laval City, Quebec
Canada H7E 4V7

Telephone 661-9140

Barringer Research Ltd.,
304 Carlingview Drive,
Rexdale, Ontario
Canada M9W 5G2
Telephone (416) 675-3870 Telex 06-989183
Branches: 3750 19th St. N.E., Calgary, Alberta • 1626 Cole Blvd., Denver, Colorado

In parallel with its R&D activities Barringer Research expanded into manufacturing and selling the end products of its research and acquired an established and versatile line of commercially available products.

Magnetometers are an important part of the Company's commercial product division. The Barringer M-123 recording magnetometer is an example of the state of the art in this field. The M-123 is a full 1 gamma sensitivity proton precession instrument which fea-

tures portability, ease of operation and low capital expenditure. The two marine M-123 systems (SM123—Shallow Marine and DM123—Deep Marine) have a wide range of applications such as mineral and petroleum exploration, geological and geophysical study and the search for lost or buried objects such as salvage or archaeological work.

The DM-123 is suitable for all marine and geological surveying as well as deep water salvage, pipeline and cable survey.

For typical marine geophysical packages, for oil exploration, ocean bottom research and engineering studies the 1 gamma sensitivity M123 magnetometer complete with the deep marine system package provides the magnetometer profiles required for interpretation of the depth and structure. This data is essential to the interpretation of both seismic and gravity records.

American Standard Industrial Products Division,
One Blair Drive,
Bramalea, Ontario
Canada L6T 2H4

Telephone (416) 457-2881 Telex 069-7587

Bartek Ltd.,
30 Pinehill Drive,
Lower Sackville, Nova Scotia
Canada B4C 1P2
Telephone (902) 835-5369

Bartek Ltd., is a manufacturer of fibreglass reinforced plastic products, specifically designed for the fishing industry.

Fibreglass wharf boxes, designed for stacking up to 20 high and using a fork-lift with a rotator head, are widely used in the Atlantic Canada fisheries to hold freshly caught fish as well as salting down fish.

A wide range of holding tanks, coupled with splitting, filleting and work tables, provide a near complete fish handling system. New insulated boat boxes for holding ice and fresh fish aboard open deck boats ensure high quality fish and quick off-loading at the

dockside. Work boats of 16 and 20' and truck lines for ½ ton truck bodies round out the line of products for the fisheries.

Bartek Ltd. also does a wide range of custom mouldings for special requirements.

B.C. Gearworks,
11947 95th Avenue,
Delta, British Columbia
Canada V4C 3V1

Telephone (604) 588-4407

Beaufort Air-Sea Equipment Canada Ltd.,
12351 Bridgeport Road,
Richmond, British Columbia
Canada V6V 1J4

Telephone (604) 430-4444

Beclawat (Ontario) Ltd.,
P.O. Box 884,
Belleville, Ontario
Canada K8N 5B5
Telephone (613) 966-5611 Telex 06-62245
Branch: Beclawat Ltee., 4999 St. Catherine
St. West, Suite 304, Montreal, Quebec
H3Z 1T3

BECLAWAT (ONTARIO) LTD. has been a leader for over 40 years in the manufacture of custom designed windows for the surface transportation industry. In-plant production of fully tempered safety glass in various sizes, shapes and tints, in thicknesses from 5mm (3/16") to 15mm (5/8") is also a specialty.



B G Marine,
Division BG Checo International,
375 West Liege Street,
Montreal, Quebec
Canada H2P 1H6

BG Marine Ltd., and associate divisions of BG Checo International Ltd., design, manufacture, install and service, marine electrical equipment for all types and sizes of ships.

The company's design and production programmes include main and emergency switchboards and marine

Telephone (514) 382-3025 Telex 05-827619

switchgear to the highest voltages for shipboard use. Manufactured products include generator controls, automation, annunciator and alarm systems, engine room and bridge consoles, navigation lights, panels and custom made electrical equipment and systems.

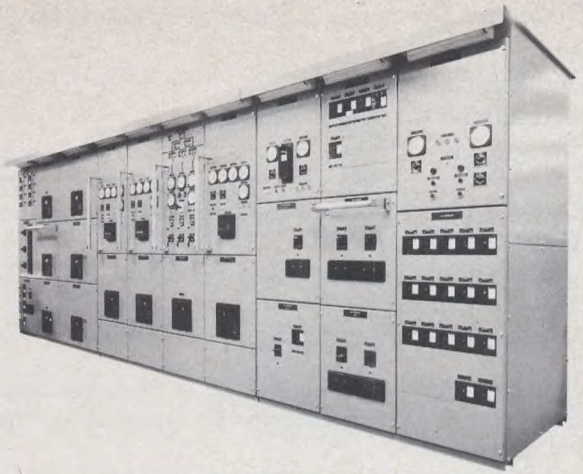
Marine equipment is built to the rules and stan-

dards of CCGS, Lloyd's, ABS, DNV, USCG, and other regulatory bodies. The Company has also built electrical equipment for Canadian Military ships during and since world war II.

Due to the increasing use of sophisticated electro-mechanical, electronic and computer controlled equipment aboard modern ships, BG Marine maintains teams of specialists for the repair and maintenance of all equipment the company supplies.

BG Marine is organized to provide multi-discipline expertise on all levels. From relatively simple electrical trouble shooting, to engineering analysis and repair of complex systems.

BG Marine is the Canadian representative of the International Ships Electric Service (ISES), an international organization operating in more than 20 countries.



Black Clawson-Kennedy Ltd.,
1144 First Avenue West,
Owen Sound, Ontario
Canada N4K 5P9

Telephone (519) 376-8860

Burrard Iron Works Ltd.,
220 Alexander St.,
Vancouver, British Columbia
Canada V6A 1C1

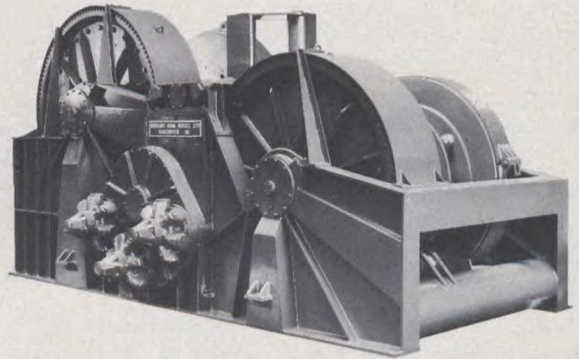
Burrard's heavy-duty winches meet the strenuous requirements of all-weather, deep-sea towing. Horizontal or vertical anchor windlasses, mooring capstans and towing winches are custom-designed to meet international standards as well as customers' specifications. Special features may be incorporated or dimensional limitations accommodated with little or no additional cost while still maintaining delivery schedules.

Towing winches (single or multi-drum) range in size from models that stow 300 m (1,000 ft.) of 25-mm (1-in.) wire to those stowing 1,100 m (3,600 ft.) of 76-mm (3-in.) wire. The drive may be hydraulic, electric or diesel through a torque converter. Usual features include an air clutch, automatic spooling with staggered guide rollers, manual and power brakes.

Horizontal anchor windlasses or vertical anchor capstans can be supplied for use with stud link anchor chain ranging from 19 mm (¾ in.) to 100 mm (4 in.) in diameter with hydraulic or electric drives.

Mooring capstans with gearboxes above or below deck and with hydraulic or electric drives, range in size

Telephone (604) 684-2491



from 30 cm (12 in.) to 91 cm (36 in.) diameter warping barrels.

Single or double drum mooring winches in various sizes can be supplied with manual or automatic controls.

Byron Jackson,
Division Borg-Warner Canada,
23 Bertrand Avenue,
Scarborough, Ontario
Canada M1L 2P3
Telephone (416) 757-6241
Branches: 237 Place Frontenac, Pointe
Claire, Quebec • 8515 Davies Rd., Edmon-
ton, Alberta • 5920-1A St. S.W., Suite 500,
Calgary, Alberta

Quiet, efficient BJ centrifugal boiler feed pumps have a proud service record in all class vessels, including the newest and largest U.S. Navy ships of the line. These compact, split-case multi-stage units pack high capacity and high performance into a lightweight package. NPSH requirements are low. They can be steam turbine or electric motor driven in continuous duty at high speeds up to 9000 rpm normal duty and up to 16,000 rpm in special service.

Instant-action unloading and stripping of barges and tankers can mean extra profit on every run. Byron Jackson has accomplished this with a unique self-priming first stage with separation chamber. It starts →

primed and stays primed for continuous, high volume, high speed unloading and stripping, even where high vapour problems are encountered.

Byron Jackson has built precise, carefully-tuned high performance pumping machines which meet U.S. Navy quiet standards without diminishing their power output. They are a product of experienced engineering, computerized production and highly-advanced hy-

draulic and vibration testing.

Liquid methane, propane and other liquefied gases "boil" at low temperatures. BJ vertical pumps with bottom-sipping inducer (5-inch suction head compared to the normal 5 foot limitation) get the job done without special pressurization or a second set of pumps. No pump cavitation problems. A highly-efficient mechanical seal prevents product loss.

Canada Steamship Lines Inc.,
759 Victoria Square,
Montreal, Quebec
Canada H2Y 2K3
Telephone (514) 288-0231

Canada Steamship Lines Inc., established in 1913, is the largest Canadian shipping company on the Great Lakes. With 35 vessels in the fleet or on order, Canada Steamship Lines operates dry bulk, cement and general cargo carriers.

C.S.L.'s fleet has a total DWT capacity in excess of 700,000 tons consisting of 14 self-unloading bulk carriers (1 being of ocean class and two with St. Lawrence Gulf capability), 12 straight decker bulk carriers (2 of which are also of ocean class), 2 cement carriers and 7 general cargo vessels. C.S.L.'s bulk carriers are of maximum seaway size design enabling them to carry 30,000 tons through the seaway.

Over the 9 month Great Lakes season, C.S.L.'s fleet carries over 28 million net tons of dry bulk and general cargo each year. C.S.L. also operates a number of its vessels during the winter season in the Gulf of St. Lawrence and in ocean service. C.S.L.'s Package Freight operation led the way in palletising freight and providing fork-lift truck access through the ship side doors, thus minimising the manual handling of freight and providing the cheapest means of moving goods between major Canadian and U.S. inland ports as well as inexpensive short term warehousing space.

As the first Canadian fleet to utilize the self-unloader concept effectively on the Great Lakes,

Branch: Quebec Tugs Ltd., 150 Rue
Dalhousie,
Quebec, G1K 4C5



C.S.L.'s self-unloading fleet is considered to be among the most advanced bulk carriers in the world today. These vessels can discharge their cargo at a rate of 5,000 to 6,000 tons per hour without any aid from shore based installations.

C.S.L.'s entry into world markets with the self-unloader concept has clearly demonstrated an increase in cargo handling productivity and significant reduction in transportation and distribution costs to bulk material shippers and receivers.

Quebec Tugs Limited, one of the arms of the C.S.L. Group, Inc., operates a fleet of five tugs and a bunkering barge. Four of the tugs are centered at the company's wharf at 150 Dalhousie Street in Quebec City and a fifth tug is engaged in deep-sea work in the Caribbean.

Among the many services we provide are harbour tows within the Port of Quebec, available all year round due to vessels being fully ice-strengthened; bunkering of vessels; moving of liquid petroleum products in the St. Lawrence Seaway; long tows in the St.

Lawrence, Great Lakes and various oceans; pilot changes during the winter period; and a limited amount of salvage work. Our tugs have ocean-going range permitting them to carry out towing and salvage work outside the territorial waters of Canada.

We are the first to be able to offer a new kind of service for vessels in the Quebec City harbour. Our bunkering barge has a capacity of 10,000 barrels and the added advantage of offering any mixture of diesel and bunker C oils. With such a fully-equipped fleet, we are able to go wherever our services may be required.

Canadian Dredge & Dock Co. Ltd.,
60 Harbour Street,
Toronto, Ontario
Canada M5J 1B8
Telephone (416) 363-2096 Telex 06-219722

Canadian Dredge and Dock Company Limited has been a continuous operation for over sixty years, primarily in the field of dredging and marine construction.

Branch: P.O. Box 10, Kingston,
Ontario K7L 4V6

The dredging fleet consists of clamshell and dipper dredges of 1½ to 8 m³ capacity as well as cutter suction dredges from 12" to 20". The equipment is in excellent condition and well capable of undertaking any variety

of marine excavation projects.

The marine construction division has completed numerous specialised projects over the years, of particular interest is subaqueous pipeline construction where innovation has been the keyword to our being leaders in the field. With the recent addition of two new floating derricks of 240 and 200 tons capacity the capability of the division has been greatly enhanced.

Both the dredging and the construction divisions have the equipment and most importantly, the experienced people to undertake the largest projects.

Canadian Dredge and Dock Company Limited operates a fully integrated shipyard in Kingston, Ontario capable of servicing, drydocking and new construction of vessels up to 200 feet in length. This yard services a steady clientele of ferry boats, tugs, yachts, Canadian Coast Guard vessels, etc., as well as servicing the company fleet.



Canadian General Electric Co. Ltd.,
1900 Eglinton Avenue East,
Scarborough, Ontario
Canada M1L 2M1
Telephone (416) 751-3220 Telex 06-963622

Designed to meet the requirements of icebreakers, icebreaking ferries and special purpose, scientific and hydrographic vessels under some of the most demanding marine conditions, electric marine propulsion systems by Canadian General Electric Company Limited are rugged and reliable. They can be found in the Arctic in such vessels as the *Pierre Radisson* and her sister ship the *Franklin* launched last Spring. Canadian General Electric's proficiency in this field will again be demonstrated on the propulsion system for a new icebreaker employing six diesel engines as prime movers. This propulsion system will be similar to the systems supplied earlier for the first two "R" class icebreakers.

The system consists of diesel engines which drive AC generators. The power is converted to DC through power rectifier equipments to drive two 7450 HP motors which in turn drive the vessel's twin screws. In all there are six sets of generators and rectifiers.

It takes three generator units and three rectifier units to drive one DC motor. The icebreaker will be equipped with two complete propulsion systems, one on the starboard and the other on the port side.

The electric marine propulsion systems include:

Prime movers—gas or steam turbines or diesel engines.

Branches across Canada



Generating equipment—DC generators or AC generator/rectifier package.

Propulsion motors—DC and AC motors.

Propulsion control—static control DC power distribution. AC ships service, power distribution equipment, thyristor power supplies, power and control cables.

Canadian General Electric's expertise in application engineering, product design, testing and field service makes the company particularly well qualified for the manufacture of electric marine propulsion systems.

Canadian Marconi Co.,
2442 Trenton Avenue,
Montreal, Quebec
Canada H3P 1Y9
Telephone (514) 341-7630 Telex 05-827822

The Company comprises four Operating Divisions reporting to Corporate General Management. These

Branches across Canada

divisions are the Avionics, Telecommunications, Marine & Land and Special Services and, all have their Headquarters in Montreal. In addition, the Company

has Branch Offices and service facilities strategically located across Canada. In the United States, sales and service is made available through Marconi Avionics Inc., and its dealer network. The Company is represented in over 80 countries.

In Canada, the Company employs some 2000 people, of which, 1800 are in Montreal and the remainder located coast to coast in branch offices, service depots and field operations. As the products and services of Canadian Marconi Company are highly technical, the employee complement includes some 180 graduate engineers and 400 technicians and technologists.

The Head Office and plant facilities total 420,000 square feet housed in a modern three storey building that, together with supplementary buildings, occupy an entire city block of 343,000 square feet.



Canadian Stone Marine Ltd.,

P.O. Box 86,
Iberville, Quebec
Canada J2X 4J5

Telephone (514) 347-3789 Telex 05-831556

Canadian Stone Marine Limited is conveniently situated near the St. Lawrence Seaway where it services both seagoing and inland vessels. Since its founding in 1967, Canadian Stone Marine has expanded rapidly.

It now has machine shops and melting capacity for making propellers with cast weight of 36,500 kg. (80,000 lb.). Repairing and servicing of damaged propellers forms a large part of Canadian Stone Marine's business.

The company has recently diversified into the field of non-ferrous general castings, for example valves and pump bodies.

The company's association with Stone Manganese Marine Ltd. of London, England, provides a backup of



technical support in the form of design and metallurgical advice.

Canal Electric,
Division Upper Lakes Shipping,
155 Cushman Road,
St Catharines, Ontario
Canada L2M 6T4

Telephone (416) 685-1792 Telex 06-15231

Canal Electric, a division of Upper Lakes Shipping Ltd., are electrical and mechanical contractors and engineers responsible for the electrical engineering and installation requirements of Port Weller Dry Docks. Our specialties are design and construction of automated systems for self-unloading ships, engine room consoles for complete propulsion and generator sys-

tems, including all hydraulic and pneumatic equipment installation.

We engineer and manufacture solid state programmes for various automation requirements, including engineer's alarm systems, boiler automation, unloading and ballasting, navigation light panels and any special systems.

We also engineer and build communication systems, which include dial phones, public address, talk-back, and fire and general alarms, all integrated in one package for marine requirements.

We stock a large supply of electrical cable, cable fittings, hydraulic tubing and fittings, and instruments for the maintenance and repair of all marine problems.

C-Tech Ltd.,
1150 Montreal Road,
Cornwall, Ontario
Canada K6H 5S2
Telephone (613) 9333 Telex 05-811538

C-Tech's principal area of interest is sonar with expertise in sonar technology, low-frequency electronics,

electro-mechanics and electro-acoustics.

Commercial equipment includes two omni-directional sonars with primary application in the fishing industry. CSS-30 Omni Sonar with ranges to 4000 meters permits simultaneous viewing of the sea 360° around the vessel. LSS-68 Omni Sonar, with ranges to 2000 meters, views a 200° sector. DCU-30 Display

Control uses eight colors/sixteen grey shades to differentiate between echoes of different intensity and provides total alpha-numeric information regarding sonar state and target state relative to vessel. A depth sounder for pleasure craft is available in C-Tech QDS-400.

C-Tech military activity is in three product areas.

- a. C-Tech electronic scan switches (patented in Canada, U.S.A. and Japan) are a direct replacement both functionally and mechanically for most electro-mechanical switches in scanning

sonars in use by Allied navies.

- b. C-Tech designs and manufactures a variety of multi-element cylindrical array and planar array transducers of frequencies 3-100 KHZ.
- c. C-Tech is a qualified manufacturer of a variety of Standard Electronic Modules (SEMs).

C-Tech designs and manufactures special purpose sonars and transducers for hydrographic and oceanographic survey use under a variety of sea, environmental, and platform conditions.

**Chubb Fire Security,
777 Dundas Street East,
Toronto, Ontario
Canada M4M 1P9
Telephone (416) 461-0411 Telex 06-217735**

CHUBB has total capability to provide all the fire protection needs of the marine industry—for ship-board, alongside, on-shore, and off-shore facilities—including surveys, specifications, designs, manufacture, maintenance and service.

CHUBB has three manufacturing facilities in the Toronto area where they design and manufacture a full range of portable extinguishers, fixed fire detection and alarm systems, and special fire extinguishing systems.

Special extinguishing systems products include: Halon 1301—Carbon Dioxide—Protein, Fluoroprotein and AFFF liquids and equipment—High Expansion Foam—Dry Chemical.

CHUBB (formerly Pyrene) has been in business in Canada for over 60 years. They have provided the fire protection requirements for all types, classes and size of vessels, from the smallest tugs and fishing boats to the largest oil tankers and cargo carriers, to the most sophisticated oceanographic vessels and ice breakers.

CHUBB's equipment is commonly used on oil piers and docks, and in warehouses and traffic control centres. Chubb is familiar with all fire codes, North American and International.

**Cramer Engineering Ltd.,
P.O. Box 48358,
Vancouver, British Columbia
Canada V7X 1A2
Telephone (604) 876-9622**

Cramer Engineering Ltd. based in Vancouver, B.C. was founded in 1975 to manufacture and service marine electronic and electrical equipment under the trade name of "Sea Mate".

At present the "Sea Mate" product line includes the No. 500 Emergency Position Indicating buoy, a range of marine Hydrocarbon gas detectors and numerous electronic accessory items for the marine industry. Products to be introduced in the near future include an Emergency Locator Beacon transmitter operating on the 121.5 MHz and 243 MHz international distress frequency, a range of high intensity anti-collision flair up lights for use on life rafts, pleasure boats and commercial vessels, a personal emergency strobe for use in man overboard situations. Development of a range of sailing and navigational instruments is well under way and introduction is expected to be in mid 1981. The sailing instruments will include a speed and distance (log) instrument, a wind group including wind speed, wind direction and close hauled or "magnified wind". All instruments will be offered in either digital



format or conventional analog style. A companion Quartz clock and digital depth sounder are also anticipated.

Repair and calibration service is also offered for most makes of depth sounders, compasses, clocks and sailing instruments in service in Canada. Also onboard electrical repair and installation is offered.

**Crosbie & Sons Ltd.,
2955 Sartelon Street,
St. Laurent, Quebec
Canada H4R 1E6**

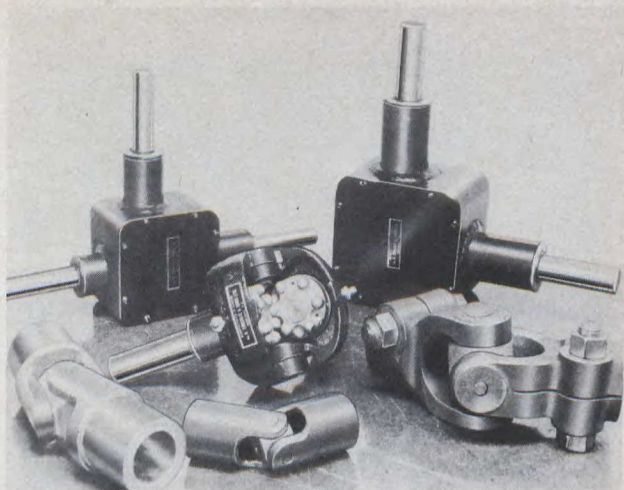
Telephone (514) 332-2206 Telex 05-826647

A. Crosbie & Sons Limited has been filling the special requirements of shipbuilders for more than 30
→

years.

The company meets the most exacting specifications for spindle support equipment and its foundry is equipped to produce bronze and aluminum castings in a wide range of sizes.

Spindle support equipment produced by the company includes deck stands, scupper valves and strainers. It also manufactures vertical and inverted vents, deck drains, deck access boxes and other fittings—all to exact customer requirements.



DAF Indal Ltd.,
3570 Hawkestone Road,
Mississauga, Ontario
Canada L5C 2V8
Telephone (416) 275-5300 Telex 06-961482

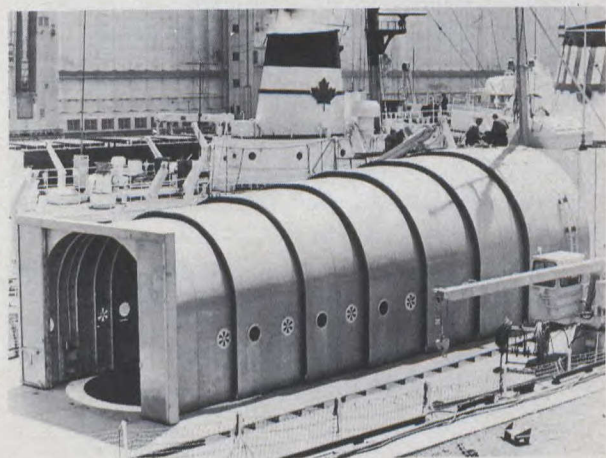
Extensive engineering and fabrication facilities have enabled DAF Indal Ltd. (DAF) to solve many marine problems and to develop new and unique products, among them being telescopic hangars, hangar doors and helicopter recovery systems for shipboard applications.

The smallest ship can provide hangar facilities with the DAF telescopic hangar. Retracted, the hangar frees its own deck space for takeoff and landing. Extended, it provides a heated, lighted space for storage and maintenance. Use of high-strength, low-weight aluminum minimizes the ship's top weight. DAF hangars are now used by the navies of Canada, the United States, India, Iran and Italy, and by the Canadian and U.S. Coast Guards.

DAF's helicopter landing and securing system permits helicopters to operate at sea from small flight decks in rough weather. The following systems are in production:

H-2000 Series—hydraulic machinery with a rapid securing device for deck securing. Designed for helicopters in the 10,000 Kg range. Customers include USN, Canadian Navy and Japanese Navy.

E-2000 Series—electrical machinery with secure tensions. Designed for helicopters in the 10,000 Kg range. Customers include Indian Navy and Argentine Navy.



E-500/E-1000 Series—light weight electrical system for helicopters up to 6000 Kg. Customers include Hughes Helicopters and the Republic of China (Navy).

In addition we provide deck traverse systems for virtually all types of helicopters and for all weather conditions.

All these products can be applied to commercial as well as naval vessels and are particularly suited to off-shore drill rigs and support craft.

Delaval Turbine Canada Ltd.,
P.O. Box 850,
Maple, Ontario
Canada L0J 1E0
Telephone (416) 889-4861 Telex 06-964520

Branches: 1515 Mazurette St. West,
Montreal, Quebec H4N 1G8 • 24 Brisbane
Rd., Downsview, Ontario M3J 2J9 • 14-
5918 5th Street S.E., Calgary, Alberta
T2H 1L4

Delta Hydraulic Power Ltd.,
175 Kent Avenue West,
Vancouver, British Columbia
Canada V5X 2X4
Telephone (604) 327-6351 Telex 04-55276

Delta Hydraulic Power Ltd. is a privately owned company incorporated for twelve years. The company specializes in the design, installation and service of hydraulic and pneumatic systems as well as representing a number of major hydraulic and pneumatic manufacturers.

Responding to market changes has seen Delta expand into the supply of engineered products to fulfill the requirements of their customers.

With a full branch facility in Edmonton, Alberta the company is strategically located to serve the offshore exploration in the Arctic. With their knowledge of the oil and marine industry Delta is interested in discussing joint ventures with companies having similar interests in the oil offshore industry.

Branch: 8223 Davies Rd., Edmonton, Alberta
T6E 4N1



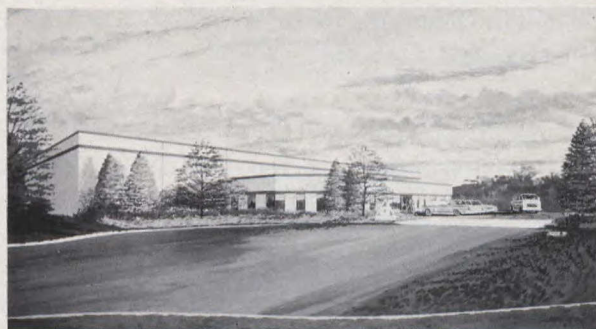
Diachem Industries Ltd.,
5289 Regent Street,
Burnaby, British Columbia
Canada V5C 4H4

Telephone (604) 294-4343

Branches: Diachem Chimique Inc., 125
Taillon, Cap de la Madeleine, Quebec • Dia-
chem Industries (Ontario) Ltd., 135A King-
ston Road E., Pickering L1V 2A2 • Diachem
Thunder Bay Ltd., 224 North Franklin St.,
Thunder Bay, Ontario P7C 4H9

Diachem Industries Ltd. is completing its new 20,000 sq. ft. manufacturing facility in Richmond, B.C. This building will represent the most modern specialty chemical manufacturing facility in Canada. The facility will include the following:

- Laboratory
- Office
- Warehouse



—Process area: 10 raw material storage tanks; 4 manufacturing kettles; material heat room; Automatic drums filling, bulk chemical shipping facility.

Products manufactured for the marine industry will include:

Oil Spill Dispersants (Federally approved)—Tank Cleaning Chemicals—Cooling Water Treatments—Electrical Cleaners—Bilge Cleaners—Detergents—Sanitizers—Steam Cleaners—etc.

Diamond Canapower Ltd.,
P.O. Box 5051,
Burlington, Ontario
Canada L7R 4A7
Telephone (416) 335-1321 Telex 06-18286

Dickinson Marine Products Ltd.,
3737 Napier Street,
Burnaby, British Columbia
Canada V5C 3E4
Telephone (604) 291-9651 Telex 04-54247

In 1932 a small company was founded in Vancouver, Canada, by Robert Dickinson, to design and manufacture oil fired galley stoves and marine heaters. His

Branches: Dickinson Marine Products (US) Inc., 103-4241 21st Ave., Seattle, Washington 98199 • Dickinson Products (Europe) Ltd., Carrington Works, Laundry Lane, Milford-on-Sea, Hants., England

products were prized highly by the local commercial fishing industry and yachtsman for their excellence of design and their practical function.

Since that time our marketing area has expanded

rapidly until our products are now sold in almost every part of the western world and our popularity with the "pleasure boater" has increased enormously. This is particularly true in the United States, which now accounts for a good proportion of our total sales volume.

Our plant facilities comprise 10,000 square feet of factory area, equipped with modern production equipment, some of our own design. We now manufacture virtually everything required for our products in our own plant. We extend an open invitation to any of you to visit us if ever you are in the Vancouver area.

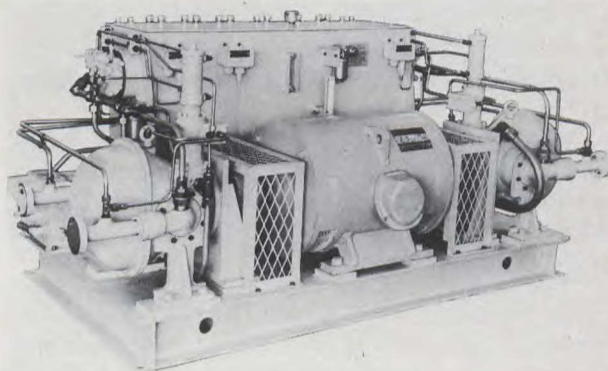
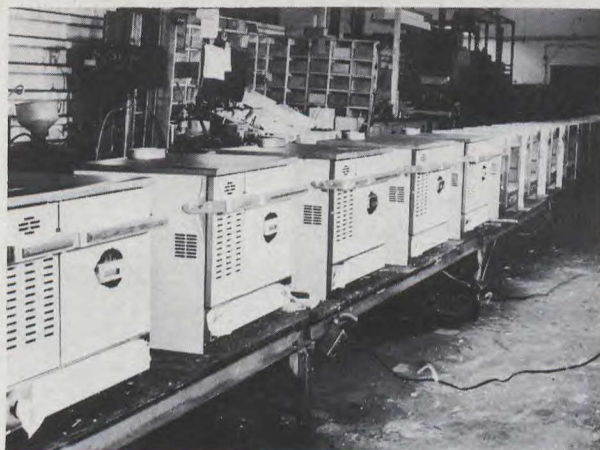
Dickinson strongly believes that any company wishing to hold a premier position must constantly pursue new product ideas and seek ways to improve present ones. That is why we maintain an on-going Research and Development Department where a number of exciting new projects are currently under way.

Dowty Equipment of Canada Ltd.,
574 Monarch Avenue,
Ajax, Ontario
Canada L1S 2G7
Telephone (416) 683-3100 Telex 06-981295

With a long established reputation in aircraft hydraulics, Dowty Equipment of Canada Limited has moved successfully into the field of marine hydraulics with equipment such as centralized power packs, winches and capstans.

The company is located in Ajax, Ontario on the outskirts of Toronto in a plant of approximately 90,000 square feet with complete machine shop, fitting shop, fabrication and test facilities.

Whilst standard product lines exist, experienced



engineering, design and test personnel are available to meet any custom hydraulic requirement.

Eyrotechnics Ltd.,
414-45 Rideau Street,
Ottawa, Ontario
Canada K1N 5W8
Telephone (613) 238-8791

Branches: 1253B Esquimalt Rd., Victoria,
B.C. V9A 3P4 • 805-45 Alderney Drive,
Dartmouth, N.S. B2Y 2N6

Fiberglas Canada Ltd.,
3080 Yonge Street,
Toronto, Ontario
Canada M4V 1M7
Telephone (416) 482-2836 Telex 065-24309

The largest manufacturer of glass fibre products in this country, Fiberglas Canada Limited produces fibrous glass for insulation, continuous fibres for textiles, and various forms of glass fibre reinforcement for moulded plastics. The company also manufactures about one-third of the polyester resins used in the moulding of reinforced plastics.

Fiberglas Canada was established in 1939 by the founder of Duplate Canada Ltd., and licensed by Owens-Corning Fiberglas Corporation in the U.S. to employ its proprietary processes in the manufacture of glass fibres. Fiberglas Canada Limited is owned jointly by Duplate and Owens-Corning.

Fiberglas Canada has annual sales of about \$276 million and employs about 2,800 persons throughout

Canada. It operates thermal insulation plants in Edmonton, Sarnia, Montreal, Moncton and Toronto, and will soon have a sixth plant in production at Mission, B.C. Guelph, Ontario, is the site of two Fiberglas Canada plants—one making textile fibres and the other producing polyester resins. Research and Development Laboratories have been established in Guelph and Sarnia, while branch offices and warehouses have been strategically located in several cities across the country, from Saint John, N.B., to Vancouver.

The largest part of the company's insulation output goes into the residential market, although fibrous glass products are also used to insulate commercial and industrial buildings, refrigerators, freezers and ranges, truck transports, railway cars, ships and aircraft.

Fiberglas Canada's reinforcements become integral parts of such moulded products as boats, car and truck components, bathtubs, translucent structural panels, electrical insulation, industrial tanks, ducts and process piping. They are also used in automobile tires and paper products.

Fram Canada Inc.,
305 Romeo Street,
Stratford, Ontario
Canada N5A 6V4

Telephone (519) 271-3470 Telex 069-55115

Herb Fraser & Associates Ltd.,
1 Chestnut Street,
Port Colborne, Ontario
Canada L3K 1R3

Telephone (416) 834-4549

We have fabricating shops, machine shop, pipe shop, electrical shop, Diesel shop, mobile cranes and portable equipment, and skilled tradesmen providing

complete ship repair services at Port Colborne and wherever required by the shipping industry.

We also manufacture marine gangways, fairleads, hoppers, incinerators, ladders, masts and fabricated steel products.

Galt Equipment Ltd.,
47 Marie Victorin Boulevard,
Candiac, Quebec
Canada J5R 1B6
Telephone (514) 659-9644 Telex 05-268633
Branch: 8-12851 Bathgate Way, Richmond,
BC V6V 1Y5

Galt Equipment Limited specializes in the design and production of a varied line of refrigeration and environmental control equipment to meet the requirements of the marine and transport, food and fish, and petrochemical industries.

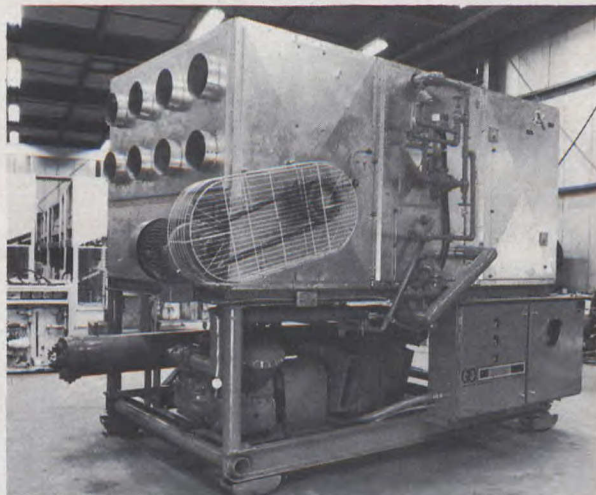
For the fishing industry the company supplies completely packaged, self-contained, ready to run shell ice makers to fish plants to meet the ice requirements of the fleet. For the more modern vessels, cooling and freezing equipment from standard or custom units is supplied to ensure that cargoes reach the market fresh and safe.

For the marine trade in general, Galt makes cargo reefer systems and air conditioning equipment for all types of shipping.

Containerization introduced a new concept in the transport scene. To meet the challenge, Galt's Thermotrol Division invented the cartridge concept of container environmental control.

With side-inserted and end-mounted cartridges for six or 12-metre (20 or 40-foot) ISO insulated containers, the division's production meets both national and international requirements. Galt now offers complete package deals with insulated containers and refrigeration plants.

Galt Equipment also supplies refrigeration and air



conditioning for the Canadian navy's class 280 destroyers, provision vessels and some research ships.

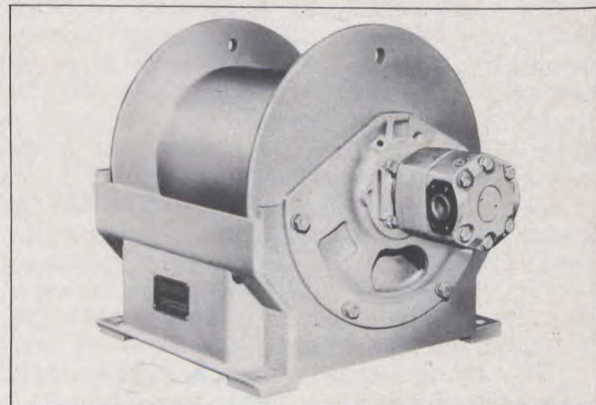
The company's production shops are capable of a variety of work, and its welding shop is certified for high pressure vessels in steel, steel alloys and cupro-nickel as well as in non-ferrous alloys. In steel, pressures up to 42 kg/cm² (600 lb/in²) are worked. Steel shell 90/10 cupro-nickel tubes and tube sheets and naval brass water boxes are produced to custom requirements.

Galt Equipment maintains a testing facility capable of running under load chilling equipment of up to 300,000 kg-cal/hr (1,200,000 BTU/hr). All equipment is produced to such standards as MIL, Lloyd's, ABS, CSA*, and other classifications, and fully qualified field supervisory and service staffs are available.

Gearmatic Co.,
Division Paccar of Canada Ltd.,
7400 132 Street,
Surrey, British Columbia
Canada V3T 4X4
Telephone (604) 596-7111

Gearmatic Co. hydraulic planetary winches/hoist and drives are used extensively in dock, deck and mobile applications where customers demand trouble-free operations under rigorous climatic and working condition.

The modular design of Gearmatic products provides an off-the-shelf selection of components to be



assembled in a wide variety of combinations to meet the application requirements.

The Gearmatic hydraulic planetary winches and hoists have automatic fail-safe brakes and offer a wide selection of cable drum configurations, gear ratios and hydraulic motor (medium and high pressure ranges). Optional features such as high speed reverse, free fall and two speed are also available. Bare drum linepull capacities up to 44,000 lbs (19,955 Kg) with linespeeds

up to 547 FPM (167 m/min) cover most application requirements.

High torque low speed hydraulic planetary drive with output torques up to 120,000 in lb (13,524 N.m) at 62 RPM are also part of the Gearmatic product line.

The International marketing of Gearmatic Co. hydraulic products is handled by PACCAR International through a distributor network with outlets now servicing 25 countries.

Guildfords Ltd.,
P.O. Box 609,
Dartmouth, Nova Scotia
Canada B2Y 3Z2
Telephone (902) 469-9201
Branches: 151 Halifax St., Moncton, N.B. ●
Grandview Industrial Park, Saint John, N.B.
● Donovans Industrial Park, St. John's, New-
foundland

GUILDFORDS LIMITED was founded in 1906 as a ship supply and machinery business.

Owing to its advantageous geographical location near the sea, and its more than 60 years of application experience, Guildfords Limited today can offer you the finest marine products and insulation services on the Atlantic Coast.

Guildfords marine insulation installations have been completed on all types of marine craft, ranging in



size and importance from the critically accurate detail necessary in ships of the Navy to the increasing complexity of the expanding Atlantic fishing industry.

We contract and supply insulations for hull, piping, equipment and refrigeration.

Guildfords Limited is also experienced in the manufacture of reinforced plastic tanks, pipe, work boats, ducts, etc.

Guildline Instruments Ltd.,
P.O. Box 99
Smiths Falls, Ontario
Canada K7A 4S9
Telephone (613) 283-3000

Guildline's reputation has been based on research, development and manufacturing to precise specifications. From such an operation has come instrumentation such as the 'Autosal' laboratory salinometer, now a standard in this field of measurement; the analog and digital CTD profiling systems presenting an excellent combination of remarkable accuracy, reliability, ease of maintenance and calibration. Also available is the 'Batfish' programmable towed body, one of the most versatile tethered general purpose instrumentation platforms commercially available.

The Series 8800 Batfish is readily adaptable to an expanding range of instrument payloads. Towed by an electromechanical cable, the body responds to control signals from the ship which may be a constant depth command or a programmed hybrid (e.g. sawtooth) profile at depths to 400 metres and speeds from five to 14 knots. In addition to the conventional CTD instrument package, a fluorimeter for dye and chlorophyll studies has been successfully adapted and an electronic zooplankton counter is under development.

Representing the fourth generation of precision, in-situ profiling systems, the Model 8507 Digital CTD System offers features never before available including: pre-calibrated exchangeable plug-in sensors; probe electronics which are independent of sensor cali-

**In USA: 2 Westchester Plaza, Elmsford,
New York 10523**



bration and permit sensor replacement at sea without opening the pressure case; data record/playback with a low cost audio cassette recorder, automatic error flag and a system check every cycle; versatile adaptation to vertical or towed body profiling.

Hastings Brass Foundry (1972) Ltd.,
236 Clark Drive,
Vancouver, British Columbia
Canada V5L 3H3
Telephone (604) 253-3811

Extremely versatile, Hasbra gurdies are widely used in the salmon fishing industry off North America's Pacific coast, trolling with up to 31.7-kg (70-lb.) leads for depth. They are also found in the tuna fisheries where lines are trolled near the surface and for deep still-fishing for such species as the red snapper.

Normally, gurdies are driven hydraulically but are also adaptable to a variety of mechanical drives. Each spool runs on a driven shaft with its individual clutch and brake control providing a choice of being driven, free wheeled or locked by brake. With its own wire or cordage and hooks or lures, each spool may be pulled individually by the fisherman while the others remain in use.

Hastings Brass Foundry, with extensive experience



in both the marine and commercial fishing fields, supplies such products as bronze seine release catches, trolling blocks, bronze hydraulic valves and selector valves, stern bearings, stuffing boxes and a wide range of cast, nonferrous marine products.

John T. Hepburn Ltd.,
914 Dupont Street,
Toronto, Ontario
Canada M6H 1Z2
Telephone (416) 671-2200 Telex 06-968793

John T. Hepburn, Limited designs and manufactures a wide range of equipment for the marine industries. Hepburn's comprehensive design and manufacturing capability equips them for the design and production of deck machinery of the largest sizes which are sold in the international market.

Deck Machinery

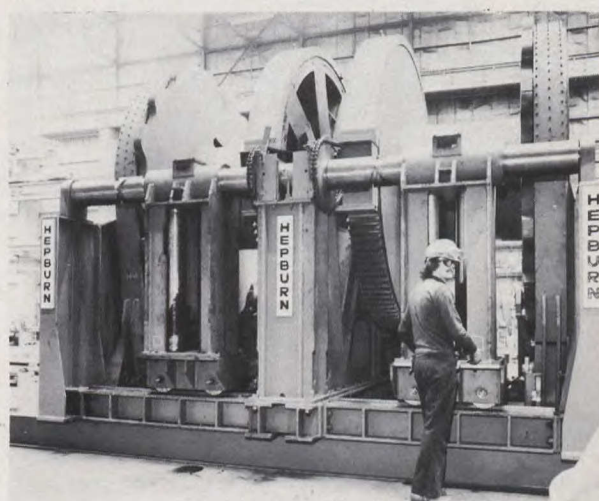
Electric or electro-hydraulic driven anchor windlasses, capstans, mooring winches for the St. Lawrence seaway and offshore applications, towing winches, traction winch combinations, oceanographic winches and deck cranes.

Naval Equipment

The company's Replenishment-at-Sea equipment has been widely accepted as a highly successful, service-proven method for the transfer of fuel and stores between vessels whilst underway. Several of the world's navies have standardised on this equipment.

Fishing

Hepburn design and manufacture a range of stern trawling winches, net reels and ancillary winches. They have also actively participated in developing innovative multi-purpose gear handling winches and Arctic fishing equipment.



Offshore Oil Exploration Industry

Hepburn offers supplies and personnel transfer equipment developed from their successful naval replenishment systems which fulfils several maintenance and emergency roles in the offshore industry. They also offer low cost, permanent mooring tensioning equipment for converted VLCC and ULCC storage vessels or barges, roller type chain chasers and hydraulically driven B.O.P. handling cranes.

Manoeuvring Equipment

Positioning and propulsion thrusters units can be supplied.

Hermes Electronics Ltd.,
P.O. Box 1005,
Dartmouth, Nova Scotia
Canada B2Y 4A1

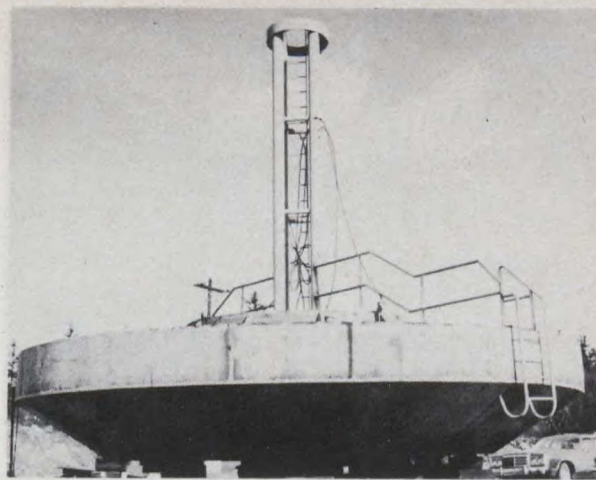
Hermes Electronics Limited specializes in the research, design and production of offshore data acquisition systems, adaptive IIF communication systems and

Telephone (902) 466-7491 Telex 019-21744

shallow and deep ocean moorings.

Of particular significance to oceanography, the Hermes conceived and designed Canadian Ocean Data System (CODS) gathers offshore meteorological and oceanographic data. The data is made available to both industry and government to support offshore operators concerned with operational safety, surveillance and warning. Weather forecasting data for marine and coastal areas is continuously gathered, updated and telemetered to CODS shore stations.

With years of experience, Hermes has developed the skills and technologies necessary to undertake complete turnkey projects for offshore data acquisition. A further service is based on proprietary computer programs for hull design of electromechanical ocean buoys in accordance with given dynamic oceanographic and meteorological conditions.

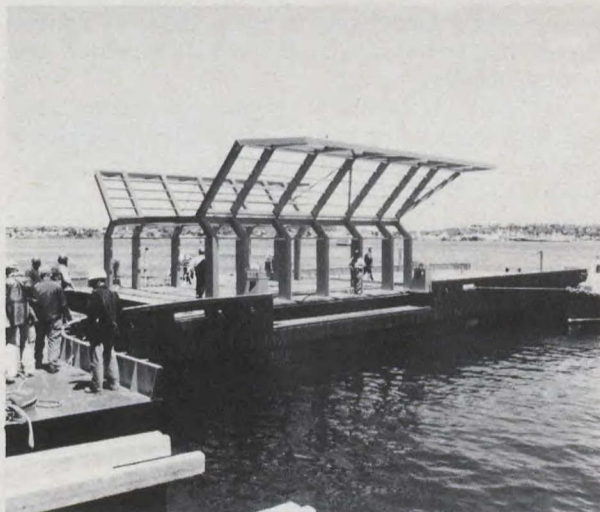


HMW Industries Ltd.,
P.O. Box 756,
Halifax, Nova Scotia
Canada B3J 2V2
Telephone (902) 469-7760 Telex 019-31467

HMW Industries Limited manufactures a complete range of deck machinery and components for Marine Industry and provides ship repair services.

Recent projects include the manufacture of deck machinery for fishing vessels; structural steel fabrication and component manufacture for jack-up drilling rigs and semi-submersible exploration rigs; supply and installation of storage systems, deck machinery, and ventilation equipment for supply vessels; complete cable laying barge outfitting, including cable handling components, anchor handling winches and electrical installations, and the building of highway ferries, navigational buoys and marine structures.

HMW Industries Limited has two plants in Nova



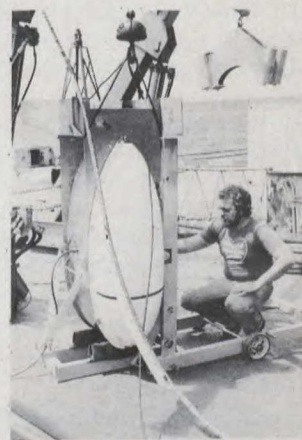
Scotia, each occupying 38,000 sq. ft., a Steel Service Centre and an experienced staff of over 200 people.

Huntec ('70) Ltd.,
25 Howden Road,
Scarborough, Ontario
Canada M1R 5A6
Telephone (416) 751-8055 Telex 06-963640

Huntec's Hydrosonde DeepTowed Seismic (DTS) System continues to prove its value to offshore operations where adverse weather and sea state conditions present serious problems of time and economics in determining seafloor sediments and other offshore seismic derived data. Since its introduction in 1974, the DTS System has logged an impressive amount of data in such areas as the North Sea, the Norwegian Coast, the west coast of Africa, the Gulf of Mexico, and Canada's east coast and Arctic.

Applications have included pipeline route surveys, platform and rig site surveys, geological reconnaissance and sediment classification studies. DTS survey operations are routinely conducted at ships speeds to 6 knots, on a 24 hour basis. Very good results have been obtained under Force 7 sea conditions at water depths of 250 m to 300 m.

Recent innovations on the DTS System have re-



sulted in higher acoustic energy with better resolution/penetration characteristics; automatic four component motion compensation circuitry enabling acquisition of seabed profiles that illustrate the true shape of the sea floor relative to mean sea level datum; and an adaptive signal processor with optimum gain function so that each sub-bottom reflector appears at its proper level on the recorder grey scale.

Hurum Engineering Ltd.,
300 St. Sacrement Street,
Montreal, Quebec
Canada H2Y 1X4
Telephone (514) 284-0691 Telex 055-60313
Branch: Suite 1106, Duke Tower, Scotia
Square, Halifax, N.S. B3J 1P3

Hurum Engineering Ltd. is a company geared to provide service in sales, engineering, and consulting in all phases to the marine industry, including owners, shipbuilders, and operators of not only Canada, but the marine countries of the world.

We are one of the major suppliers of quality marine equipment and take pride in our after-sales service, including installation supervision, personnel training, and preventative maintenance programmes for all types of vessels.

For a substantial period of time, Hurum has acted as ship repair consultants in every phase of marine engineering, to the satisfaction of both domestic and overseas owners.

In the fishing section of the marine industry, Hurum Engineering has been a leader introducing new equipment and technical innovations which in Canada, has resulted in increased yields, and subsequent profits to the fishing vessel owners themselves. We are anx-



ious to export this expertise.

Hurum Engineering Ltd. is a leading manufacturer and supplier of oil spill control booms and anti-pollution accessories to the world market. This oil pollution equipment is now used extensively by all major oil companies, the Canadian Coast Guard, and Canadian Government Environmental Agencies. This is in addition to parallel Agencies in overseas countries. This pollution equipment is marketed under the name of FLEXY.

Hydro-Mac Inc.,
10575 Tolhurst,
Montreal, Quebec
Canada H3L 3A6

Telephone (514) 331-9175

International Paints (Canada) Ltd.,
6700 Park Avenue,
Montreal, Quebec
Canada H2V 4P6

Telephone (514) 271-4655

Since 1928, International Paints has been a contributor to the ever-growing Canadian shipping and maritime industry. Today, as a division of the largest marine paint company in the world, its services and products are offered at more than 300 locations around the world.

production facilities make in excess of 13,638,000 litres (3,000,000 gal.) of coatings annually.

With long experience and established technical expertise, company laboratories are constantly engaged in the search for new and better coatings. Advanced technical development in epoxies and zincs, for example, has brought about a whole generation of marine coatings as well as internal pipe coatings for natural gas and water and hydro-electric installations. To meet these demands and more, International's four

Improved anti-fouling and anti-corrosion coatings are developed, tested and refined to meet the stringent demands of the marine industry—demands for greater tonnage and longer times out of maintenance dry-docks.

International Paints has also made significant contributions to the success of Canadian-built drilling rigs and vessels where year-round operation is normal. With the continual scouring of these giant structures by the relatively shallow coastal waters in which they operate, durable and long lasting coatings, as developed by the company, are indispensable.

Internav Ltd.,
Point Edward Marine Park,
Sydney, Nova Scotia
Canada B1P 6K3

Telephone (902) 539-0660 Telex 019-35126

Internav is one of the world's leading manufacturers of commercial marine receivers for the Loran C radio navigation system.

navigation computing systems and track plotters for large commercial ships, to very high accuracy hydrographic survey receivers used for oil exploration and similar requirements. Internav also builds precision Loran C monitoring and signal measuring equipment for special applications.

Equipment produced ranges from lightweight, low cost, microprocessor controlled units for pleasure boats and small vessels, through advanced multiple waypoint

Internav Loran C receivers have been purchased as standard equipment by the Canadian Coast Guard, the United States Coast Guard, the Canadian Department of National Defence, and by a wide range of government, commercial, and private users around the world, from pleasure yachts to supertankers.

Internav products are sold in Canada under the company's name, but are exported worldwide under the name of SIMRAD—Internav's world distributor based in Oslo, Norway.

Internav also has an active Research and Development Group, where new Loran C technology and applications are investigated. The R and D Group has performed specialised Loran C signal studies in Canada, the Mediterranean, and elsewhere. The company also operates portable Loran C transmitters under contract for hydrographic survey and other projects requiring high positioning accuracy.



Island Control Ltd.,
P.O. Box 1990,
Charlottetown, Prince Edward Island
Canada C1A 7N7
Telephone (902) 892-1912 Telex 014-44242

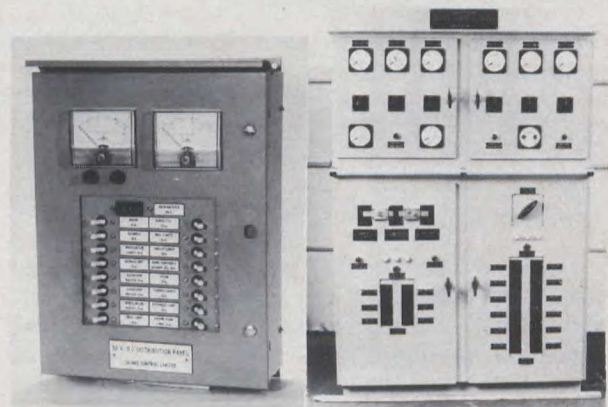
Products and Services

Main & Emergency Switchboards, Single and Three Phase—Distribution Panels—Motor Control Centres—Navigation Light Panels—Remote & Local Alarm Panels—Specialty Control Panels and Systems—Specialty Power Supplies—Shore Connection Boxes.

Suppliers to Island Control:

AMF Canada Ltd., Guelph, Ontario—Relays; Bach Simpson Ltd., London, Ontario—Metering; Cam Gard Supply, Moncton, N.B.—Cabinets, meters, etc.; Drummond McCall Ltd., Toronto, Ontario—Bus Bar; Heinneman Electric Canada Ltd., Montreal, Quebec—Breakers; Ilsco Canada Ltd., Toronto, Ontario—Grounding bus; Spae-Naur Products Ltd., Toronto, Ontario—Hardware; Westinghouse Canada Ltd., Moncton, N.B.—Breakers, meters, etc.; Crompton Instruments, Montreal, Quebec—Metering.

Island Control Limited are Marine Electrical designers and manufacturers of switch gear, distribution and control equipment in the industry. We provide control equipment for pleasure craft, as well as the commercial industry. All our products are manufactured and tested in our plant for distribution. Our suppliers are almost all Canadian and, therefore, Canadian content use is close to 100%.



We are capable of designing complete electrical systems for the marine industry and up to this time, have concentrated on commercial fishing craft up to 200 feet in length.

Our firm is also capable of providing consulting services in the electrical field for ship owners who wish to upgrade their existing facilities or for ship builders who wish to have a new design to meet the requirements of a custom built ship.

We are also capable of, and do some of, our own installation; field service crews are available upon request.

We have been concentrating mainly on markets available in Atlantic Canada, and, therefore, have not yet looked into opportunities available for export.

Joiner Systems of Canada Ltd.,
3300 Cavendish Boulevard, Suite 640,
Montreal, Quebec
Canada H4B 2M8
Telephone (514) 481-7743-4-5 Telex 055-66138

Joiner Systems of Canada Ltd., a designer, supplier and installer of habitability systems for all types and sizes of vessels, is conveniently located in Montreal, Quebec.

Complete interior systems consisting of patented

Joinlock bulkheading and lining systems, ceiling and deck covering systems, insulation for fire, thermal comfort and sound attenuation can be supplied and installed by Joiner Systems' competent naval architects, engineers and installation labour force.

All types of marine doors for shipboard installation designed to suit the requirements of each individual client with construction to suit all classification societies and/or individual regulatory bodies are supplied and installed by J.S.C.

Hollow metal Joiner doors and frames with various types of decorative finishes including any colour baked enamel paint, decorative vinyl, etc. have been manufactured for all of Canada's major shipyards and ship owners from Newfoundland to British Columbia. A complete range of B-Class and A-Class fire doors, gas-tight, soundproof, watertight and weathertight doors are also available.

Along with the above mentioned items J.S.C. design, supply and install prefabricated refrigeration chambers, metal and fibreglass window boxes, furniture of wood and metal. J.S.C. also act as distributors of Canadian made galley and pantry equipment.

Whether it be new construction, conversion or ship repairs, no project is too large or too small for J.S.C. So please feel free to request further information and let us try and meet your requirements.



Kelvin Hughes
716 Chemin de Golfe,
Nun's Island, Quebec
Canada H3E 1B2
Telephone (514) 766-2345 Telex 05-24840

Kelvin Hughes are the exclusive Canadian distributors of the patented Fixed Activated Sludge Treatment (FAST) Marine Sanitation Device (MSD), designed and developed by St Louis Ships, division of Potts Industries Inc. which is now being manufactured in Canada.

The FAST MSD bears Canadian Department of the

Environment's Type Approval number A-1 and is certified for use in all Canadian waters including the Great Lakes.

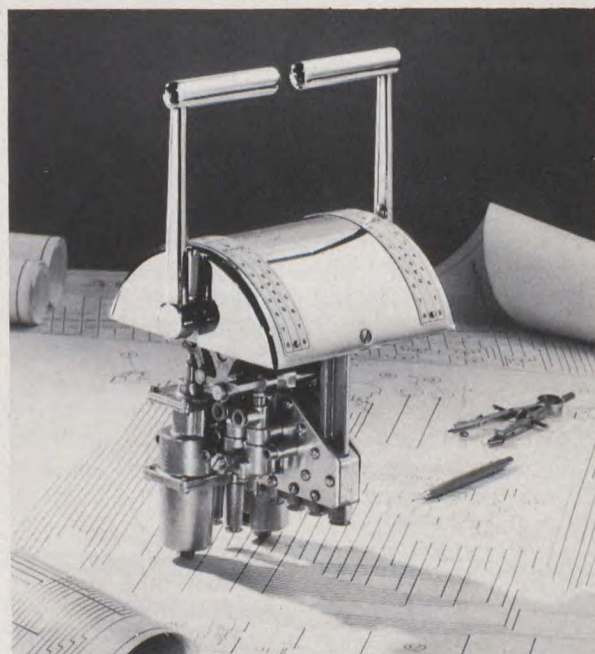
The system is United States Coast Guard approved as a Type II MSD. It can handle all classes of vessel from crew sizes of two persons to the largest cruise liner.

J. Kobelt Manufacturing Co. Ltd.,
235 East 5th Avenue,
Vancouver, British Columbia
Canada V5T 1H2
Telephone (604) 879-6323 Telex 04-55450

J. Kobelt Manufacturing Co. Ltd. specialises in precision controls and control systems, pneumatic and mechanical (push-pull & wire over pulley) for marine propulsion units and deck machinery. The company also designs and manufactures a wide range of pneumatically operated and fail-safe disc brakes for propeller shafts, winches and other similar shaft/axle applications.

Braking forces on the Kobelt disc brakes range from a few gram-centimetres (inch-pounds) to 345,600 kilogram-metres (2.5 million ft. lbs.), and the disc sizes vary from 22.9 cm. (9 inches) to 365.76 cm (12 ft.). These brakes and systems are suitable for dynamic and static applications and come in a wide range of sizes. They are found in varying uses and industries throughout the world.

The company also offers custom engineering and manufacture for brakes where the rapid dissipation of heat is a requirement or where extended brake engagement is the norm. One of the more recent develop-



ments is an internally water cooled disc for anchor handling winches on drill ships and pipe-laying barges.

The Company's willingness to adapt and innovate has caused them to expand from their solid base in the marine industry into any industry where control and braking systems are of primary importance. As well as the marine industry, Kobelt now serves the forestry, oil exploration and heavy construction industries.

The controls can be provided for any size of vessel or any type of propulsion arrangement, such as con-

trollable pitch propellers with automatic load control, reversing gear boxes (hydraulic or pneumatic) and direct reversing engines.

Kobelt's reputation is based upon meticulous attention to research and engineering, materials, craftsmanship, quality control in production and new technologies such as their permanent mould machine and pressure injection diecasting machine.

Korfund Sampson Ltd.,
590 Orly Avenue,
Dorval, Quebec
Canada H9P 1E9
Telephone (514) 363-1042

Korfund-Sampson Limited is one of the oldest and foremost companies engaged exclusively in design, development and manufacture of engineered vibration and noise control systems. The Company's extensive product line serves an almost unlimited number of applications in industry, power plants, aerospace and marine fields.

The Korfund system of isolation is synonymous with vibration control and its Series "S" Marine type steel spring vibration isolator is widely used in Canada's Coast Guard, Department of Fisheries and Min-

Branch: 60 Advance Road,
Toronto, Ontario M8Z 2T7

istry of Transport. This isolator is equipped with all directional limit stops designed to withstand forces due to roll, pitch and slamming of sea going vessels. A large stock of these isolators are maintained at Korfund-Sampson's Montreal plant.

Korfund-Sampson has offices and/or agents in all of Canada's major cities. Our research work has led to a large number of "firsts" which today are the standard of the industry. Also we have the orientation and Research & Development resources to develop improved or new solutions for old and new vibration and noise control problems.

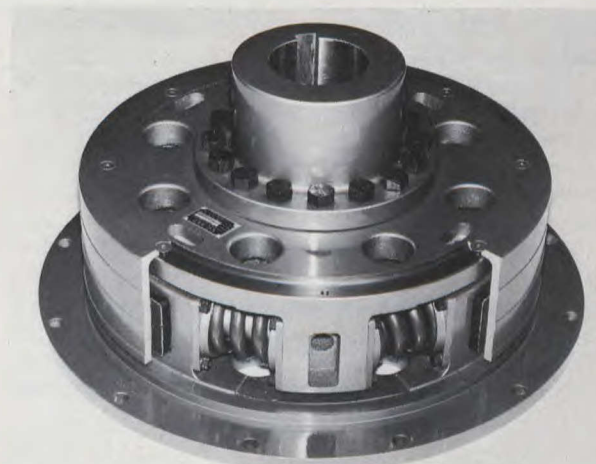
Lister Bolt & Chain Ltd.,
1771 Savage Road,
Richmond, British Columbia
Canada V6V 1R1
Telephone (604) 273-5411 Telex 043-55637

Lo-Rez Vibration Control Ltd.,
156 West 8th Avenue,
Vancouver, British Columbia
Canada V5Y 1N2
Telephone (604) 879-2974 Telex 04-55188

Lo-Rez Vibration Control produces steel-spring and rubber flexible couplings for power transmission, vibration isolators for controlling equipment-induced vibration, and dampers for controlling torsional vibration in Diesel engine crankshafts. Lo-Rez began operations in Vancouver in 1956 and has seen its products exported worldwide.

Couplings range in size up to the 'N' model (190 cm diameter, maximum rating 26000 HP @ 540 RPM). These couplings—extremely vital in geared Diesel propulsion systems and compressor systems—have a low, constant and accurately-controlled torsional stiffness, which facilitates both predictive and corrective torsional vibration analyses and permit the significant critical speeds to be located well below the minimum operating RPM. Damping is adjustable to suit actual conditions in the field. Lubrication is not required.

Steel-spring and rubber isolators range up to 20,000 Kg. rated load per mount. The high static deflection available permits high isolation efficiencies. The BR2-LS and BR4-LS isolators are capable of car-



rying a substantial propellor thrust as well as having built-in, rubber-cushioned limiting stops to prevent undue excursion in rough seas, and are well suited for main propulsion engines.

Lo-Rez has fully researched and patented innovative features for its new tuned viscous damper for crankshafts. The improvement in torsional vibration damping capacity—over that available in conventional viscous dampers—is on the order of 60%. Robust, bolted aluminum housings with cooling fins provide for long-lasting and cooler operation.

Lunenburg Foundry & Engineering Ltd.,
16 Brook Street,
Lunenburg, Nova Scotia
Canada B0J 2C0
Telephone (902) 634-8827 Telex 019-21509

Lunenburg Foundry and Engineering Limited are Ford Industrial Distributor for the Province of Nova Scotia and have been producing the well known "Ford Senator" gasoline and diesel engines for the past sixteen years. The company continues to manufacture it's famous Atlantic Marine engines.

Lunenburg Foundry and Engineering Limited have the most modern Propeller service shop in the Atlantic Canada. Their specially designed machinery permits the straightening of blades, measuring pitch, repairing blade tips, polishing and dynamically balancing. They are a major supplier of propellers to boat-builders and boat owners. They manufacture two, three and four blade propellers up to 50" in diameter.

Lunenburg Foundry & Engineering Limited engineer, design and manufacture complete underwater gear and also make winches, windlasses, deck machinery, steerers and cargo hoists, stoves and furnaces.



Their facilities include machine shops, welding shop, sheet metal shop, electrical shop, engine shop, pattern shop and foundry.

Lunenburg Foundry & Engineering Limited have completed major repairs to their marine slips. The large cradle has been enlarged to 1600 tons capacity. The three railway drydocks are again in operation and the company is now able to give better service and faster ship repairs.

Marinav Corporation,
1140 Morrison Drive,
Ottawa, Ontario
Canada K2H 8S9
Telephone (613) 820-6600 Telex 053-4117
Branch: 310-505 8th Avenue S.W., Calgary,
Alberta T2P 1G2

A full range of general navigation, survey control systems and ancillary equipment specifically designed for offshore resource surveys is offered for lease by Marinav Corporation, with or without experienced operating personnel.

Marinav personnel have more than 20 years of experience in offshore survey and related marine operations. With a staff of professional and technical personnel, the company has built up a comprehensive inventory of navigation, engineering and logistic support equipment.

In addition, Marinav undertakes marine, hydrographic and offshore engineering surveys, including bottom profiling and side-scan operations, rig location services by single-point or translocation doppler satellite solutions. The company also provides consulting services in the application of modern surveying tech-



nology to mapping control for geophysical and geodetic surveys.

Maritime Industries Ltd.,
6307 Laurel Street,
Burnaby, British Columbia
Canada V5B 3B3
Telephone (604) 299-7591 Telex 043-54799

Maritime Industries are designers and manufacturers of steerable propulsion units and bow thrusters.

The steerable propulsion units are known as Z-drives. The standard product range includes units of up to 2000 h.p., for special applications higher powers are available.

The Z-drive replaces the conventional propeller and rudder combination with an integrated unit which performs both propulsive and steering functions. Steering is accomplished by rotating the lower leg hydraulically or by a combination of an electric-hydraulic system. Maximum thrust is therefore

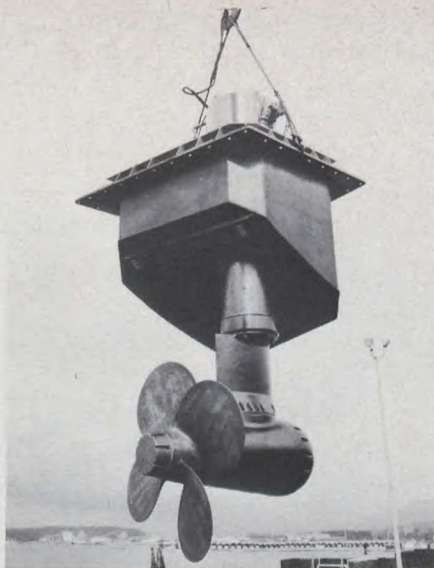
achieved in any direction throughout a 360° rotation.

Z-drives are available in a number of configurations including over stern deck-mounted, through hull and retractable. They have been used throughout the world in tugs, ferries, drill rigs, barges, dredges, fireboats and military applications, and have developed a high reputation for being rugged and built to heavy duty standards.

Z-drives will provide the vessel with high manoeuvrability, accurate station holding, increased stopping power and maintenance without drydocking. In addition, for double-ended ferries, Z-drives provide full propulsive efficiency in both directions.

Maritime Industries also manufactures a range of tunnel thrusters with a similar power range to the Z-drives.

Maritime's customer services include feasibility studies, applications engineering, installation and commissioning, operating personnel training, field service and factory overhaul programmes.



Martin-Black Inc.,
6600 Trans Canada Highway, Suite 320,
Pointe Claire, Quebec,
Canada H9R 4S2
Telephone (514) 687-3344

**Branches: P.O. Box 902, Truro, N.S.
B2N 5G6 • 3870 Jacombs Rd., Richmond,
B.C. V6V 1Y6**

Mechtronics Research Corporation,
1727 2nd Avenue West,
Vancouver, British Columbia
Canada V6J 1H8
Telephone (604) 736-2671

Mechtronics specialises in the design and manufacture of systems that effectively interface mechanical equipment with electronic controls. Steering control systems for 360° steerable thrusters have been designed and manufactured by Mechtronics that provide reliable, positive one-to-one full follow-up control

for multiple drive systems.

A system currently being supplied to the U.S. Navy provides portable remote control for two packaged positioning systems manufactured by Maritime Industries Ltd of Burnaby, B.C.

Other Mechtronics systems include: Engine Alarm Recorder Systems, and Video Display Alarm Systems. The Video Display Alarm Systems use digital data transmission to enable complete engine room alarms to be transmitted to the wheelhouse on two wires, eliminating costly shipboard wiring, and minimizing the cost of future additional alarm monitoring stations.

Montgomery Elevator Co. Ltd.,
15 Shorncliffe Road,
Toronto, Ontario
Canada M9B 3S4
Telephone (416) 239-4373 Telex 06-967896
Branches: 2545 Cavendish Blvd., Suite 145,
Montreal, Quebec; 1201 Franklin Street,
Vancouver, B.C.

For over 50 years Montgomery Elevator Co. Limited has maintained the highest standards of quality in the design and production of vertical transportation equipment. Montgomery is one of the larger independent companies of its kind in Canada, employing over 400 employees located in two factories and more than 25 sales, installation and service offices.

The selection of vertical transportation equipment involves a careful analysis of project requirements.

Consideration must be given to the type, location and size of the equipment as well as the ships' traffic patterns.

Escalators are often selected for use in ships and buildings as they move people at a lower cost per passenger than any other form of vertical transportation. Of these, Montgomery escalators are chosen again and again.

Montgomery Elevator, escalators, Power Walks and Ramps are efficient, safe, dependable and attractive. They are found in ships, major airports, and other transportation terminals, office and retail buildings, schools, civic centers, shopping centers and corporate headquarter buildings.

Where there is heavy traffic, Montgomery Elevators, escalators, Power Walks and Ramps are an economical solution to any people or equipment moving problem.

Montreal Engineering Co. Ltd.,
P.O. Box 6088, Station A,
Montreal, Quebec
Canada H3C 2Z8
Telephone (514) 286-3636
Telex 055-60735

Toronto: K. A. Litzen,
2 St. Clair Avenue East,
Toronto, Ontario
Canada M4T 2T5

Nautical Electronic Laboratories Ltd.,
RR 1 Tantallon,
Halifax County, Nova Scotia
Canada B0J 3J0
Telephone (902) 823-2233 Telex 019-22552

Nautical Electronic Laboratories Limited (NAUTEL) is a small, self-contained company located within 30 miles of Halifax, Nova Scotia, with special interest in Radio Navigation and Communication systems and associated products.

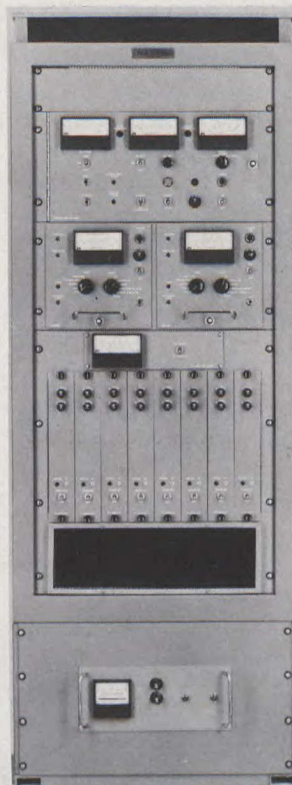
Nautel manufacture the world's largest family of "Totally Solid State" non-directional radiobeacon transmitters with output power levels available up to 4 kilowatts. MF Telegraph and HF Communication transmitters are also included in our range of products, together with Digital Chronometer and Time Systems. Our facilities include:

Research and Development: Personnel experienced in high power solid state technology, antenna systems, time systems and many other diversified interests.

Engineering: Personnel with past experience and education directly relating to the systems designed and manufactured by Nautel.

Testing: Full facilities, including temperature test chambers.

Other facilities include a machine and sheet metal shop, full production area, technical writing, mechanical and electrical/electronic drafting, all complement Nautel's product range.



Norris Warming Canada Ltd.,
1150 Morrison Drive, Suite 203,
Ottawa, Ontario
Canada K2H 8S9
Telephone (613) 820-9772 Telex 053-4527
Branch: Suite 203 Dundrave Centre, 2438
Marine Drive, W. Vancouver, B.C.

For more than 25 years, Norris Warming Canada Limited has been designing and supplying heating, ventilation, and air conditioning equipment that meets the stringent requirements of marine usage, not only in Canada, but on a worldwide basis.

The company has designed systems and supplied the appropriate hardware for the majority of vessels built in Canada, which includes passenger ships and passenger/vehicle ferries, icebreakers, tankers, bulk carriers, naval vessels, drill rigs, drill ships, and their support craft.

Norris Warming Canada, through its specialized experience, is foremost in its field, meeting custom needs of an ever-expanding maritime industry in which mere function is no longer acceptable but performance to prestated specifications is today's standard.

The commercial customers are assured of world-



wide service, with agents in Australia, Greece, Holland, Belgium, Singapore, Korea, Spain, Taiwan, Yugoslavia, India, Turkey and Pakistan. Norris Warming Canada projects and systems have been included in ships sold recently to Britain, Germany, United States, Peru, Greece, France and the Cameroons.

Northern Construction Co. Ltd.,
1304 Hornby Street,
Vancouver, British Columbia
Canada V6Z 1W6
Telephone (604) 683-4535

Branch: 401-1015 4th Street S.W.,
Calgary, Alberta

Nova Scotia Research Foundation
Corporation,
P.O. Box 790,
Dartmouth, Nova Scotia,
Canada B2Y 3Z7

Telephone (902) 424-8670 Telex 019-22719

Nova Scotia Research Foundation Corporation has developed a reputation for solving diving and oceanographic problems through innovative products.

A new line of compact electrical slip rings is now available. These new units, which offer high power ratings and high reliability under adverse conditions, are fully compatible with a wide range of umbilical cables. The slip rings, compact and competitively priced, complement the Research Corporation's range of fluid rotary unions.

Recognizing the need for improved life-support equipment, the Corporation has developed a hyperbaric blower capable of meeting the need for safe, non-contaminating, low-noise gas circulation in hyperbaric decompression chambers. The blower is coupled via a high speed, high energy magnetic drive (patented) through the pressure vessel wall from a conventional electric motor.

Among other developments is a sub-surface towed profiling system which provide high resolution profiles in water depths to 3300 ft. (1,000 m). Penetrations are up to 330 ft. (100 m) with a resolution of 1 ft. (0.3 m). Typical applications include the survey of pipeline routes, platform and drill sites, undersea mining and electrical transmission cable routes.

Novastran Ltd.,
P.O. Box 883,
Saint John, New Brunswick
Canada E2L 4C3

Osborne Propeller Consultants Inc.,
1645 West First Avenue,
Vancouver, British Columbia
Canada V6J 1G2
Telephone (604) 731-0461 Telex 04-54601
Osborne Propellers Ltd.
Address as above

Osborne Propeller Consultants Inc. was formed by R. A. Osborne of Osborne Propellers Ltd. to carry out research toward improving the fuel economy and efficiency of marine propellers. The Company has extensive in house computing facilities for propeller optimisation calculations.

Use of the computer has permitted Osborne Consultants to reduce time needed to select optimum propellers for vessels from weeks to minutes. By plotting the results on the digital plotter the computer programme allows one to make direct comparison between different alternatives like number of blades,



To assist oil spill preventions, clean-up and control organizations, a unique tracking system is available for tracking oil spill and conducting circulation flow studies. The tracker buoys are designed to behave dynamically like an oil slick on water, ensuring the precise tracking of spills in all visibilities. The system consists of tracker buoys, receivers and custom built antennas.

NSRFC's wavestaff is an established product for recording wave profiles. Of interest to engineers, oceanographers and others concerned with ships, harbours, coastal structures and wave/climate studies, the wavestaff is of unique design. It uses only a single flexible component which results in simpler transport, handling and mounting. Other design features include resistance to damage from impact or friction and from fouling effects.

Telephone (506) 693-1277

blade area, open or nozzle propeller or selecting optimum RPM among available gear ratios.

Upon selecting optimum propeller characteristics and after selecting material for the propeller and classification society rules to which propeller should be designed, complete design drawings can be produced on the digital plotter ready for the pattern shop.

The work in process programme allows Osborne Propeller to keep accurate track on material and labour used in the production of the propellers and provides means for accurate and quick estimates.

Osborne Propellers has been in the business of repairing and building marine propellers since 1935. The years of experience in building fixed and controllable pitch, open and nozzle propellers has been built in the computer programme allowing Osborne Propellers to provide the marine industry with the best quality marine propellers quickly. This provides ship owners the choice of selecting a propeller for optimum fuel efficiency at the cost of a stock propeller.

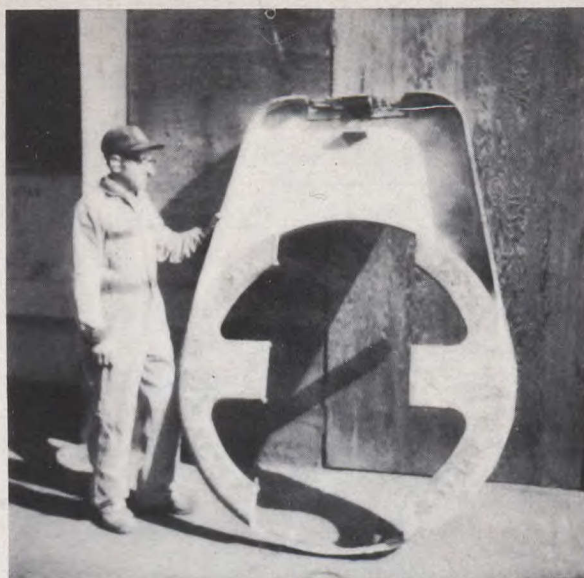
Pacific Bronze Co Ltd.,
1616 Pandora Street,
Vancouver, British Columbia
Canada V5L 1L6
Telephone (604) 253-4364

Pacific Bronze has been manufacturing non-ferrous metal castings for over 30 years, spanning two generations of the family who own the company. Quality and service have been the by-words all these years.

Over the years, the company has been expanding to better serve our public, and we now manufacture our castings from start to finish. Our equipment includes a core machine, automatic moulding machines, and heat treating facilities.

Pacific Bronze is one of the few foundries able successfully to manufacture castings in the special aluminum alloys. As a result, our pre-scheduled jobbing includes truck parts, fish pump castings, and hub and fan blade assemblies.

We have patterns for various marine hardware items, including C.S.I.-approved portlights in bronze or aluminum. Our company has a close working relationship with a nearby machine shop, and a plating



company.

As a result of our many years experience, Pacific Bronze is equipped to handle rush, as well as pre-scheduled, orders.

Pratt & Whitney Aircraft of Canada Ltd.,
Industrial & Marine division
P.O. Box 10,
Longueuil, Quebec
Canada J4K 4X9
Telephone (514) 677-9411 Telex 05-267509

Pratt & Whitney Aircraft of Canada designs and produces marine engine modules and propulsion systems based on ST6 and FT4 gas turbine engines:

ST6 AND FT4 ENGINE DATA SUMMARY
(SEA LEVEL STANDARD PRESSURE AT 15°C INLET
TEMPERATURE)

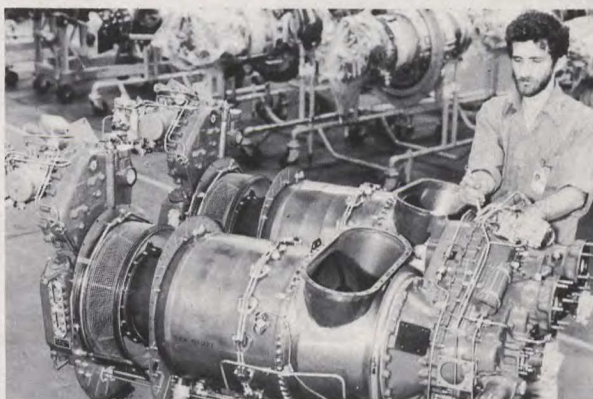
| Model | Maximum | | Output | | Length MM | Width MM | Height MM | Weight KG |
|----------|---------|----------|--------|------|--------------|-------------|--------------|--------------|
| | KW | KG/KW-HR | RPM | MM | | | | |
| ST6J-77 | 515 | .377 | 2200 | 1575 | 483 | 483 | 172 | |
| ST6L-80 | 794 | .353 | 30,000 | 1509 | 483 | 483 | 164 | |
| ST6T-76 | 1380 | .374 | 6600 | 1687 | 1128 | 803 | 332 | |
| CFT4C-3F | 38,166 | .256 | 3600 | 8839 | 2743 | 2870 | 25,400 | |

Prime Mover Controls Ltd.,
3901 East 2nd Avenue,
Burnaby, British Columbia
Canada V5C 3W9

Prime Mover Controls Ltd., are manufacturers of marine control components and systems of exceptional quality and durability. Supported by highly trained, technically competent and customer motivated personnel, as well as extensive research, development, production, test and service facilities, PMC has gained an enviable reputation for delivery of reliable, first-class products—on time—and then supporting these products with technical aid, customer training and thorough documentation. PMC controls are giving reliable proven performance on vessels sailing throughout the world.

Pneumatic, electronic and hydraulic products are

Branch: I&M Division, Suite 3040,
Bow Valley Square, Tower 2,
205-5th Avenue S.W., Calgary Alberta
T2P 2V7

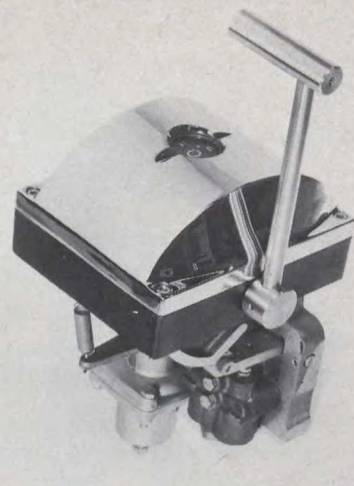


Telephone (604) 294-6205 Telex 04-354781

offered which solve a variety of requirements for most types of vessels, including: remote and engineroom propulsion control systems; clutch controls with optional shaft brake control, adjustable soft engage, timed reversing (proportional) interlock, fuel boost (proportional and throttle override; C.P. propeller controls with automatic load control and maximum load selection; manual and automatic load sharing of engines; modular pneumatic logic systems—ultra compact and serviceable; thruster and winch control systems; custom built shipboard consoles—fully wired, piped, tested and documented; solid state alarm annunciator systems with remote display and senders;

propulsion telegraph systems, microprocessor based, with innovative features; solid state navigation light control with 24 hour monitoring; pneumatic tank depth indicator systems.

PMC provides additional support to its manufacturing capability with such customer services as a large parts stock, extensive quality control, repair and overhaul programs, engine governor service to high standards, customer training programs and consulting services.



Procom Systems & Computations Ltd.,
Suite 401, 1010 Ouest Rue Ste Catherine,
Montreal, Quebec
Canada H3B 1G2

Telephone (514) 866-3150 Telex 268812

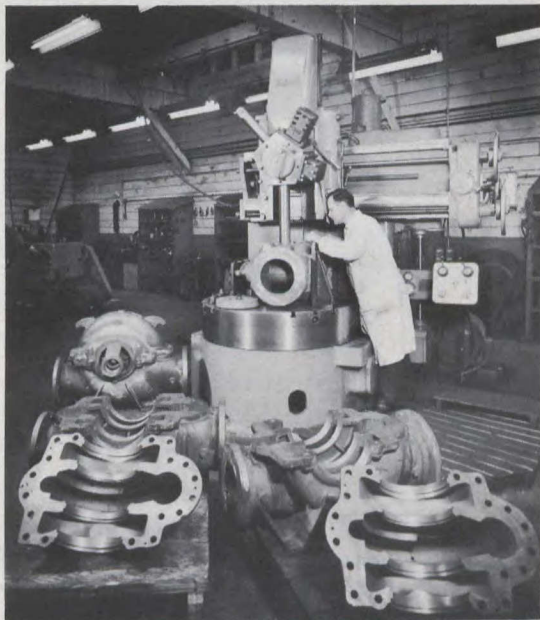
Pumps & Power Ltd.,
1380 Napier Street,
Vancouver, British Columbia
Canada V5L 2M4
Telephone (604) 255-4341 Telex 04-54463
Branch: 15712-112th Avenue, Edmonton
Alberta T5M 2W1

Pumps & Power is a Canadian company which was established in Vancouver, British Columbia, in 1912. Since then, it has become the major supplier of pumps and compressors in Western Canada, with particular emphasis on the marine market.

We are manufacturers as well as distributors, and have approximately 30,000 sq. ft. of office, manufacturing and warehouse space. These facilities enable us to assemble, repair, service and test equipment which we market. For the marine industry, our testing procedures allow classifications to be properly met including LRS, CSI, or ABS.

Paramount pumps, as manufactured by Pumps & Power, include centrifugal self primers and non self primers, sump units, sewage and solids handling units, etc., in all materials (cast iron, bronze, steel, stainless steel), and in various vertical or horizontal configurations.

In addition, as distributors for various pumps of gear, screw, or centrifugal type and positive displacement blowers, we can offer complete packages, with high Canadian Content (motors, assembly, mountings, testing, labour, etc.) for all applications including sea



and fresh water circulation, cooling, lubrication, bilge and ballast, stripping, sanitary, potable, oil transfer, fire and general service on all sizes of tankers, passenger liners, ferry boats, cargo ships, deep sea trawlers, etc.

Our extensive experience in the pump and compressor business allows our sales engineers to discuss all types of applications completely with both naval architects and ship builders alike.

Pyramid Transit Products Ltd
86 Leacock Drive,
Pointe Claire, Quebec
Canada H9R 1H1

Pyramid Transit Products Ltd. are designers and manufacturers of ship windows and shutters. They also

Telephone (514) 694-3631

produce clear view screens, portlights and work hatches.

Pyramid Transit also designs and produces specialised windows for surface transport vehicles—rail, road and off-road.

Queensboro Hydraulic Ltd.,
Foot of Spruce Street,
New Westminster, British Columbia
Canada V3M 5A6
Telephone (604) 524-2631

Queensboro Marine Equipment Ltd.,
Foot of Spruce Street,
New Westminster, British Columbia
Canada V3M 5A6
Telephone (604) 524-2631

Rolls-Royce (Canada) Ltd.,
P.O. Box 1000, Montreal AMF,
Montreal, Quebec
Canada H4Y 1B7
Telephone (514) 631-3541 Telex 05-821882

The Industrial & Marine RB.211 is derived from the Rolls-Royce aero RB.211 which powers the Lockheed L-1011 "Tristar".

The Rolls-Royce Marine RB.211 gas turbine propulsion package consists of the high efficiency two spool RB.211 gas generator connected to a long-life two stage free power turbine.

Two types of air intake systems for the gas generator are offered to suit various ship configurations, a horizontal or a vertical type intake.

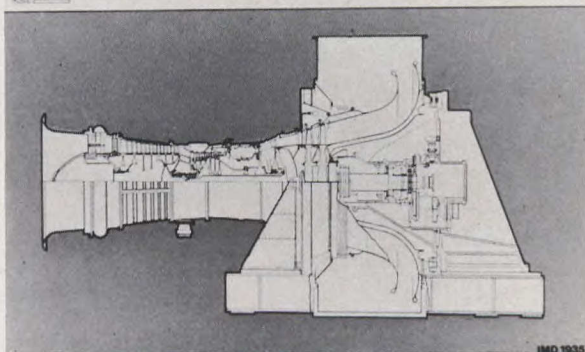
An acoustic hood over the gas generator provides sound attenuation to 85 dBA at 1.5 metres while allowing access for maintenance. The hood is pressurized to meet fire safety requirements and provided with an automatic fire extinguishing system.

The exhaust gases leave the power turbine via the exhaust volute and diffuser. The volute may be mounted at any angle $\pm 60^\circ$ from the vertical to suit ship layout.

The entire package is mounted on a rigid base frame which also provides mountings for a primary



Rolls-Royce Marine RB 211



reduction gear if required. Attachment between the base frame and ship seatings is by resilient mounts.

The package includes a self-contained gas generator lubricating oil system and a separate power turbine lubrication system which can be integrated with the primary gearbox lubrication system if required.

Maximum power output from the Marine RB.211 is 29,200 shp under ISO conditions. At this rating, thermal efficiency is 34.8%.

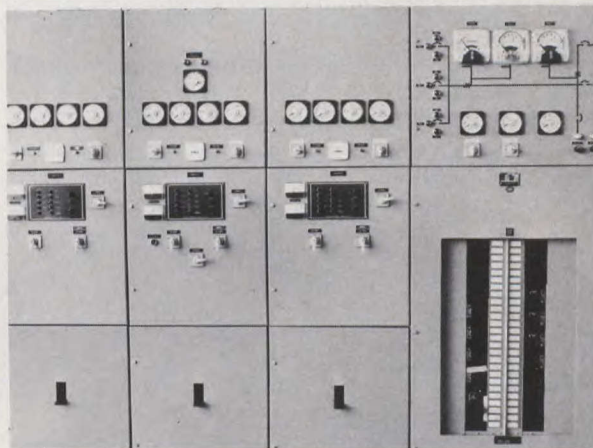
Schmidtec Power Systems Ltd.,
3941 Grant Street,
Burnaby, British Columbia
Canada V5C 3N4
Telephone (604) 291-8912

Schmidtec Power Systems Ltd. is a western Canadian manufacturer of electrical control and power equipment, specifically designed to cater to the power generation market. Schmidtec also produces a wide range of electronic devices which are employed in logic and sensing applications, and which integrate with conventional devices in power control systems.

As specialists in the marine electrical power field, Schmidtec is capable of the design, manufacture, testing, and repair of switchboards and generators. As well, Schmidtec will supply and service static equipment such as battery chargers, voltage regulators, inverters, etc.

All equipment manufactured by Schmidtec Power Systems will be produced in strict accordance with the required regulatory authorities, including CSA, IEEE, and CSI. Quality control is stressed in all phases of design and construction, to ensure a final product of outstanding finish and reliability.

Schmidtec has qualified service personnel available to undertake repair procedures on electrical



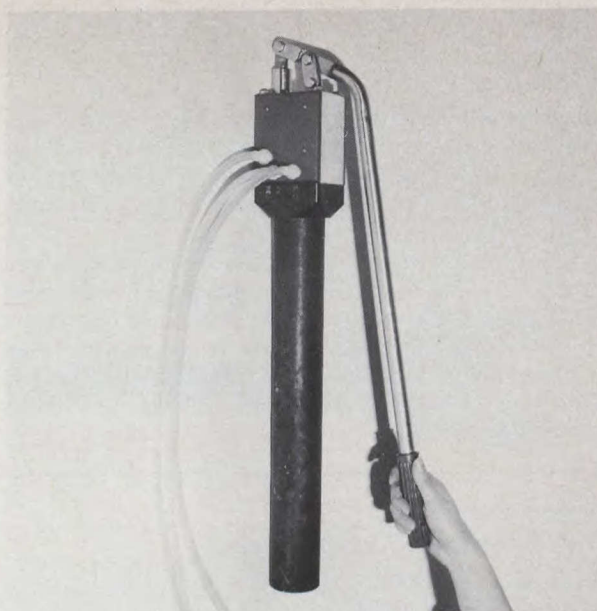
switchboards and generating equipment, including engine governing systems, generator voltage regulation equipment, synchronizing apparatus, engine alarm systems, power distribution equipment, etc. Service and parts are available on an emergency basis.

Seagold Industries
4008 Myrtle Street,
Burnaby, British Columbia
Canada V5C 4G2
Telephone (604) 437-4445 Telex 04-356682

Seagold Industries was formed in 1978 to develop patented* energy recovery pumps which enable it to market efficient reverse osmosis desalination systems. Reverse osmosis has become a very competitive process for seawater desalination as membrane performance and reliability have achieved high standards in recent years.

To date Seagold has developed a range of products from a 25 gallon per day hand pump for emergency survival or recreation use to a 10,000 gallon per day unit. The 25 gallon per day hand pump is at the commercial production stage, the 200, 500 and 1500 gallon per day units are at the working prototype stage, with a 10,000 gallon per day unit being in the prototype assembly stage. Extensions to 50,000 and 100,000 gallon per day units are envisaged.

* Patented world-wide



Seaspan International Ltd.,
10 Pemberton Avenue,
North Vancouver, British Columbia
Canada V7P 2R1
Telephone (604) 988-3111 Telex 04-352532

With more than a century of experience, Seaspan International Ltd., Canada's most diversified tug and barge organisation, provides a wide range of services along the West Coast of North America from Mexico to Alaska.

Seaspan's fleet of 47 tugs, 2 self-propelled rail carriers and 253 barges are engaged to the movement of logs, pulpwood chips, petroleum, chemicals, pulp, paper, lumber, limestone, gypsum, salt, other bulk commodities and rail cars as well as deep sea salvage and towing.

A subsidiary company, Seaspan Development Co. Ltd. (SEADEVCO) specialises in consulting services for tug and barge transportation studies. Custom services



range from feasibility studies to the development and operation, on a turnkey basis, through to transportation systems.

Seaspan has also been in the forefront of the towing of construction materials and supplies from world ports into the Canadian Arctic, primarily for the petroleum exploration industries.

Sea-Tec Fabricators Ltd.,
12220 2nd Avenue,
Richmond, British Columbia
Canada V7E 3L8
Telephone (604) 271-7422

Sea-Tec Fabricators Ltd. has been supplying the fishing industry in Canada with all the hydraulic and deck machinery requirements for the past five years. Over these years we have completed an average of twelve complete installations of such items as deck winches, seine drums, anchor winches, mast and booms and all the hydraulic equipment needed to operate these vessels.

We have a complete machine shop and manufacture all the machinery we supply. We also specialise in aluminum welding both on and off these vessels.

We have exported self spooling longline drums to



Alaska and Florida in the USA and have recently supplied the deck machinery and hydraulics for a cargo vessel built by Breton Industrial and Marine Ltd. in Nova Scotia. This vessel is operating in Bermuda waters.

We also supplied two combined towing bitts and capstan winches built for two government high speed vessels now under construction by the same company.

We also manufacture a pressure compensated flow control valve with a capacity of 100 G.P.M. @ 3000 psi. This valve is made for the marine industry and for all weather conditions.



Sihi Pumps Ltd.,
225 Speedvale Avenue West,
Guelph, Ontario
Canada N1H 6L8
Telephone (519) 824-4600

**Branch: Sihi Pumps Inc., 303 Industrial
Blvd., Grand Island, NY 14072, USA**

Solidur Plastics Canada Co.,
19 Constellation Court,
Rexdale, Ontario
Canada M9W 1K4
Telephone (416) 675-6285
Branch: 5940 2nd Rd., Richmond,
B.C. V7C 4R9

Solidur manufactures and fabricates ultrahigh molecular weight polyethylene—a low coefficient of friction, high impact- and abrasion-resistant plastic which is used in the Marine Industry for hopper linings in self-unloading vessels, conveyor idler coverings, chute liners and belt scrappers. It is also used in dock bumpers and fenders and dredge spud well linings.

The slippery and impact- and abrasion-resistant qualities of Solidur UHMWPE have proved extremely successful in shipping—including the Great Lakes trade.



The resin is produced in the United States and West Germany and then compounded in the Canadian company's U.S. subsidiary and fabricated and installed in Canada.

Spilsbury Communications Systems,
120 East Cordova Street,
Vancouver, British Columbia
Canada V6A 1L1
Telephone (604) 684-4131 Telex 04-55482

Since 1941 Spilsbury Communication Systems has been manufacturing communications equipment for service at sea, on land, or in aircraft. Based on this experience and on latest technology an entirely new line of high frequency single side band equipment has been designed. This series of radiotelephones is designed to Canadian Department of Communications Specification RSS 125 and to American Federal Communications Commission Rules. These light-weight, rugged units offer the user a choice of power from 100 to 150 watts, up to 24 channels, and may be operated in voice, morse code or radioteletype transmission modes.

In order to offer a complete communications



package, Spilsbury Communications Systems has also developed a family of pre-programmed, full automatic, self tuning, multi frequency marine antennas designed to take advantage of the benefits of centre loading which provides increased effective radiated power in comparison with conventional base loaded antennas of the same height. The STA-500 series of antennas of patented design are servo controlled and can be installed in a fraction of the time required for conventional marine high frequency antennas.

It should be noted that these antennas are not restricted to maritime use but can be used for land fixed or mobile applications.

In addition to designing and manufacturing radio systems Spilsbury Communication Systems can furnish complete Research & Development and Consulting Services.



Steadman Containers,
150 Glidden Road,
Brampton, Ontario
Canada L6W 3L2
Telephone (416) 456-9700 Telex 06-97536

Designed to meet international standards adopted by every major trading nation, a container is not likely to become obsolescent. It must be built to withstand heavy wear at sea, over the road and on the rails. Its only moving parts are the door hinges and locks.

Steadman is building containers that will serve you perhaps not forever, but longer, much longer. And cost you less to keep looking like new. Our containers are built with many standard features almost no other manufacturer offers, and some that we believe are unique:

Steadman steel containers are made of USS COR-TEN "A" steel—roof, side walls and doors. The floor crossmembers are of high-strength rolled I beams.

The high-strength COR-TEN steel increases dent resistance—it has a 40% higher yield point than carbon steel. We use flat 2 mm (14 ga.) COR-TEN sheet in the roof, 1.5 mm (16 ga.) sheet in the corrugated walls



and doors. The roofs are cambered to provide positive drainage.

Our COR-TEN steel containers are 5 to 8 times as corrosion resistant to severe marine and industrial atmospheres as structural carbon steel. Paint and protective coatings will last up to twice as long. If paint is chipped or scratched, the steel creates its own protective oxide coating until the container can be returned for touch-up repair.

Stephens-Adamson,
Division Allis-Chalmers Canada Ltd.,
P.O. Box 5900,
Belleville, Ontario
Canada K8N 5C8
Telephone (613) 962-3411 Telex 06-62229

Stephens-Adamson is the major supplier of high capacity dry bulk materials handling systems for self-unloading vessels, with more than 75 years' experience in the design and production of bulk material handling equipment. S-A has supplied over 60 systems for Great Lakes and deep sea vessels, with unloading rates up to 10,000 tons per hour.

The S-A Research Department has been responsible for the development of improved materials handling equipment and methods, including the revolutionary Stephens-Adamson Loop Belt Elevator. Featuring high capacity, low maintenance costs, minimal space requirements and machinery weight, this pat-



ented system maximises the cubic content and cargo carrying capability of the vessel. Dependable performance has been proven with more than 30 systems in operation since introduction in 1971.

Surette Battery Co. Ltd.,
P.O. Box 2020,
Springhill, Nova Scotia
Canada B0M 1X0

Telephone (905) 597-3767 Telex 019-33555

Telemechanique Canada Ltd.,
580 Lepine Avenue,
Dorval, Quebec
Canada H9P 1G2
Telephone (514) 636-9560 Telex 05-821849

Branches: 303 Lesmill Rd., Don Mills, Ontario • 500 Béchard, Ville Vanier, Quebec

Telemechanique is a world wide manufacturer of electrical motor controls and pilot devices. We have 26 manufacturing plants and are represented in 70 countries.

Our head office is located in Rueil-Malmaison in France and the Canadian subsidiary has its head office in Montreal. Our plant in Canada manufacture 600 VAC or DC contactors.

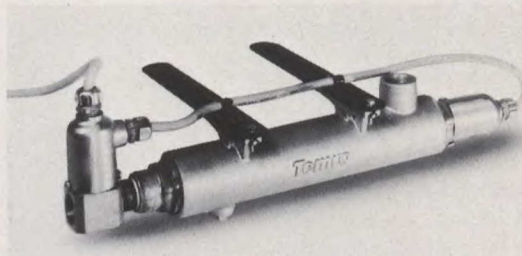
Temro Automotive.
Division Budd Canada Inc.,
P.O. Box 962,
Winnipeg, Manitoba
Canada R3C 2V3

Telephone (204) 452-2005 Telex 57607

When it comes to designing and manufacturing heating elements and cold weather starting aids for engines, few countries in the world can challenge Canada's supremacy as a natural testing ground. The Temro Division of Budd Canada Inc. offers extensive ranges of cold weather aids for engines. They are backed by over 60 years' experience in providing products that function efficiently in severe climatic conditions.

The company is known also for its high performance Cowl exhaust silencer. Using a unique spiral concept, high attenuation is achieved at very low back pressures. Size and weight are less than half those of units with a comparable performance. Cowl offers a variety of configurations which allow great flexibility of installation.

Leading manufacturers of original equipment



around the world specify Temro Products, which include oil heaters, coolant circulation heaters, engine coolant immersion heaters, ether starting systems, propane heaters, battery warmers and interior car warmers. Temro heating elements are supplied for special purpose applications in all wattages, voltages and sheath materials.

W. A. Thom Ltd.,
245 Fell Avenue.
North Vancouver, British Columbia
Canada V7P 2K1

Items produced for the shipbuilding industry include heating and ventilating systems, tanks, rudders, masts, approved weathertight doors, deck houses, ventilators and stainless steel galley equipment.

Our 20,000 sq. ft. plant is well equipped to produce fabrications in stainless steel, aluminum and mild steel for the industry.

Custom work includes dewatering equipment used in the harvest of herring, bucket elevators, conveyors and barge mounted siphon systems for fast, efficient unloading of fish boats.

Telephone (604) 980-3477 Telex 04-352690

A recent project included two articulated passenger gangplanks, constructed in four sections. The units are complete with electric winch for raising and lowering and hydraulic system for folding and unfolding. This gangplank can be deployed onto the dock in about 90 seconds. This design permits the complete unit to fold up inside a small compartment in the ship's side.

This company provides fabrication and repair services to the pulp and paper, saw mill, mining and manufacturing industries.

Thomson-Gordon Ltd.,
3225 Mainway,
Burlington, Ontario
Canada L7M 1A6

Thomson-Gordon Ltd. began in 1911 as the G. J. Thomson Company, selling packings and engineers'

Telephone (416) 528-0185 Telex 061-8757

supplies. Over the years leather and rubber products were added and, by the 1930s, the firm was manufac-

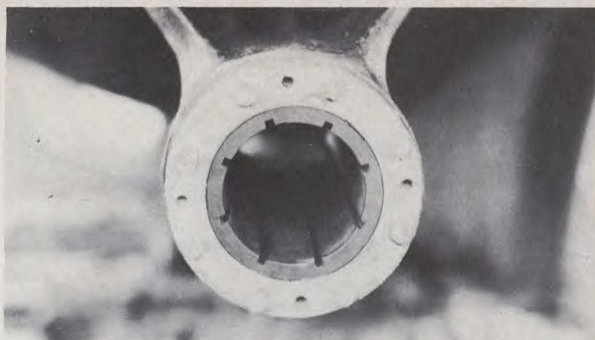
turing a limited line of products.

In 1979 Thomson-Gordon integrated into one facility its research and development, engineering, machine shop, rubber manufacturing and bearing production departments.

The company's Thordon elastomer bearings have been proved over a number of years in industrial and marine service applications. Unlike rubber bearings which require expensive custom molding, Thordon bearings are custom machined from stock on a standard lathe.

Machined to interference fit, these bearings are so tough they can actually be installed with a sledge hammer. The outstanding elastomer properties of Thordon, a fully reacted proprietary polymer blend developed by Thomson-Gordon, result in superior service performance. The interference fit eliminates need for adhesives, set screws, keeper strips, axial compression and other locking devices.

Thordon's ability to handle high bearing pressures produces some basic design advantages. For example, where permissible, finished bearing length can be designed shorter in proportion to the shaft diameter. Self-lubricating Thordon XL bearings also eliminate the cooling water systems required for typical rubber



designs.

Under operating conditions, Thordon shows very little water swell and is not damaged by oil. Its absorption resistance compared with more familiar plastic products, makes it exceptionally stable dimensionally. Unlike rubber, it can operate for limited periods without lubrication due to its low dry dynamic coefficient of friction.

Thomson-Gordon's broad experience is available to assist in the design, tolerances and applications of its marine bearings.

Thorn Lighting Canada,
1400 Meyerside Drive,
Mississauga, Ontario
Canada L5T 1H2
Telephone (416) 677-4248

Branches: 4632 Boulevard Thimens, St.
Laurent, Quebec • 6908 6th Street S.E.,
Calgary, Alberta • 956 Richards St.,
Vancouver, B.C. • 600 Pine Glen Road,
Riverview, New Brunswick

Thorne Stevenson & Kellogg,
2300 Yonge Street,
Toronto, Ontario
Canada M4P 1G2

Thorne Stevenson & Kellogg is a Canadian-owned management consulting company whose clientele reflects a broad cross-section of organisations in both the private and public-sectors. While the firm's client base is primarily in Canada, it has conducted major assignments in the United States, Europe, Latin America, Asia, Africa and the Caribbean.

As strong project managers and fisheries consultants, Thorne Stevenson & Kellogg has performed a number of major feasibility studies including the development of complete master plans for proposed fishing projects. These projects included features such as

Telephone (416) 422-1521

international market analysis, plant design and costs, fleet design and infrastructure considerations. In addition, our company has conducted many studies in the related areas of food marketing, harbour and ports administration and physical distribution.

Thorne Stevenson & Kellogg has assisted the management of a number of Canadian fishing companies in the development of techniques in trawler operations and fish processing. These assignments included work in methods improvement, quality control process development, factory layout, evaluation of equipment and organization planning.

Topper Floats Ltd.,
7690 Hopcott Road,
Delta, British Columbia
Canada V4K 3N3

Telephone (604) 946-1301 Telex 043-51219

Three Island Steel Co Ltd.,
Wire Rope Division
PO Box 50,
New Westminster, British Columbia
Canada V3L 4Y1

Telephone (604) 524-3744 Telex 04-54649

Tree Island Steel Co. Ltd. has for many years been a leader in the production of wire drawn products such



as nails, weldmesh, stucco mesh and a host of other products.

Several years ago, Tree Island invested heavily in the most modern wire rope machinery to meet the demanding requirements of the Marine, Offshore Mining and Drilling, Towing, Land Mining and Logging industries. We have several rigging shops in the B.C. area and Seattle so that we may supply ropes complete with fittings and wire rope slings.



Tri-Services L.A.S. Ltée.,
440-19th Avenue,
Lachine, Quebec
Canada H8S 3S2
Telephone (514) 634-7247
Affiliate: LISA 87 Main St., Champlain,
NY 12919, USA

Tri-Services was established in February 1976 and has since been engaged in the fabrication of specialized service equipment for the fire protection and life safety industry.

Our first product, the Totale Dry Chemical Trans-

fer System, has been designed and developed to cover all aspects of environmental control in the dry powder (fire fighting chemicals) industry.

This product is now being used extensively by the Department of National Defense, Ministry of Transport, practically all major oil companies, Fire Departments and many major industries throughout Canada and the United States, even as far as Australia. We have various other new products which are in prototype and planning stages which will be ready for marketing within the next year.

Velan Engineering Ltd.,
2125 Ward Avenue,
St. Laurent, Quebec
Canada H4M 1T6
Telephone (514) 748-7743 Telex 05-825668

Velan is one of the world's largest manufacturers of valves and steam traps for marine use, chemicals, oil refining, petrochemical, cryogenics, thermal and nuclear power.

It offers a complete line of forged and cast gate,

globe and check valves in sizes 6.350 mm (1/4") to 609.6 mm (24") and pressure classes of 68.2 kg to 316.4 kgf/cm² (ANSI # 150-4,500).

It also offers a complete range of steam traps from 0 to 176 kgf/cm² (0 to 2,500 PSI).

Velan has three manufacturing plants in Montreal, Canada, and subsidiary plants in Vermont, U.S.A., Leicester, England, Paris, France and Hagwinkel, West Germany. Velan is serviced by a world-wide network of agents and distributors on five continents.

Volcano Inc.,
2020 St Anne Street,
Ste Hyacinthe, Quebec
Canada J2S 5H2

Telephone (514) 774-5326 Telex 05-830545

Wagner Engineering Ltd.,
40 Gostick Place,
North Vancouver, British Columbia
Canada V7M 3G2

The products of Wagner Engineering Ltd. have an international reputation developed through strong personal communications and long experience meeting the demands of specific markets. The distribution network comprises over 60 countries, with representatives

providing sales, service, and technical assistance.

The inventory of Wagner forms the largest selection available from any single manufacturer of hydraulic steering equipment. And Wagner is 100% Canadian.

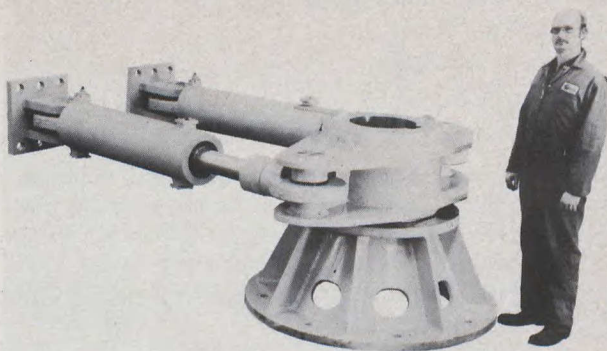
Five separate types in more than 60 sizes mean that nearly every customer requirement can be met with standard stock components. Applied torque ranges from 53 kg.m in the small manual gear to 1600 T.M in

the electro-hydraulic systems.

A wide range of control equipment is available enabling the entire steering system to be obtained from one source. This sole responsibility guarantees the compatibility of all components.

Custom equipment requirements, often the case in marine design where the size and shape of ships are as varied as conditions of the sea, are managed as efficiently as standard product requirements and usually can be built from the wide variety of stock components available. This allows faster delivery and better pricing on special orders.

Wagner also offers a broad selection of electronic navigational equipment and accessories.



**Wallace & Tiernan Division,
Penwalt of Canada Ltd.,
925 Warden Avenue,
Scarborough, Ontario
Canada M1L 4C5
Telephone (416) 751-7561 Telex 06-963513**

Wallace & Tiernan Division of Canada through its affiliate, Automatic Power, Incorporated, markets a range of marine equipment. The company has over 50 years of marine signal experience and port aids to navigation systems.

The product line consists of sound signal systems, fog signals, xenon light systems for lighthouse service, alarm systems, solar energy systems (photovoltaic), daymarks and underwater acoustical equipment.

The company has offices in Canada, Mexico, U.S.A., Brasil, England and Australia.



**Waterway Manufacturing Ltd.,
5431 Minoru Boulevard,
Richmond, British Columbia
Canada V6X 2B1
Telephone (604) 273-0036**

Waterway Mfg. Ltd. is a young company situated in Western Canada with a branch office in Ontario. Its executives, with years of experience in the Marine Window field, are continually designing and engineering new ideas for their marine window products.

Waterway manufactures three lines of high quality windows and doors.

Series 500—designed for pleasure craft and smaller vessels.

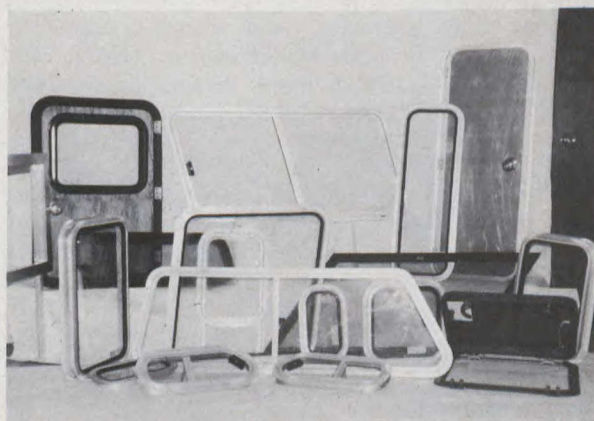
Series 5000—designed for work boats and larger fishing vessels.

Series SW 100—designed for larger ships.

Waterway windows are built from high quality Marine Aluminum extrusions with radius corners and glass thickness from 6 mm to 18 mm glass.

Weathertight doors are built of Marine Aluminum

Branch: P.O. Box 893, Sarnia, Ontario



with foam core insulation in single piece or Dutch style.

Waterway Mfg. Ltd. a Canadian owned company welcomes the opportunity to supply further information or details.

K. W. Wilk Associates Ltd.,
34 Capital Drive,
Nepean, Ontario
Canada K2G 0E9
Telephone (613) 225-9570 Telex 053-3521

K. W. Wilk Associates Limited design, manufacture and installation of Marine Communication Systems for the Ministry of Transport 'Canadian Coast Guard Branch', National Defence Department, Shell Oil Limited, Dome Petroleum Limited and Federal Commerce and Navigation.

The following ships have been supplied: The Coast Guard Ships—*Louis S. St. Laurent* Icebreaker, *Normand McLeod Rogers* Icebreaker, *Griffon* Icebreaker, *Barlett* Buoy Vessel, *Provo Wallis* Buoy Vessel, *Labrador* Icebreaker, *Alert* Search and Rescue Vessel, *Robert Foulis* Supply Vessel, *McKenzie* Supply Vessel, *James Douglas* Supply Vessel, *Camsell*, *Montcalm*, *Walter E. Foster*, *Sir William Alexander*, *Montmorency*, *Alexander Henry*, *Pierre Radisson* Icebreaker, *Franklin* Icebreaker, *Namao*, *Tupper*, *Tracy*, *Sir Humphrey Gilbert* and *John Cabot*.

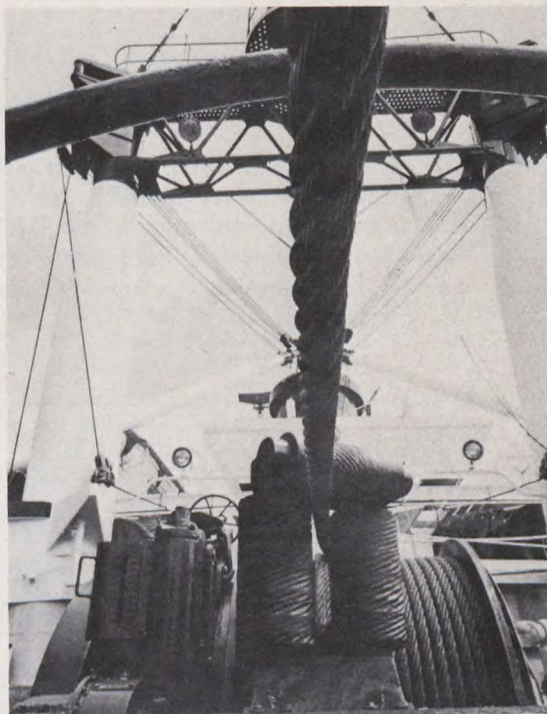


Wrights Canadian Ropes Ltd.,
2551 No 6 Rd.,
Richmond, British Columbia
Canada V6V 1P3
Branch: 5503-82nd Avenue, Edmonton,
Alberta T6B 2J6

The quality of wire ropes manufactured by Wrights Canadian Ropes Ltd. meets the most exacting standards for strength, toughness, flexibility, fatigue and abrasion resistance. The steel wire used is drawn to the strictest specifications and every coil is thoroughly tested to ensure that it complies with those high standards.

The company's galvanized ropes are designed and constructed to withstand the most demanding tasks of marine service and are lubricated to improve resistance to salt water corrosion. The constructions chosen combine correct flexibility with abrasion resistance and strength so as to provide the marine industry with some of its most reliable ropes. Adequate stocks are carried by the company to fill the needs of all replacements and new installations.

Wrights Canadian Ropes supplies galvanized wire rope with certificates to meet Lloyd's Registry of Shipping, Bureau Veritas and the American Bureau of Shipping as well as Canadian Ministry of Transport requirements.

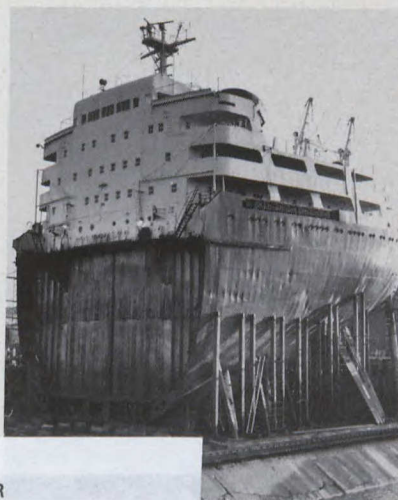


Xzit Chemicals
Division Ardrex Ltd.,
P.O. Box 814,
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Canada L2R 6Y3
Telephone (416) 684-1800

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complete Port Arthur dry dock repair facility).

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