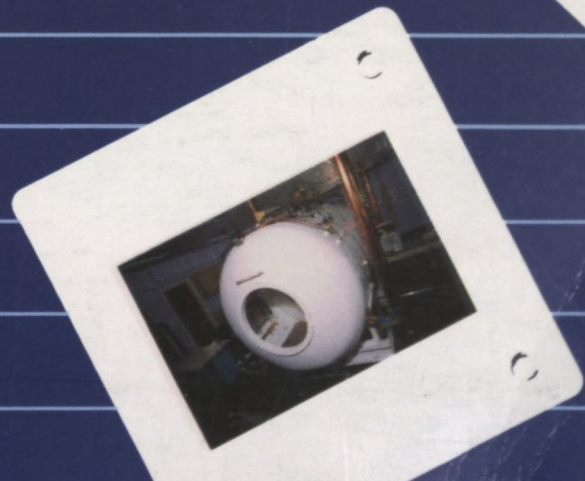
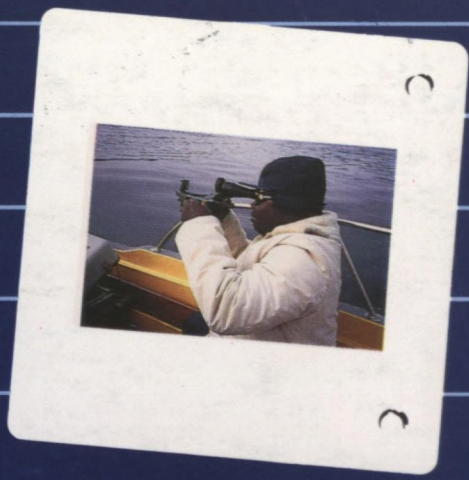


stor
CA1
EA409
87C15
ENG

OCEAN INDUSTRIES *PRODUCTS AND SERVICES FOR WORLD INDUSTRIES*



External Affairs
Canada

Affaires extérieures
Canada

b2259977(E)

Dept. of External Affairs
Min. des Affaires extérieures

OCT 16 1980

RETURN TO DEPARTMENTAL LIBRARY
REPOURNER A LA BIBLIOTHEQUE DU MINISTERE

43-253-722

CANADA'S OCEAN INDUSTRIES PRODUCTS AND SERVICES FOR WORLD INDUSTRIES



■ The search for products and services in the oceanic industries can often be a time-consuming and arduous task. However, this directory has been designed to allow the reader to identify potential suppliers – first in an alphabetical listing and profile of all the companies with product and/or service offered, together with address and contact person. Following that section are three appendices which: (1) list the manufacturers of products and systems; (2) list the companies that offer services and consultants; and (3) identify the companies by category of product or service available.

For more information

Please feel free to contact the company itself or the Canadian trade commissioner at the nearest Canadian embassy or consulate. You may also write to:

Oceanic Industries – Products and Services
USA Trade and Investment Development Bureau
Department of External Affairs
125 Sussex Drive
Ottawa, Ontario
Canada K1A 0G2

or

Automotive, Marine and Rail Branch
Department of Regional Industrial Expansion
235 Queen Street
Ottawa, Ontario
Canada K1A 0H5

■ **Note**

This directory is designed to acquaint foreign buyers with Canadian exporters of oceanic industries' products and services. It is not intended to be a definitive listing, although every effort has been made to include all Canadian exporters. The product and service information was provided by respondents to queries sent to all known exporting Canadian ocean industry companies.

Acknowledgements

We wish to express appreciation to the officers of the Automotive, Marine and Rail Branch, federal Department of Regional Industrial Expansion, Ottawa, and to the national and regional liaison officers of the federal Department of Fisheries and Oceans, for their invaluable support and assistance in the production of this publication.

United States Trade and Investment Development Bureau
Department of External Affairs

Introduction	4
Company Profiles	7
Appendix I Oceanic Products Manufacturers	68
Appendix II Oceanic Services Firms	68
Appendix III Company Categories	69



Introduction

Background

Canada owes much of its development to its waterways and oceans. The rivers and lakes were the highways of yesterday and are still the nation's lifelines of transportation. Canada's coastlines are bordered by three oceans whose waters and sea-floor hold vast wealth. The Atlantic continental shelf has the world's richest fishing grounds. Huge reservoirs of oil and gas lie in the seabeds of the Canadian zones of both the Atlantic and Arctic oceans.

For more than 100 years, Canadians have developed their capabilities to explore and exploit their marine and freshwater resources. In a variety of frequently hostile environments, challenged by immense distances and an often difficult climate, innovative solutions to unique problems were essential.

In doing it the hard way, Canada has built an oceanic manufacturing and services industry of considerable size, diversity and experience. Equipment has to meet high standards of reliability. It must work in the -40°C temperatures of the long polar nights. Supplied by air to many field operations, instrumentation and products are necessarily strong, portable and compact.

Development of new technologies has been matched by the creation of multidisciplinary oceanic capabilities to provide services for the marine, offshore and coastal sectors. The long-established marine sciences expertise has, since the early 1970s, been expanded into the full range of products and services required to supply the offshore exploration, development and production markets.

The ocean industries grew quickly: between 1970 and 1986 total yearly sales rose from a few million to \$500 million; approximately 60 per cent or \$300 million were exports. As a result, Canada has become a world leader in the international oceanic sector.

Canadian Exporters

This directory describes more than 133 large and small Canadian firms with first-rate services and superior products available to private and public sector customers outside Canada. They are listed in alphabetical order, with an index of companies by product or service.

Manufacturers

Canadian manufacturers set the world standard for advanced communications – voice or data, underwater or over long distances. Their oceanographic systems are designed to operate unattended for long periods, capture data and transmit information in real-time. They have

developed space-suit-like diving gear capable of deeper dives with enhanced mobility. Incorporating advanced robotics, their submersibles and remotely operated vehicles (ROVs) are used worldwide by exploration companies, scientists, power and pipeline firms alike.

Canadian radar and sonar for navigation, remote sensing, or geophysical applications, is available for use aboard ships, aircraft or satellites, as are the latest solid state navigation and positioning systems. In addition, more than 80 of the firms listed offer research and development, either on contact or through a joint venture; many of these have well-equipped laboratories and test facilities.

Services

Canada's ocean services sector is internationally recognized for its performance in an extensive range of engineering, science, consulting and survey tasks in marine environments. In particular, Canadian firms are known for their willingness to customize technology to client requirements.

They offer the skills for marine and environmental assessment work under all conditions of ocean investigation in 20 disciplines and 60 specialties. Canadians specialize in offshore development planning – particularly for the new Exclusive Economic Zones of coastal states, which must be delineated under the United Nations Convention on the Law of the Sea (UNCLOS); in pollution and environmental studies; in computer modelling of environmental factors influencing oil spills; and in marine installation design. Canadians are also the

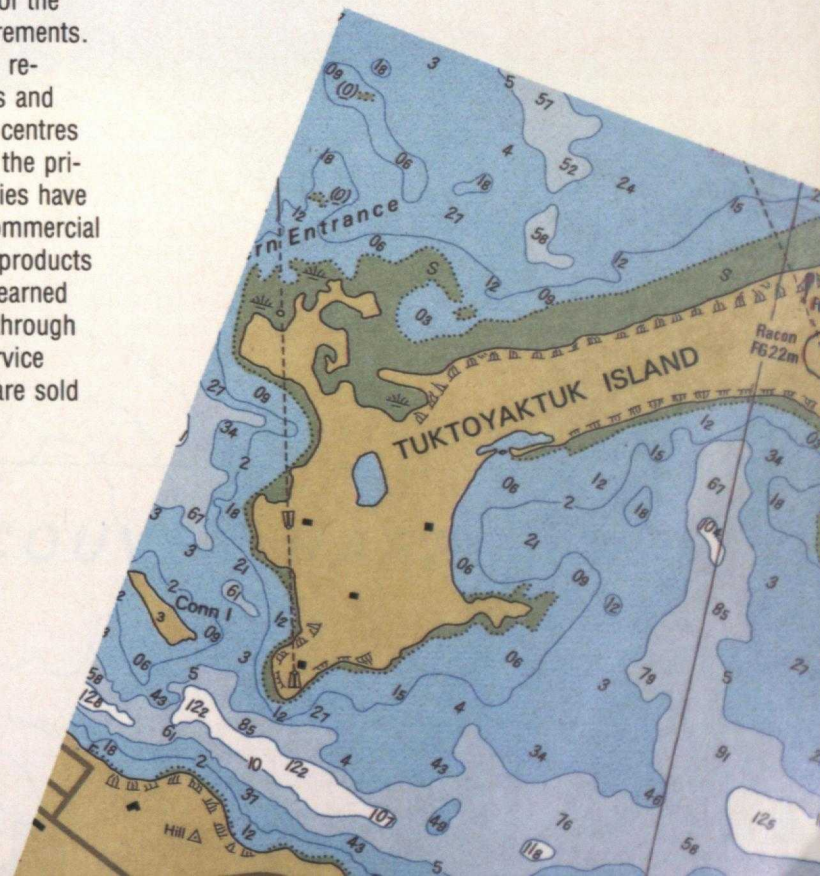
world's most expert and cost-efficient hydrographers and cartographers; and their marine survey crews are supported by entire microwave, radio and satellite systems.

Sharing the Knowledge

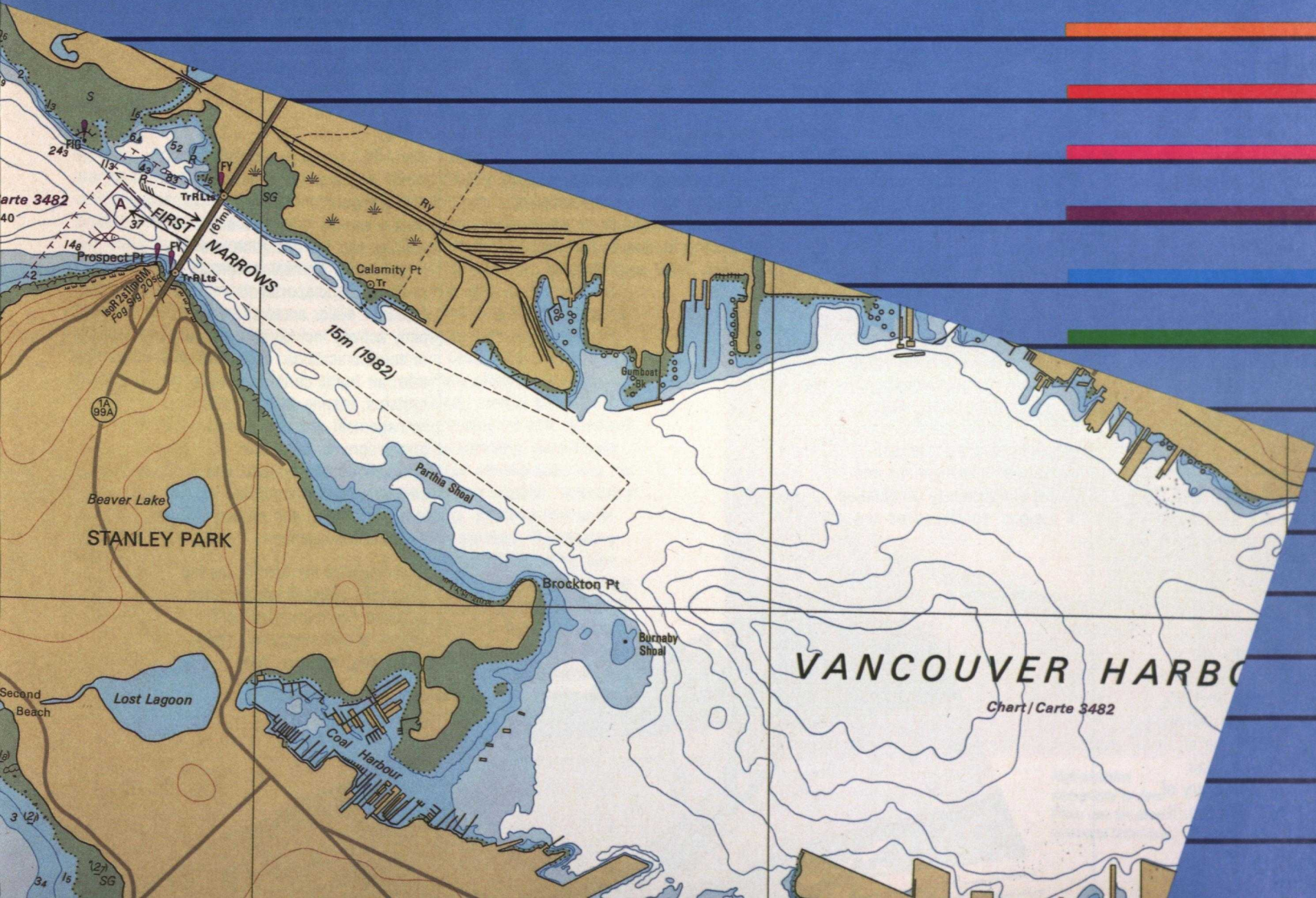
All the companies listed in this directory export their products and services to many countries, including the United Kingdom, France, Norway, Italy, Australia, the ASEAN countries (Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand), as well as China and Japan. The success enjoyed in exporting by these companies is the result of the advanced technology they have developed and the training services they provide for local managers and technicians.

Federal Support

The Canadian government has supported the development of the ocean industries by funding extensive research and development and by contracting out to private firms for much of the continuing public requirements. Canada maintains three renowned ocean institutes and two freshwater science centres with strong linkages to the private sector. These policies have stimulated increased commercial innovation. The result: products and services that have earned an enviable reputation through ongoing design and service improvement and that are sold worldwide.



COMPANY PROFILES



Able Dive Company Inc.
 671 Janette Avenue
 Windsor, Ontario
 Canada N9A 4Z8
 Tel: (519) 252-8539
 Telex: 037-4482

Contacts:

R. Stacey, President
 D. Stacey, Secretary/Treasurer

Able Dive provides professional underwater service, including dive support services, to marine contractors, government agencies, research institutes, and marine operators. Able Dive will perform inspections of completed projects (break walls, docks, hulls, etc.). General surveys and documentation, structural surveys, search/recovery, maintenance and repair procedures, underwater hull inspections and cleaning, in-water propeller replacement, intake and discharge clean-outs, and piling (spile) removal are some other services offered by the company. It emphasizes rigid safety standards (CSA) and applied expertise and is available 24 hours a day, seven days a week on an hourly, daily, or fixed-rate basis. As an example of the company's skills, in 1985 Able Dive supervised the "environmentally safe" clean-up of the toxic blob in the St. Clair River, for the Ontario Ministry of the Environment. On that job, it logged over 600 safe dives.

Acres International Limited
 480 University Avenue
 Toronto, Ontario
 Canada M5G 1V2
 Tel: (416) 595-2027
 Telex: 06-217815 ACRES TOR

Affiliates:

Acres International Corporation,
 Buffalo, NY, U.S.A.;
 Anchorage, AK, U.S.A.;
 Washington, DC, U.S.A.

Contact:

I.W. Graham, Manager,
 International Marketing

Acres International Limited is a major international consulting engineering company that has provided consulting services for marine and heavy civil engineering projects to government and industry throughout North America and the world. The services have covered all aspects of marine and heavy civil projects from the conceptual planning and siting study stage, through preliminary engineering, feasibility studies, cost estimates, site investigations and model simulation to preparation of designs, specifications and

construction supervision and management. The projects have varied in size from the smallest economic, hydraulic or other specialist studies to full multi-million dollar developments.

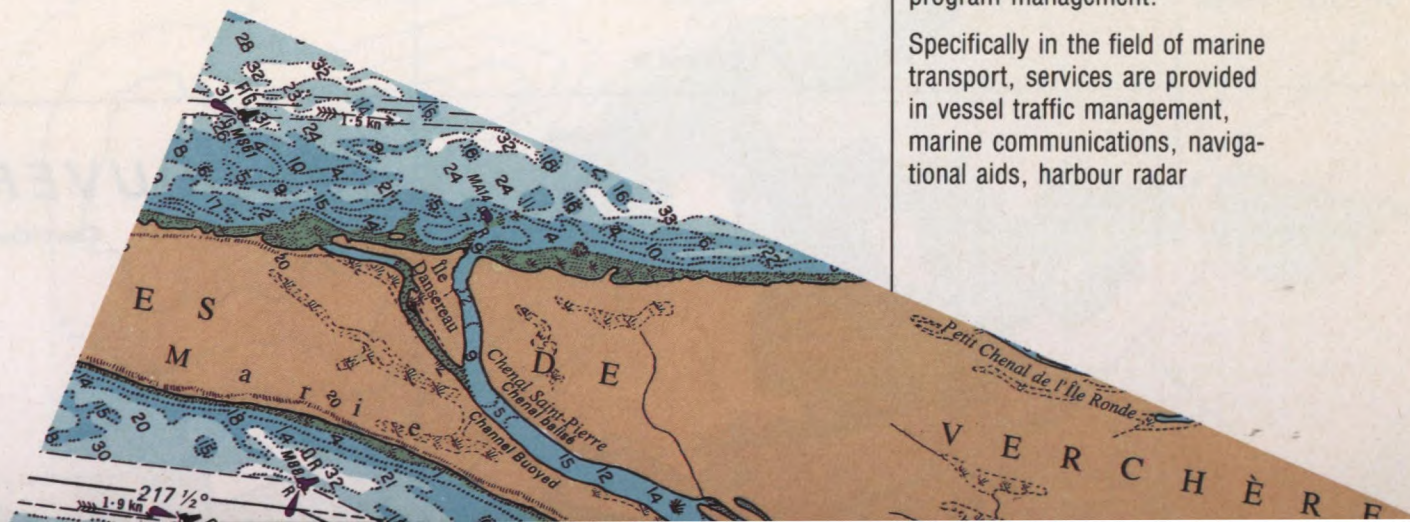
ADGA Systems International Ltd.
 400 - 116 Albert Street
 Ottawa, Ontario
 Canada K1P 5G3
 Tel: (613) 237-3022
 Telex: 053-4568 ADGAOTT

Contacts:

J.K. Burke, Director,
 Business Development, and
 Export Manager
 A.D. Gagnon, President

The ADGA group is a professional engineering organization with a reputation for high quality service in system engineering and the operation and maintenance of major communication and transportation facilities. Major areas of company activity include all aspects of communications; navigation aids; air traffic control; satellite systems; marine vessel traffic management and communication programs; computer applications and systems and software development; and system engineering and project/program management.

Specifically in the field of marine transport, services are provided in vessel traffic management, marine communications, navigational aids, harbour radar



Aero Photo Inc.
1975 Charest Boulevard West
Sainte-Foy, Quebec
Canada G1N 2E6
Tel: (418) 683-2231
Telex: 051-31523 GEOAIR

Contacts:

Maurice Gaudreault, President
Michel Pigeon, Vice President

systems, automated displays, marine simulators, coastal surveillance and hazard detection systems. Additional comprehensive consulting services are made available through working associates and affiliated consultants. ADGA offers these services and training internationally for both civil and military clients.

■ Aero Photo Inc. provides aerial photography, geodesy, geophysical surveys, photogrammetry and reprography to clients in 23 countries around the world. For aerial photography, Aero Photo has four Aero Commander aircraft and Wild RC-10 cameras, equipped with wide-angle and super wide-angle lenses. Types of survey offered are conventional, inertial and satellite. Using analogical and analytical photogrammetry, Aero Photo turns raw photographs into numerical calculations, volumetry, mapping, profiling and other specific surveys. Digital mapping, orthophotography, biostereometry and projects in applied research are undertaken. The company has specialists in monochrome and color mapping and thematic cartography. In geophysics, Aero Photo uses radiometric, spectrometric, electromagnetic and aeromagnetic surveys in the international search for mineral and petroleum resources.



*High-precision
cartography by Aero
Photo uses the latest
automated techniques.*

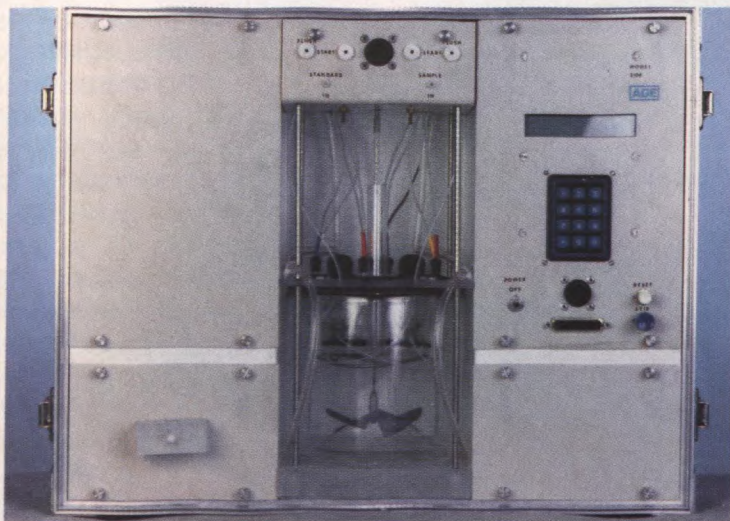
AGE Instruments Inc.
 P.O. Box 15784, Station F
 Ottawa, Ontario
 Canada K2C 3S7
 Tel: (613) 283-8424
 Telex: 063666 CNC EOS TOR.
 TO 20:AEU001

Contacts:

Ellis G. Ashworth, President
 Frank A. Ashworth, Sales and
 Export

AGE Instruments Inc. was founded by Ellis G. Ashworth in 1982 to develop and manufacture oceanographic instruments. In co-operation with the National Research Council of Canada and Dr. T. Dauphinee, the Model 1100 Barometer and the Model 2100 'MINISAL' salinometer were developed.

The Model 3100 Zooplankton Counter was developed in co-operation with Dr. A. Herman and the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Advanced techniques in design and manufacturing ensure that all AGE's instruments are extremely reliable and easily serviceable.



AGE Instruments' portable salinometer gives laboratory accuracy under field conditions.

Agrodev Canada Inc.
 Suite 600
 222 Somerset Street W.
 Ottawa, Ontario
 Canada K2P 2G3
 Tel: (613) 234-1781
 Telex: 053-3696 ENV AGRODV
 OTT

Branch offices:

Agrodev Canada, Muscat, Sultanate of Oman; and in Khartoum, Sudan; Envirocon International, Bangkok, Thailand

Agrodev is Canada's largest professionally staffed consulting company providing management and technical services in the fields of agriculture, aquaculture and fisheries both in Canada and developing countries throughout the world. Agrodev's team, composed of resource management specialists, agronomists, agricultural and environmental engineers, fisheries and aquaculture experts as well as economists and marketing specialists, is supported by an extensive network of associate staff members. This expertise gives the company the ability to respond promptly and efficiently to specific needs and requests.

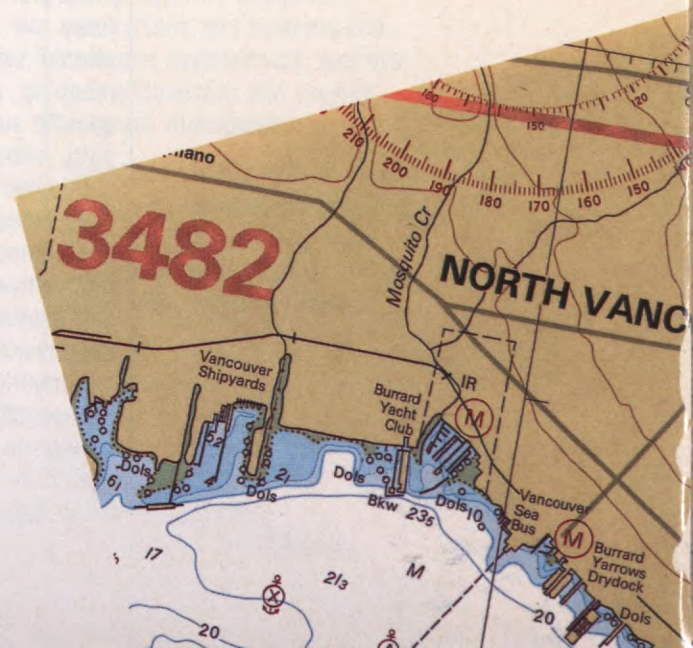
Affiliates:

Tesco, Bangkok, Thailand

Contacts:

Kenneth C. Lucas, President
 Nelson Bevard, Vice President
 Deborah Turnbull, Vice President

Agrodev is currently responsible for the execution of various development projects and studies on behalf of private clients as well as international funding organizations.



Alconsult International Ltd.
 P.O. Box 6632, Station D
 Calgary, Alberta
 Canada T2P 2E4
 Tel: (403) 262-5886
 Telex: 03-821172 CGY

Contacts:

Gordon H. Jones, President
 Denis E. Kerfoot, Vice President

Alconsult International is a Canadian team of resource professionals and executives with worldwide experience. They provide comprehensive services in the resource field and are available for large team assignments or as individual specialists or project managers. Marine-related expertise is in the areas of geomorphology; coastal oceanography; marine biology; oil-spill counter-measures; offshore drilling-management; hydrography; environmental impact assessment – both management and co-ordination; meteorology; sea ice physics; ocean routing; navigation aids; and remote sensing. Alconsult's managers have directed large environmental impact assessment projects with multi-million dollar research programs. Marine experts have undertaken work from the Arctic to the Antarctic, in most seas and all oceans.

Applied Microelectronics Institute
 1127 Barrington Street
 Halifax, Nova Scotia
 Canada B3H 2P8
 Tel: (902) 421-1250
 Telex: 019-21828

Contacts:

Douglas Pincock, Director
 Murray Vandewater, Manager,
 Business Development

Applied Microelectronics Institute (AMI) offers consulting services, contract research and development and software development in the field of electronics. Companies lacking the expertise to develop a particular electronic product or subsystem that they wish to manufacture and market can engage the institute to undertake the development on their behalf. AMI will carry out design and manufacturing support activities. Major resources currently in place are:

- CAD support for printed circuit board manufacturing technology including the development of artwork, tooling inputs, parts list and control sequences for automated assembly and test equipment.
- Comprehensive support of software development for a wide variety of embedded microprocessors used in electronic systems and modules.

Applied Microsystems Ltd.
 2035 Mills Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-0771
 Telex: 049-7181

Contact:

Martin DuPlessis, President

Applied Microsystems Ltd. has been serving the oceanographic and geophysical research industry since 1978, with innovative instrumentation that has established the company's reputation internationally. Its resources include sophisticated electronics engineering and design capabilities, and excellent technical and administrative support services. Clients like the Massachusetts Institute of Technology, U.S. Government NOAA, and Dow Chemical (Australia) have used instrumentation developed by Applied Microsystems Ltd. to obtain precision measurements of physical, chemical, biological, and geophysical data. Facilities are geared to a specialization in design and manufacture of micropower, self-contained deep sea probes. Applied Microsystems Ltd. offers a valuable resource to industry, government and the military.

Aquarius Flight Inc.
 Hangar 9, Buttonville Airport
 Markham, Ontario
 Canada L3P 3J9
 Tel: (416) 475-2885
 Telex: 06-983613 AQUARHUNT
 MSGA

Branch:

Aquarius Flight Inc.,
 Jakarta, Indonesia

Contacts:

David G. Edwards, President
 Garry T. Hunter, Vice President

Aquarius Flight Inc. specializes in aerial photography, airborne exploration and remote sensing in support of mapping and world resource development. Aquarius personnel not only have extensive experience, but also are equipped with state-of-the-art aircraft and camera and remote sensing equipment for each client's individual requirements. Fields of activity include aerial photography (black and white, colour, or infrared film); very large scale aerial photography; multispectral imagery (video or line scan); photographic laboratory (including portable facilities); remote sensing (including thermal imaging); airborne profile recording (APR); air survey installation design and aircraft conversion; photo crew training; and project management and planning. Aquarius has extensive experience on overseas projects.

Aquarius Flight Inc.

Aquarius has flown missions in 42 countries and offers aerial photography and remote sensing for resource mapping.

Archipelago Marine Research
 10 – 1140 Fort Street
 Victoria, British Columbia
 Canada V8V 3K8
 Tel: (604) 383-4535

Contacts:

Thomas Shields, President
 Brian Emmett, Research
 Biologist

- Archipelago Marine Research is involved in fisheries resource assessment and mariculture research and development. The company-developed oyster and mussel farm, which produces commercial quantities of shellfish, operates independently. Archipelago provides contractual services to government and private sector clients, offering professional expertise in the areas of shellfish mariculture, fish impoundment, resource assessment (surveys of commercially important fisheries resources), and user group studies. Services include counselling on project definition and development, design of feasibility and pilot scale studies, physical design of mariculture systems, resource inventory, and wild fishery enhancement projects.

Arctec Nfld. Ltd.
 P.O. Box 5040
 St. John's, Newfoundland
 Canada A1C 5V3
 Tel: (709) 726-4440
 Telex: 016-4702

Contact:

Razek Abdelnour, President

- Practical experience in the field is the essence of applied research at Arctec. The firm employs civil, mechanical and marine engineers, naval architects, electrical and systems engineers and geographers. Unique and reliable instrumentation systems have been designed for ship trials conducted by Arctec on the largest icebreakers, on artificial islands and on the frozen wastes of the high Arctic. These include ice load panels, a frazil ice detection device, an EM ice thickness instrument, advanced data acquisition systems for hostile environments, and ice movement sensors.

Affiliates:

Arctec Engineering Inc.,
Columbia, Maryland, U.S.A.;
Offshore Technology Corp.,
Escondido, California, U.S.A.

Arctec operates a remote sensing interpretation laboratory, two ice model basins and large scientific cold rooms, with a unique capability to study all forms of ice features and all types of hard wave/ice interactions. The firm serves the oil and offshore industries, ship designers, governments, mining and transportation, with numerous clients abroad. Products include software for dredging operations and education simulators for navigation training, and personnel transfer equipment.

Arctic Sciences Ltd.

1986 Mills Road
Sidney, British Columbia
Canada V8L 3S1
Tel: (604) 656-0177
Telex: 049-7476 ALL ROUTES
SID

Contact:

Gary R. Wilton,
General Manager

Arctic Sciences Ltd. offers expert consulting services in the physical measurement and study of the ocean, including rental of oceanographic and meteorological equipment; design, logistics and instrument deployment/recovery services for oceanographic, sea ice and monitoring programs; data processing, analysis and interpretation; remote sensing of data for oceanic, sea ice and iceberg parameters; computer model development re pollutant transport and sea-ice interactions with offshore structures and marine transport; acoustic instrument development for all-weather measurements of environmental parameters; expert advice on environmental issues related to the disciplines of physical oceanography and sea-ice/iceberg climatology.



Arctic Sciences uses satellite images to reveal surface water reflectance and temperature.

ASA Consulting Ltd.

P.O. Box 2025, Argo Building
Bedford Institute of
Oceanography
Dartmouth, Nova Scotia
Canada B2W 3X8
Tel: (902) 465-5535

Affiliate:

Applied Science
Associates Inc.,
Marragansett, RI, U.S.A.

Contacts:

S.E. Hurlbut, President
S. de Margerie, Vice President

ASA Consulting Ltd. specializes in physical oceanography and ocean engineering as applied to estuarine, nearshore and continental shelf processes. A feature is the application of numerical techniques to the solution of problems ranging from applied fluid mechanics to continental shelf oceanography. A joint venture agreement with Applied Science Associates Inc. provides ASA Consulting Ltd. with access to internationally recognized expertise in the development and application of state-of-the-art numerical models. Projects include engineering applications, environmental impact assessments and basic scientific research. ASA also offers considerable experience in project planning and management. Clients have included government agencies, power corporations, private industry and major oil companies.

Atlantic Engineering Consultants Ltd.
 34 Main Street
 Corner Brook, Newfoundland
 Canada A2H 1C3
 Tel: (709) 634-3612

Contact:
 D.J. DiCesare, Principal

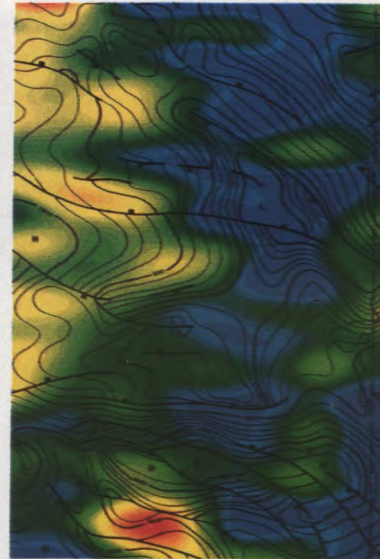
Atlantic Engineering Consultants Ltd. offers a broad range of services in the civil and electrical disciplines including work in the municipal, structural and marine areas. Projects include marine structures such as wharves, breakwaters, docking facilities, related shore facilities such as buildings, water supply and sewage disposal systems, highways and roads, bridges, drainage structures, etc. Services are offered in design, studies, investigations and evaluations. The company's staff are professional engineers, technicians and draftspeople who work together as a fully integrated team, ensuring exact compliance with the client's individual budgetary, design, and scheduling requirements.

Barringer Research Limited
 304 Carlingview Drive
 Rexdale, Ontario
 Canada M9W 5G2
 Tel: (416) 675-3870
 Telex: 06-989183

Contacts:
 John Davies, President
 Paul Lawrence, Sales Manager,
 Commercial Products

Barringer Research Limited, founded in 1961 with offices and laboratories in Toronto, Ontario, employs approximately 120 scientists, engineers, technicians and administrative staff. Barringer holds more than 170 patents issued worldwide. The company pioneered the initial development of proton precession magnetometry and manufactures complete magnetometer systems for land and marine applications. Ongoing development and engineering advancement ensure that Barringer products command a significant portion of the world market. Applications include mineral exploration, geological surveying, archeological research and search/salvage operations. The company also offers airborne geochemistry, micro magnetics and remote sensing surveys for oil and gas exploration over oceans.

Branch offices:
 Barringer Geoservices Inc.,
 Golden, CO, U.S.A.;
 Barringer Geoservices Inc.,
 Sparks, NV, U.S.A.



Barringer detects hydrocarbon deposits beneath the seabed by airborne "sniffing" of small streams of bubbles from natural seepages, shown here in colour-contoured data from the North Sea.

Bennett Environmental Consultants Ltd.
 502 - Kapilano 100
 West Vancouver, British Columbia
 Canada V7T 1A2
 Tel: (604) 922-0913
 Telex: 04-352846 AQUA GUARD VCR

Subsidiary:
 Bennett Environmental Consultants Ltd., Bellingham, WA, U.S.A.

Bennett Environmental Consultants Ltd. (BECL) provides environmental consulting services for the marine environment, including computerized mapping; oil spill and hazardous material contingency planning; on-site supervision of spill response and clean-up operations; equipment evaluation; design and testing of systems for prevention of spills at marine terminals; design of equipment for collection and disposal of oil, hazardous materials and solid wastes; impact studies; and training of personnel in oil spill response and clean-up. BECL has wide experience in providing assistance and advice to overseas governments and

Contacts:

John Bennett, President and CEO
Noel Boston, Vice President and Manager, Consulting Services

industries on environmental management and protection. A subsidiary of BECL, Aqua-Guard Sales Ltd. provides an equipment and services supply organization. Together, BECL and Aqua-Guard provide a single source for oil spill equipment and services.

Beothuk Data Systems Ltd.
P.O. Box 9310,
447 Kenmount Road
St. John's, Newfoundland
Canada A1A 2Y3
Tel: (709) 753-3333
Telex: 016-4597

Contact:

Marvin L. Siegel, Systems Development Manager

Beothuk Data Systems (BDS) has been directly involved with electronic data fisheries processing since its establishment in 1973. BDS is a full service company with particular expertise in large, online user-friendly data base systems. Services include consulting, hardware maintenance, facility management and temporary employment services as well as hardware sales. It also provides software and acts as a data centre. The company is involved with large project management contracts handling fisheries regulation compliance monitoring and scientific data collection services at sea and is currently managing the International Fisheries Observer Programs along the Atlantic seaboard of Canada. Expertise is offered to other governments seeking to establish similar programs.

Bercha Group
301 - 1220 Kensington
Road N.W.
Calgary, Alberta
Canada T2N 3P5
Tel: (403) 270-2221
Telex: 03-827666 BERCHA CGY

Branches:

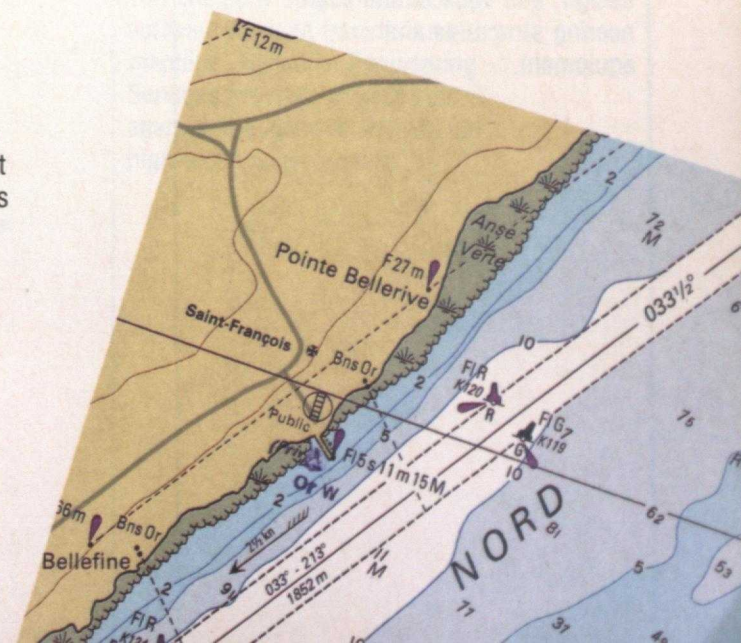
Bercha Group,
Melbourne, Australia and
Jakarta, Indonesia

The Bercha Group of companies consists of F.G. Bercha and Associates (Alberta) Limited, F.G. Bercha and Associates (Ontario) Limited, Bercha International Inc., and F.G. Bercha and Associates Inc. These companies provide complementary consulting and service activities in data acquisition, analysis and interpretation; project management; engineering; and environmental analysis to clients worldwide. The Group specializes in the acquisition, processing and automatic analysis of remote sensing information on ocean resources in a range of climate and habitat conditions, from tropical regions to the Arctic and Antarctic.

Contact:

F.G. Bercha, President
V.L. Shaw, Vice President

Applications include ice and iceberg surveillance and mapping, and monitoring of coastal and alluvial swamps and associated flood phenomena. In environmental analysis, Bercha uses a variety of data sources for solution of resource management problems, engineering site optimization, resource mapping, and economic analysis.



Bert van Leeuwen Industrial Design Limited
 P.O. Box 6, 11 Princess Street
 Amherst, Nova Scotia
 Canada B4H 1W5
 Tel: (902) 667-3464

Contact:
 H.J. (Bert) van Leeuwen,
 President

Bert van Leeuwen Industrial Design Limited offers design management services, including studies and reports; and design engineering, including product design and development and production engineering for fish handling and processing equipment, instruments, plastic buoys, safety equipment, shipping containers, lightweight structures, modules, passive survival equipment, machine and tool design, and aquacultural engineering structures and equipment.

Bio-Conseil inc.
 119-2065 Charest Boulevard, W.
 Sainte-Foy, Quebec
 Canada G1N 2G1
 Tel: (418) 681-6931

Contacts:
 Marc Gagnon, President
 Alain Andersen, Vice President

Bio-Conseil inc. offers quality services in the fisheries development and aquaculture areas. An interdisciplinary group of biologists; computer, fisheries technology and aquaculture specialists; oceanographers; economists; and agricultural engineers provides the necessary expertise in the biological, technical and socio-economic aspects of fisheries development and aquaculture.

Brooke Ocean Technology Ltd.
 24 Flamingo Drive
 Halifax, Nova Scotia
 Canada B3M 1S7
 Tel: (902) 443-2932

Contact:
 John Brooke, President

Brooke Ocean Technology Ltd. offers research and development, applying practical mechanical design, and manufacturing of unique oceanographic equipment. Advisory services in ocean engineering, the selection and use of shipborne equipment, and experienced management of large projects are undertaken. Projects include underwater systems with emphasis on remote, automatic operation without complex surface controls; evaluation of systems; design and development of new shipborne 'over the side' systems for deployment of equipment at sea; and research and design of protective methods for shipborne equipment. Brooke has a wire protection system for cleaning and lubricating long wires (while in use, if required); a retrieval system for recovering a "lost," moored system on the seabed; and a photographic mosaic survey of the ocean floor to areas of 3,000 m² without acoustic markers.

Can-Dive Services Ltd.
 1367 Crown Street
 North Vancouver, British Columbia
 Canada V7J 1G4
 Tel: (604) 984-9131
 Telex: 04-352566

Subsidiaries:
 Can-Dive Services Ltd., Seattle, WA, U.S.A.;
 Trinidad Marine Services,
 Port of Spain, Trinidad, B.W.I.

Can-Dive's state-of-the-art, innovative diving technology and related services have earned the company an enviable international reputation. Services are offered for exploration and production, marine construction, oceanographic surveys, specialized technical tasks, and marine salvage. As Arctic specialists, Can-Dive divers have logged more than 10 000 dives. Diving projects range from conventional bell diving services to work requiring diver-held television cameras, as well as project development and atmospheric diving to 1 000 metres using specialized systems. The firm has pioneered many of today's advanced technology subsea services, including one-atmosphere suits that allow operators to work at depths to over 600 metres. Can-Dive manufactures a range of remotely operated submersibles for depths to 1 000 metres. It undertakes scientific and research programs for governments and private industry.

Contact:
Phil Nuytten, President



Can-Dive's Deep Rover submersible is a state-of-the-art system for depths to 915 metres.

Canadian Astronautics Limited
1050 Morrison Drive
Ottawa, Ontario
Canada K2H 8K7
Tel: (613) 820-8280
Telex: 053-3937 CDN ASTRO
OTT
FAX: 613-820-8314

Contact:
Vinit Nijhawan, Marketing and
Sales Manager

- Canadian Astronautics Limited (CAL) is a diversified company engaged in developing and manufacturing a wide range of high-technology products and providing systems engineering services. CAL's expertise in signal processing has made the company the leading supplier of satellite-aided search and rescue (SARSAT) ground stations. Stations operate with the international search and rescue satellites for emergency location of distressed aircraft and vessels. Other products include an image processing system; an acoustic processing system to measure polar ice thickness; airborne synthetic aperture radar (SAR) and side looking airborne radar (SLAR) for mapping, ice reconnaissance, geophysical exploration and environmental monitoring applications; and a software programmable sonobuoy processor.

Canadian Engineering Services Ltd.
10025 - 56th Avenue
Edmonton, Alberta
Canada T6E 5L7
Tel: (403) 438-1336
Telex: 037-3850

Contact:
D. Rae Sutherland, Chief
Executive Officer

Branch office:
CES Middle East Trading Ltd.,
Kuwait, Kuwait

- Canadian Engineering Services Ltd. is a high-technology management, surveying and engineering firm skilled in offshore and onshore surveying, mapping, computer digitization, banking, processing and high-speed data transferring. Processing includes computer mapping and associated data-relating for computer access based on geographic or cadastral positioning information. The company specializes in software for data transfer and mapping. Canadian Engineering Services provides project managers and economic analysts on high-technology projects.

Canadian Instrumentation and Research Limited
 2211 Dunwin Drive
 Mississauga, Ontario
 Canada L5L 1X1
 Tel: (416) 828-1456
 FAX: 828-1457

Contact:
 Michael Failles, President

Canadian Instrumentation and Research Limited produces single mode fibre optic devices and assemblies, including polarization preserving couplers, for development of interferometric sensors. Hydrophones and the fibre gyro are typical applications. Facilities exist for research and development in optics electronics and precision mechanics.

Canadian Marconi Company
 2442 Trenton Avenue
 Montreal, Quebec
 Canada H3P 1Y9
 Tel: (514) 341-7630
 Telex: 05-827822

Subsidiaries:

CMC Electronics, Inc.,
 Eatontown, NJ, U.S.A.;
 CMC Electronics, Inc.,
 East Rutherford, NJ, U.S.A

Canadian Marconi Company (CMC) was founded in 1903 by Guglielmo Marconi, the genius who engineered the world's first transoceanic wireless transmission. From its roots in marine wireless and commercial radio broadcasting, the company has developed into one of the world's foremost producers of high-technology electronics and communications products. Generic product categories encompass avionics, specialized electronic components, radar systems, data communications systems, and tactical communications systems. The company's AN/GRC-103 line-of-sight radio fills 70 per cent of the global requirement for this class of equipment. Its navigation and control and display systems for aircraft have found acceptance in many U.S. military programs.

Contact:
 Corporate Communications
 Department

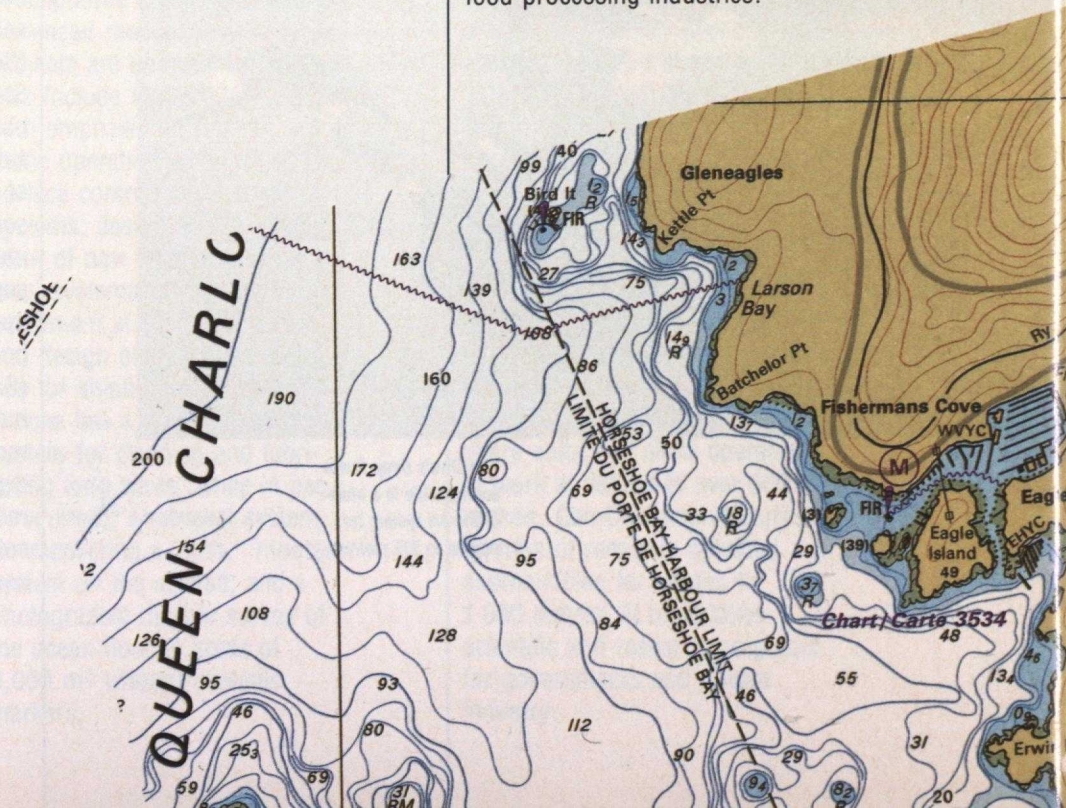
CMC components are specified for the electronics and communications equipment of many major U.S. and British aerospace companies.

CANPOLAR Consultants Ltd.
 4 - 421 Eglinton Avenue W.
 Toronto, Ontario
 Canada M5N 1A4
 Tel: (416) 487-1581
 Telex: 06-218813 D&D

Affiliate:
 INTERA Technologies Inc.,
 Austin, TX, U.S.A.

Contact:
 James R. Rossiter, President

Advances in microelectronics, biotechnology and machine intelligence have created the basis for new and powerful sensing tools. Since its formation in 1983, CANPOLAR has completed contracts for the offshore industry, governments and food processing industries.



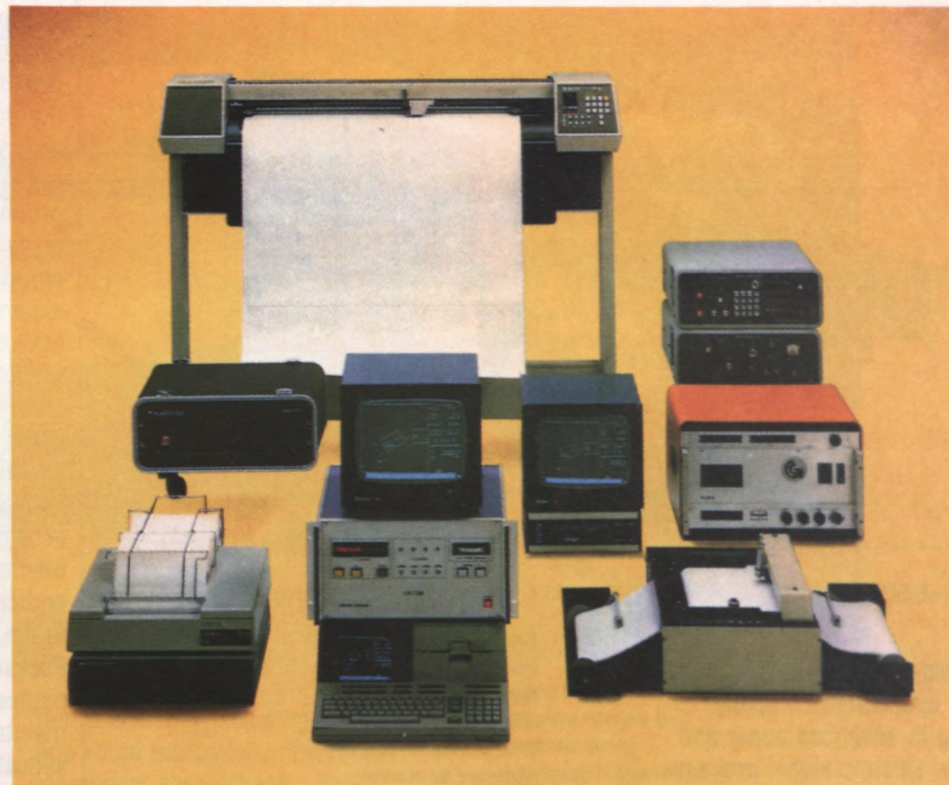
Cansite Surveys Limited
507, 206 – 7th Avenue S.W.
Calgary, Alberta
Canada T2P 0W7
Tel: (403) 234-9979
Telex: 03822052 CANSITE CGY

Contact:

J. Tom Lockhart, President

CANPOLAR provides technical consulting, demand innovation and product development services. Primary focus is on sensor technologies for industrial applications, including evaluations of multi-sensor ice hazard detection systems; advancements in airborne, marine and impulse radar systems; implementation of underwater acoustic ice surveillance systems; design of optical sensing systems for fish and meat grading; development of biosensors for fish quality control. The professional staff hold advanced degrees in physics, biology and biochemistry, with wide experience in instrument design, Arctic field experimentation, remote sensing, data interpretation and project management. A sensor development facility is located in St. John's, Newfoundland.

Cansite Surveys Limited is a marine survey organization providing the offshore and coastal engineering industry with a comprehensive range of positioning, hydrographic and site survey services. The company has access to a unique store of knowledge, systems and technical facilities, and applies the latest and most sophisticated methods, technology and equipment to collect, process and present survey data. Cansite Surveys owns, operates and maintains all its own equipment and its instrument packages include surface and acoustic positioning systems, satellite receivers, computers, geophysical instruments and a variety of oceanographic and inspection tools.

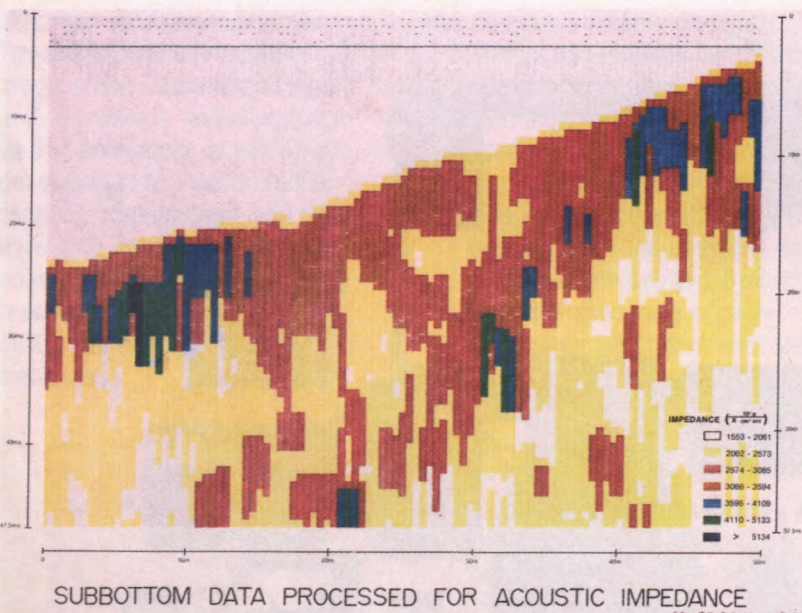


Cansite's Interplot 200 system is an integrated survey and data processing package.

**Caulfield Engineering – A
Division of Caulfield Creative
Arts Ltd.**
193 East Whitecroft
Sherwood Park, Alberta
Canada T8B 1B7
Tel: (403) 467-9813

Subsidiary:
Caulfield Creative Arts Inc.,
Houston, TX, U.S.A.

Contact:
D. Caulfield, President



Caulfield Engineering is a small, highly specialized company dealing in advanced sonar and shallow seismic signal processing. It provides a complete series, from specialized products such as stereo side scan, spatial ship's speed meter, shallow geophysical digital processing system (acoustic core system), and CE7000 computer

Caulfield has introduced a new approach to shallow seismics, shown in these sub-bottom data processed for acoustic impedance.

to engineering and software services. Caulfield has a "hands-on" field attitude and is willing to travel to almost any part of the world to support client needs.

**Challenger Surveys &
Services Ltd.**
500 – 10310 Jasper Avenue
Edmonton, Alberta
Canada T5J 2W4
Tel: (403) 424-5511

Contacts:
Vic Wolchansky, President
Dave Thomson, Project Manager

Challenger Surveys & Services Ltd. offers a high standard of professional survey services to the public, government and industry. This is achieved through the diverse academic background and practical experience of its professional staff. The company's strength lies in the expertise of its personnel, who have offshore survey experience ranging from small bathymetric surveys to large-scale development projects using novel applications of existing technology. The company has ready access to a large inventory of offshore state-of-the-art survey equipment. Challenger maintains in-house a variety of Hewlett Packard technical and IBM compatible computers. The firm also maintains its own software and allocates a large portion of its resources to the development of new software and techniques.

**Commercial Diving and Marine
Services Ltd.**
P.O. Box 326
Prince Rupert, British
Columbia
Canada V8J 3P9
Tel: (604) 627-1415

Contact:
W.J. Belsey, President

Commercial Diving and Marine Services Ltd. is a professional consulting firm, providing both government and industry with a professional and qualified service, specializing in underwater inspection and non-destructive testing and repair procedures. The company's expertise lies in its ability to take technology underwater. Projects as far north as the Beaufort Sea as well as in the Atlantic and the Pacific oceans have been carried out by this firm. From structural surveys, submarine pipelines and cable inspections, to maintenance and repair procedures, Commercial Diving and Marine has the background, qualifications and experience for all underwater requirements.

CSSA Consultants Ltd.
 321 – 1500 Stanley Street
 Montreal, Quebec
 Canada H3A 1R3
 Tel: (514) 849-4369
 Telex: 055-62171 MTL

Contact:
 Sam Salley, Vice President

CSSA Consultants Ltd. offers a unique expertise in the performance of integrated programs in the aquatic sciences. The wide range of services provides potential clients with the opportunity to obtain complete and concise evaluations of marine resources, both biotic and abiotic. CSSA's oceanographers and engineers have extensive experience in tropical, temperate and arctic environments. Whether estuary, near-shore or open ocean regions, the company is capable of providing a full spectrum of services in research and development to answer all marine needs.

D.F. Dickins Associates Ltd.
 3732 West Broadway
 Vancouver, British Columbia
 Canada V6R 2C1
 Tel: (604) 224-4124
 Telex: 04-54247

Contact:
 David Dickins, President



D.F. Dickins Associates Ltd. provides office and field consulting services in the following areas:
sea ice conditions – including ice dynamics, ice morphology, statistical presentations of historical conditions, remote sensing interpretation, and ice design criteria;

transportation – including shipping route evaluation, hovercraft operational assessments, and offshore logistics;
oil spill research – including experimental spills in ice, analytical studies of oil behaviour and fate in different ice regimes, and assessment of the effectiveness of oil spill counter-measures;

Dickins Associates personnel measure ice properties during experimental crude oil spill.

hovercraft design and testing – including conceptual design, resistance and powering and performance analysis.

Dighem Surveys & Processing Inc.
 228 Matheson Boulevard E.
 Mississauga, Ontario
 Canada L4Z 1X1
 Tel: (416) 890-0313
 Telex: 06-961334 DIGHEM

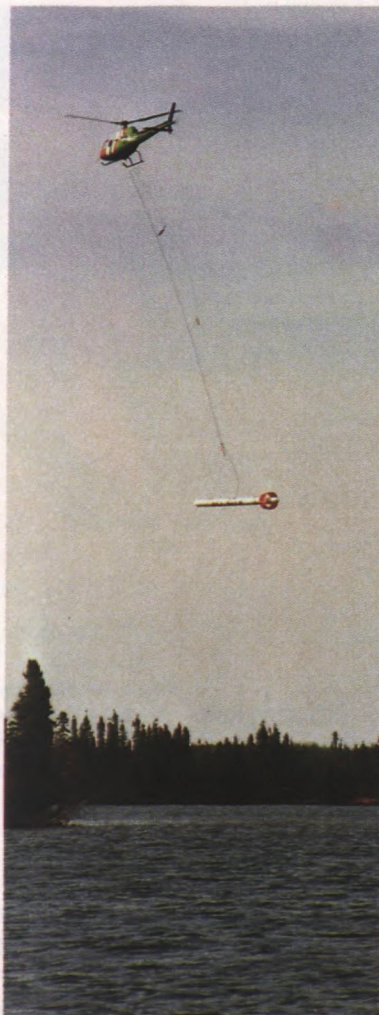
Subsidiary:

Dighem Surveys & Processing Inc., Sydney, Australia

Contacts:

J.J. Kilty, Chief Geophysicist
 D.C. Fraser, President

Dighem Surveys & Processing Inc., a company that offers airborne geophysical surveys, specializes in helicopter-borne electromagnetic systems. This system is available for airborne bathymetry/hydrography where depth of salt water does not exceed 30 metres. The system can also be used for mapping salinity problems such as salt water encroachment and for discrimination of fresh water float in salt water. Dighem also offers contract research and development services, airborne bathymetry services and sea ice thickness measurement.



Dighem's innovative processing technology is applied to helicopter electromagnetic survey data.

Dobrocky SEATECH Limited
 P.O. Box 6500
 9865 West Saanich Road
 Sidney, British Columbia
 Canada V8L 4M7
 Tel: (604) 656-0111
 Telex: 049-7487

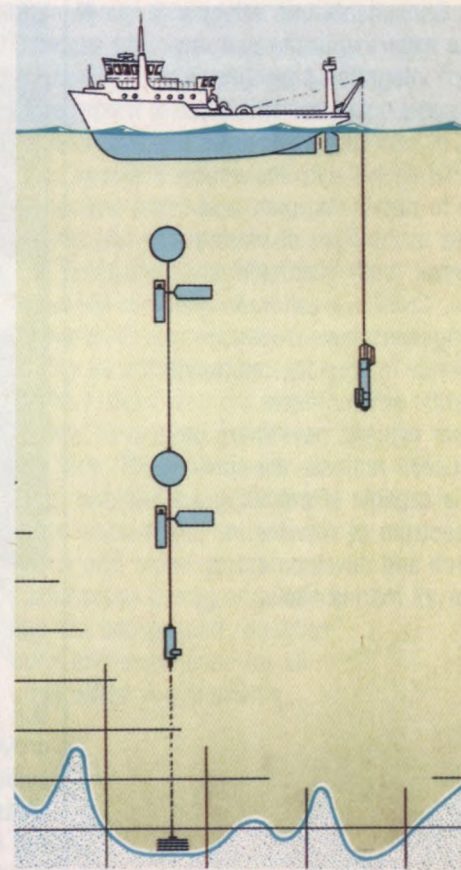
Branch:

Dobrocky SEATECH Limited,
 Anchorage, AK, U.S.A.

Contact:

Mark Hill, Manager

Dobrocky SEATECH Limited is an experienced oceanographic and environmental consulting company providing services in physical, chemical and biological oceanography, numerical modelling, hydrography, marine geology, and marine geophysics. SEATECH undertakes multidisciplinary programs with an integrated, cost-effective service. The survey section provides hydrographic and geophysical surveys and surveys for rig and platform sites, pipeline routes, dredging, seabed clearance, ports and harbours, and shallow gas and drilling. Physical oceanographic studies have been completed for offshore oil and gas exploration, submarine pipelines, ice motion prediction, effluent dilution and dispersion determination, modelling of ocean circulation patterns, and environmental impact assessments and monitoring. SEATECH offers aggregate location and mining feasibility programs, and sediment trans-



Dobrocky SEATECH offers complete contract oceanographic services worldwide.

Dominion Diving Limited
145 Main Street
Dartmouth, Nova Scotia
Canada B2X 1R6
Tel: (902) 434-5120
Telex: 019-23562

Contact:

Barry R. Lohnes, President

port and mapping and beach erosion studies. The company has completed projects worldwide for clients in mining and engineering, petroleum companies, the pulp and paper industry, and government.

■ Dominion offers salvage, inspection, repair and maintenance services, support equipment and shore-based services. Diving and support services are available for offshore drilling rigs, with observation bell and saturation diving system. Diving teams with air and mixed gas capabilities can be contracted for short and long terms, including support for platform and pipeline projects, riser installations on production platforms, pipeline surveys, burials and tie-ins, and setting offshore tanker moorings. Dominion has a complete range of manned and unmanned vehicles for observation and specialized work tasks. Survey support includes bottom and sub-bottom profiling, sand migration studies and rig positioning. In-water services include propellor polishing and repair.



Dominion Diving specializes in drill rig support, marine construction and in-water repairs.

Eastern Marine Services Limited
 P.O. Box 154
 Musquodoboit Harbour,
 Nova Scotia
 Canada B0J 2L0
 Tel: (902) 827-3244
 Telex: 019-23501 ESDC MSQB

Contact:

D.J. Wellwood, Manager,
 Special Projects

Eastern Marine Services Limited is involved in specialty fabrication of zooplankton net sampling systems to high standards for both domestic and export markets. It has acquired a strong reputation for innovative solutions to customer needs. A multiple net zooplankton sampler was designed and built for the Bedford Institute of Oceanography, Canada's oceanographic research facility in Dartmouth, Nova Scotia. With interest being expressed from various countries, a complete hardware/software electronics suite was added, incorporating sensors, data handling and data conversion. These systems are now in operation in Canada, Italy and Australia.



Eastern Marine's multiple net zooplankton sampler, ready for electronics to be mounted.

ECS Group of Companies
 112 Kent Street
 Ottawa, Ontario
 Canada K2P 2K8
 Tel: (613) 236-3920 and
 (613) 230-6201
 Telex: 053-4499 GERMIL OTT
 and 053-3806 ECS OTT

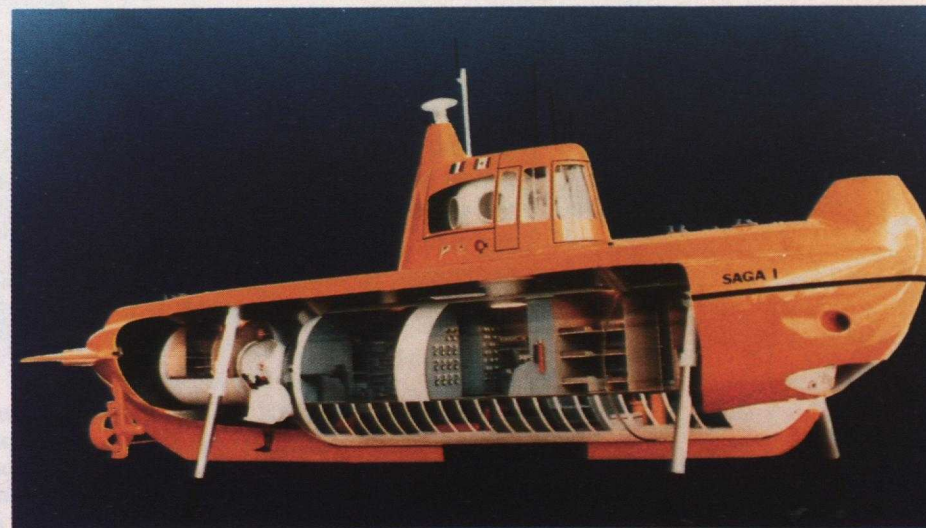
Contacts:

Richard Boadway,
 Vice President, Finance
 D.S. Boyle, President,
 German & Milne Inc.

The ECS Group of Companies consists of ECS Energy Conversion Systems Inc., ECS - Power Systems Inc., German & Milne Inc., and TIAC Manufacturing Inc. This group offers the experience and collective capability to carry out advanced research, development, design and engineering in the following areas: autonomous power systems; small nuclear reactors; naval architecture and marine engineering; control

systems; navigation and communication systems; equipment; and scientific and engineering computing.

The SAGA-N, world's first commercial nuclear-powered research submersible, will have a power plant designed by the ECS Group. Its single fuel charge will last for seven years, enabling 30-day voyages with six divers.



ESL Environmental Sciences Limited
 2045 Mills Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-1922
 Telex: 049-7460

Contact:
 John McDonald,
 Export Manager

■ ESL, a member of The Seakem Group, specializes in environmental impact assessment and micro-computer database management. The firm offers services in the fields of physical and biological oceanography, aquatics, fisheries and marine mammals biology, hydrology and water quality, wastewater management, and atmospheric sciences. ESL's computing division produces a wide variety of micro-computer software and custom applications for statistical analysis, interactive searching, retrieval and graphical display of all types of data. The company has recently acted as lead consultant in several large environmental impact evaluations involving offshore oil and gas development and has developed oil-spill and other emergency response plans.

Fathom Oceanology Limited
 6760 Campobello Road
 Mississauga, Ontario
 Canada L5N 2L8
 Tel: (416) 821-8730
 Telex: 06-218222 FATHOM O
 MSGA

Contact:
 Robert R. Walker,
 Vice President, Marketing

■ Fathom Oceanology Limited is dedicated in its product line to the design, manufacture, factory and field testing of custom-engineered equipment, products and technical services for the specialized needs of a varied international clientele in the defence, commercial, and scientific sectors of the marine industry. Fathom offers both proprietary products and custom developed and manufactured mechanical equipment for ship-borne use. Fathom's hydrodynamic expertise is a key technological resource that has made a substantial contribution to the success of the company's products. Fathom has merged other technologies to develop thin-skinned towed bodies, complete hydraulic systems incorporating passive and active motion compensation systems, buoyancy equipment and alternative energy sources.

Focal Marine Limited
 1378 Bedford Highway
 Bedford, Nova Scotia
 Canada B4A 1E2
 Tel: (902) 835-1217
 Telex: 019-22888 SEIMAC HFX

Contact:
 Graham Smith, Executive
 Manager

■ Focal Marine Limited specializes in the design of fibre-optic products and services, mainly in marine applications. Capabilities include data acquisition, remote sensing, communications, alarms and controls. Activities range from scientific investigations into the behaviour of fibres and components in the demanding ocean environment through systems design and engineering, prototype design and testing, field investigations and installations, and product development. Focal Marine has applied fibre optics on ships, in undersea tow cables, and on the seabed. Its products include fibre-optic local area network (LAN); fibre-optic sliprings (rotary joints); remote heads for fluorometers; fibre-optic liquid level sensors; fibre-optic streamflow (current) meters; wind turbine data and control systems; fibre-optic load cells; and courses in fibre optics. Training is offered abroad and in Canada.

Follett Gosse & Associates Limited
 P.O. Box 5635
 St. John's, Newfoundland
 Canada A1C 5W8
 Tel: (709) 753-2100

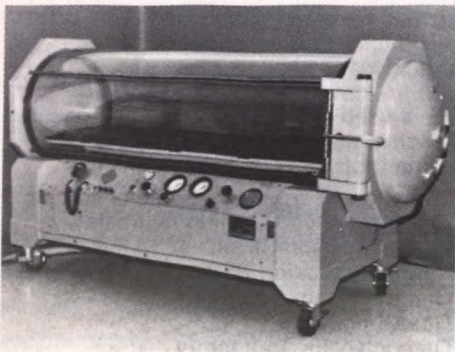
Contact:
 Gary Follett, President

■ Follett Gosse & Associates is a consulting engineering firm specializing in structural engineering for marine projects; marine engineering in the design of marine structures such as docks, wharves, piers, slipways and breakwaters; salt water intake and pumping systems as well as fish handling facilities; and welding engineering including welding procedure preparation, welding design and welding inspection.

**Fullerton, Sherwood
Engineering Ltd.**
6450 Van Deemter Court
Mississauga, Ontario
Canada L5T 1S1
Tel: (416) 671-0656
Telex: 06-968905 FSEL MSGA

Contacts:

David J. Fullerton, President
John E. Sherwood,
Secretary/Treasurer



Hyperbaric oxygenation systems by Fullerton, Sherwood enclose patients in a pressure chamber where they breathe oxygen at a pressure greater than one atmosphere for treatment of gas gangrene, diving embolisms and decompression sickness.

Fullerton, Sherwood Engineering provides engineering, design, project management, inspection and manufacturing services to a wide variety of clients spanning the subsea, military, regulatory, medical and educational sectors. The company spearheads multidisciplinary teams in preparing feasibility studies, market assessment, facility and equipment requirements, capital expenditure estimates, and curriculum development for underwater training institutions. It also provides medical hyperbaric systems, monoplace and multi-place, on a turnkey basis for the provision of clinical hyperbaric

oxygen therapy and performs equipment surveys for oil companies, governments and commercial diving companies. As well, it designs and alters existing hyperbaric facilities; provides specialized equipment and custom-designs packages for inland and offshore commercial diving companies; and provides services and equipment to support military diving requirements.

G.A. Borstad Associates Ltd.
100 Marine Technology Centre
9865 West Saanich Road
Sidney, British Columbia
Canada V8L 3S1
Tel: (604) 656-5350

Contact:

G.A. Borstad, President

G.A. Borstad Associates Ltd. specializes in research, development and application of airborne and satellite remote sensing techniques, software and sensors for fisheries and oceanographic use, exporting its consulting, analysis and project services. The firm has conducted descriptive biological and physical oceanographic studies of large, remote and poorly known areas using aircraft and satellites. Airborne and satellite mapping projects have been carried out in the Arctic, Pacific and Atlantic in support of ecological, oceanographic and ice movement studies. Committed projects are in Australia, Peru and China, and include training. The company offers near real-time satellite oceanographic analysis to clients who value the ability to obtain a map while they are at sea, allowing them to rationalize their sampling procedure and save expensive ship time. This technique is easily extended to commercial fisheries.

Geomarine Associates Limited
P.O. Box 41, Station M
Halifax, Nova Scotia
Canada B3J 2L4
Tel: (902) 422-6482
Telex: 019-22662 TRADE
ASSOC HFX

Contact:

Alan Ruffman, President

Geomarine Associates can take an offshore high-resolution survey requirement through from start to finish. The company pays attention to the often-ignored facet of offshore geological or geophysical work, the pre-survey assembly and assessment of all other available data that will allow the client to plan the most economical program. Survey design, equipment selection, execution, client representation, interpretation and regional integration are all aspects addressed by Geomarine. Such services can cover engineering surveys for pipelines, cables, outfalls, dams or causeways, wellsite surveys, aggregate surveys, placer mineral exploration, wreck location and salvage applications, slumping and sedimentology problems, along with related research questions on matters such as boundary disputes and seismicity.

GeoTech Surveys Limited
 50 Johnson Crescent
 Lower Sackville, Nova Scotia
 Canada B4C 3A4
 Tel: (902) 865-2932

Contact:

Warren B. Ervine, President

GeoTech Surveys Limited provides professional engineering and scientific consulting services to industrial and governmental organizations where expertise is required for projects involving any combination of geology, geochemistry, engineering or research. Dr. Warren B. Ervine, President of GeoTech, has more than 30 years' experience in the resources industry. Projects have been undertaken with numerous mining, petroleum and exploration companies and with governments in Canada and the United States. Involvement in these projects included geological mapping (detailed, reconnaissance, underground), geochemical surveys (water, soils, stream sediments), geophysical surveys (Mag, EM, Afmag), drilling programs, land surveying, oil and gas engineering studies, market studies, report writing and program planning.

Guildline Instruments Ltd.
 P.O. Box 99, 21 Gilroy Street
 Smiths Falls, Ontario
 Canada K7A 4S9
 Tel: (613) 283-3000
 Telex: 053-3028

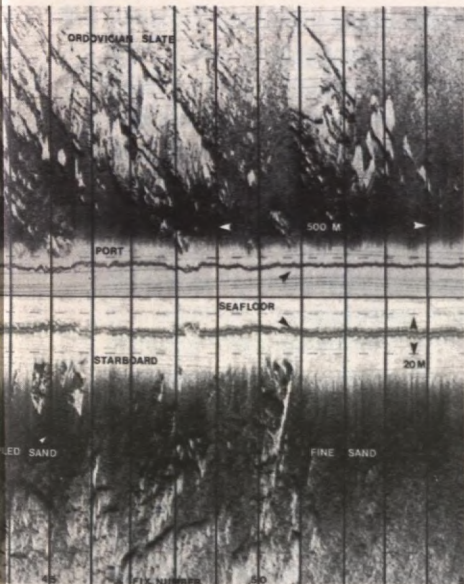
Affiliate:

Guildline Instruments Inc.,
 Orlando, FL, U.S.A.

Contact:

Pierre Lemoyne, Export
 Manager

Guildline Instruments is an innovative corporation, known worldwide for its electrical metrology instrumentation. An energetic and extensive research and development section devotes its efforts primarily to oceanography. A full range of oceanographic instrumentation provides continuous vertical profiles of sea temperature and salinity as functions of depth with high precision. The "Auto-sal" laboratory salinometer employs a unique continuous sample flow system, offering a marked improvement in speed and convenience over the conventional method. Guildline's "Batfish" programmable towed body is a versatile platform for rapid gathering of oceanographic data, featuring operational depths to 400 metres, adaptability to various instrumentation payloads, and



Sidescan sonar, shown in Geomarine's image, has become a major tool for marine surveys.



Guildline's Batfish is a programmable towed body which can be "flown" at a static depth or automatically in a sawtooth pattern for rapid gathering of oceanographic data.

failsafe override for emergencies. Other products include the Expandable Precision Digital CTD System (precision 16-channel data acquisition system); a self-contained in-situ profiling system; oceanographic slip rings; and hand crank and arctic winches.

Hermes Electronics Limited
P.O. Box 1005
40 Atlantic Street
Dartmouth, Nova Scotia
Canada B2Y 4A1
Tel: (902) 466-7491
Telex: 019-21744 HERMES DRT

Contacts:

P.S. Cugno, General Manager
 A.S. Logan, Director, Marketing
 Products and Programs



The air-deployable spheroid buoy is typical of the Hermes Electronics range of data acquisition products for hostile environments.

Hermes Electronics Limited is an electronics systems developer and manufacturer, specializing in hydro-acoustic sensing systems, high-frequency loop antenna arrays, shipboard data platforms, HF ionosphere sounding systems and satellite-monitored environmental data acquisition and analysis systems for use in the ocean, on ice and on land.

Using its proprietary technology, Hermes manufactures large quantities of difar and omni passive sonobuoys and towed arrays for submarine surveillance – over one million sonobuoys have been delivered. Sonobuoys are deployed in the ocean from ships, helicopters and airplanes and act as listening devices to pick up acoustical energy radiated by submarines. These data are transferred to the operational platform where they are analyzed to determine the submarine's identity, position, speed and course. The company also produces bathythermographs, used to generate real-time temperature profiles of the ocean during ASW operations.

Hunter and Associates Ltd.
6350 Northwest Drive
Mississauga, Ontario
Canada L4V 1J7
Tel: (416) 678-6844
Telex: 06-983613 AQUARHUNT
MSG A

Affiliates:

Aquarius Flight Inc.,
 Jakarta, Indonesia;
 David Lashley and Partners,
 Barbados, West Indies

Contact:

Garry T. Hunter, President

Hunter and Associates is a multidisciplinary resource management consulting firm offering a wide range of environmental and engineering services. Specializing in the use of air-photo interpretation and advanced remote sensing technology for research leading to resource management policy recommendations, the company has developed expertise in coastal zone management including shallow water bathymetric surveys. A recent coastal conservation study in Barbados included environmental dual-frequency acoustic surveys for water column and sub-bottom

profiling, sediment transport and erosion studies, comparative historic shoreline analysis by photogrammetry, marine biology surveys by scuba diving, colour aerial photography and video surveys, environmental modelling, and recommendations for environmental mitigation and design solutions.

Hunter included aerial photography for a coastal conservation study in Barbados that featured counterpart training and technology transfer.



HYMARC Engineering Ltd.
 P.O. Box 5127, Station F
 Ottawa, Ontario
 Canada K2C 3H4
 Tel: (613) 727-1584

Contacts:

F.R. Livingstone, President and
 Export Manager
 M.F. George, Vice President

■ HYMARC Engineering Ltd. provides consulting services in naval architecture and marine engineering, propeller design/analysis, ship hydrodynamics, mathematical modelling of ship motions in different sea states, and propulsion system specifications/simulation. HYMARC has developed and is manufacturing three-dimensional laser-based vision systems for marine propeller inspections. The HYSCAN-60 system uses a synchronized scanning technique to produce a large field of view without compromising the resolution. Range information is obtained through triangulation, and the unique optical arrangement greatly reduces shadow effects. Using a laser for illumination makes measurement possible in difficult lighting conditions. Complex shapes can be digitized rapidly and accurately and the resulting data used as input to a CAD/CAM system. Software and 3-D graphics are also available to verify propeller allowable tolerances.

IDON Corporation
 P.O. Box 3728, Station C
 Ottawa, Ontario
 Canada K1Y 4J8
 Tel: (613) 722-8101
 Telex: 053-4370 OTT

Contact:

Herbert G. Bown, President

■ IDON Corporation specializes in consulting and research and development in international electronic communications standards, most particularly those which pertain to electronic maps and charts. The company is experienced in system design, development, and implementation in electronic communications and electronic communications coding. Two of its principals developed Canada's videotex technology, NAPLPS.

Indal Technologies Inc.
 3570 Hawkestone Road
 Mississauga, Ontario
 Canada L5C 2V8
 Tel: (416) 275-5300
 Telex: 06-961482 INDALTECH
 MSGA

Contact:

Robert E. Marcille, Vice President,
 Business Development

■ Indal Technologies Inc. manufactures a wide variety of mechanical, electro-mechanical, hydraulic and structural systems and is internationally recognized as the world's leading supplier of shipborne helicopter support systems. Recovery assist, securing and traversing systems enable helicopters to safely land on and take off from the decks of small ships. Telescopic hangars and hangar doors, visual landing aids, fueling systems, and prefabricated lightweight flight decks combine to provide a fully integrated system of helicopter recovery and deck handling, maintenance and protection unequalled in the world today. Customers include the coastguards and navies of many countries throughout the world. Indal Technologies is skilled in all aspects of design engineering, specialty manufacturing, program management and inte-

grated logistics support. The company is an acknowledged expert in the field of specialized aluminum and stainless steel structural fabrication work.

Indal Technologies is a world leader in manufacture of helicopter recovery assist, securing and traversing systems for shipboard use, especially in hazardous conditions.



Innotech Aviation (1986) Limited
 10105 Ryan Avenue
 Dorval, Quebec
 Canada H9P 1A2
 Tel: (514) 636-8484
 Telex: 05821856 INNOTECHAV
 MTL

Contact:

T.F. Colahan, Vice President,
 Contract Services and
 Operations

Innotech has been contracted by the Government of Canada since 1975 to provide aircraft maintenance and flight operations for the Canada Centre for Remote Sensing. As part of a "transfer to industry" program, the aircraft and sensors have been made available for commercial utilization. Innotech can offer remote sensing coverage by a family of sensors not normally available to companies involved in aerial survey or remote sensing. Aircraft include a CV-580, a Falcon 20 and a DC-3. Sensors available are a C and/or X band synthetic aperture radar (SAR), the multispectral scanner (MSS), and the pushbroom imager (MEIS 2). The company has carried out remote sensing projects throughout the world. Applications include spill monitoring, coastal zone mapping, sediment transport and real-time ice surveillance, flood monitoring and water management.

Instrumar Limited
 P.O. Box 13246, Station A
 St. John's, Newfoundland
 Canada A1B 4A5
 Tel: (709) 726-8460

Contacts:

Alastair Allan, President
 Kenneth Butt, Vice President

Instrumar Limited is a research and development company specializing in the design of custom instrumentation and the development of new electronic products. Manufacturing is carried out in its subsidiary company, Instrumar Engineering Limited. The company serves the offshore petroleum, fishing and marine transportation industries and offers complete project management from concept to production. In-house services include full hardware and software capability with specialities in optoelectronics, power supply and package design. Among Instrumar's products are a portable hand-held spectrophotometer, developed in conjunction with Westinghouse Canada Inc.; tactile sensory devices and trawl net monitoring equipment for the fishing industry; a non-acoustic underwater-through-ice data transmission system; and various ice-measuring instruments produced for the offshore petroleum industry.

Intera Technologies Ltd.
 1200, 510 - 5th Street S.W.
 Calgary, Alberta
 Canada T2P 3S2
 Tel: (403) 266-0900
 Telex: 03-824537 INTERA CGY

Branch offices:

Exploration Consultants Limited,
 London, England;
 Intera Technologies Ltd.,
 Jakarta, Indonesia;
 Intera Technologies Ltd.,
 Austin, TX, U.S.A.

Contact:

Marc C. Wride, Vice President,
 Marketing

Intera Technologies applies advanced technologies to environmental management. Many of the firm's technical achievements are today considered fundamental methods of analysis. An Intera-developed airborne imaging radar enables surveillance and data gathering capabilities at one-half to one-third the cost of other similar services. It involves a side-looking imaging radar (SLAR) for ocean surveillance of ships, ice, or other targets in any weather condition, day or night. Even in the absence of weather problems, SAR (synthetic aperture radar) imagery is a desired remote sensor.

Intera has the specialized technology and the field experience to support resource development in the arctic environment, offering ice management programs, radar mapping (SAR and SLAR) of ice location, characteristics and movement, ice-mechanics studies supporting construction in arctic waters and marine navigation support in ice-infested waters. Among other applications are strategic oil spill mapping and tracking, and oceanographic studies of ocean currents and fronts, internal wave detection, wave directional spectrum and shallow water anomalies.



Intera's airborne side-looking imaging radar (SLAR) permits ocean surveillance and data gathering in all weathers, day or night.

Interact Research & Development Corporation
 4252 Commerce Circle
 Victoria, British Columbia
 Canada V8Z 4M2
 Tel: (604) 727-6641
 Telex: 049-7309 INTER VIC

Subsidiary:

Quester Tangent Corporation
 (see listing)

Contact:

Phillip Morris, Export Manager
 and Director of Research

Interact Research & Development Corporation is dedicated to solving multidisciplinary scientific and engineering problems with unique skills in the areas of software development, numerical modelling, artificial intelligence, telecommunications and hardware development. Specific marine science expertise includes SAIL modules, development of algorithms for navigation, modelling oceanographic phenomena, and spectral analysis of ocean currents and tides. With hardware experience ranging from IBM PCs to VME based systems through to DEC VAXes as well as mainframes, and software skills including C, Fortran, PL/1, Pascal, Lisp, as well as database managers and assembly languages for real-time work, Interact is well positioned to undertake real problems in the oceanic sciences field.

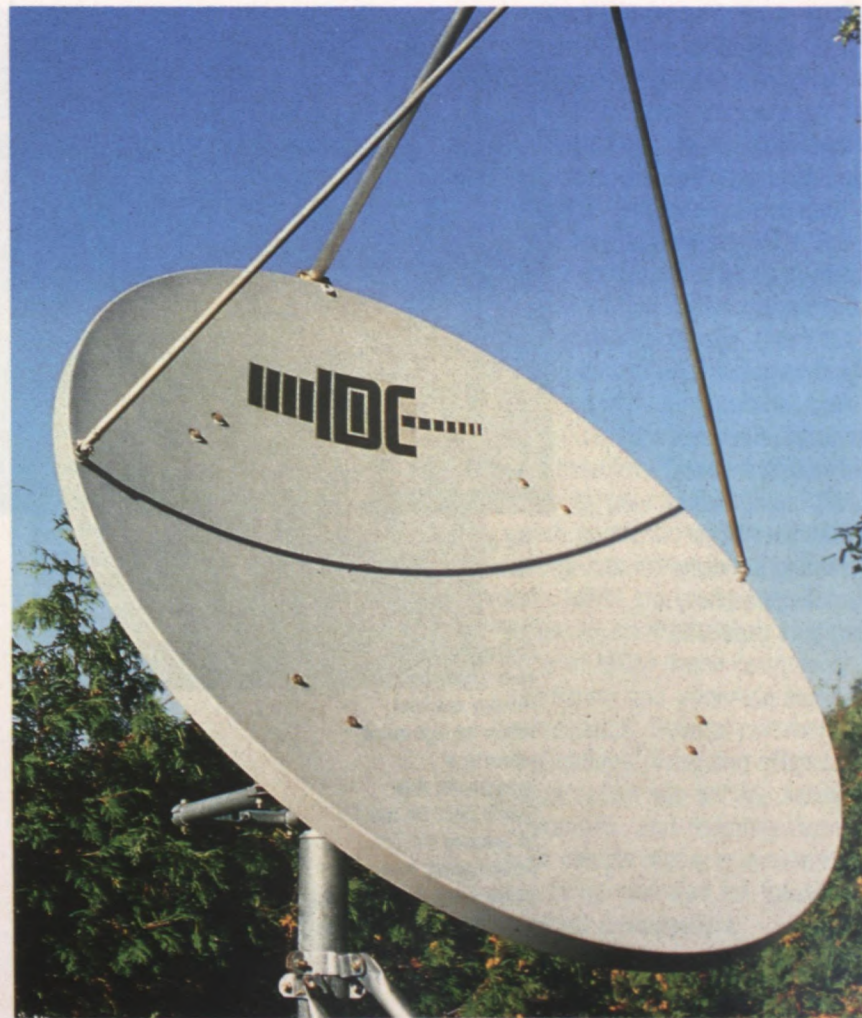
International Datacasting Company
 485 Richmond Road
 Ottawa, Ontario
 Canada K2A 3Z2
 Tel: (613) 725-3300
 Telex: 053-3970 IDC OTT

Contact:

James E. Storm, President and
 Chief Executive Officer

International Datacasting Company (IDC) specializes in state-of-the-art digital satellite networking equipment, providing satellite-based communications solutions. A satellite system is currently under development at IDC, in conjunction with the Canadian Hydrographic Service, to facilitate the distribution of nautical chart data. Initially this pilot system will network land-based electronic chart dealers and decentralized data capture facilities. Means of getting up-to-date data directly to ships at sea are also being explored. New communications equipment for field survey teams is also under development. Training is available in Canada for foreign personnel.

International Datacasting's digital satellite networking system is applied to distributing nautical electronic chart data.



International Submarine Engineering Ltd.
2601 Murray Street
Port Moody, British Columbia
Canada V3H 1X1
Tel: (604) 937-3421
Telex: 04-353554 ISE PTMY

Affiliates:

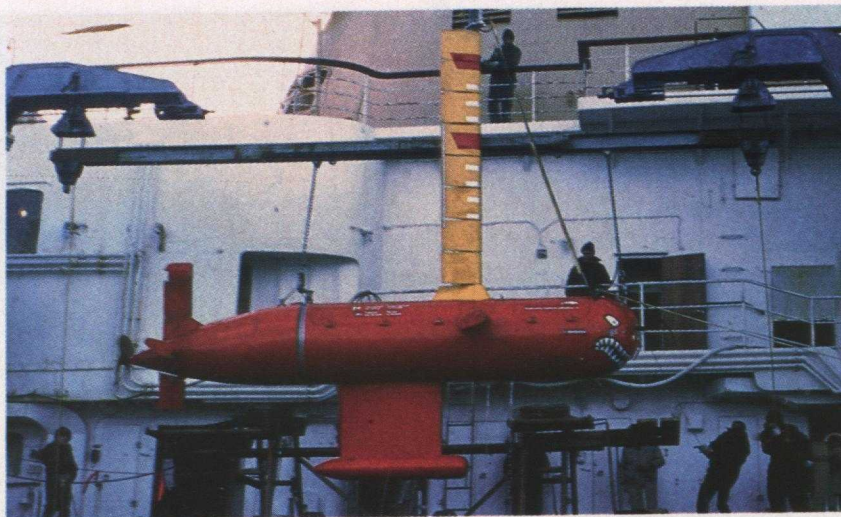
Fairey Hydraulics Ltd.,
 Middlesex, England;
 Underwater Systems Australia
 Ltd., Fremantle, Australia;
 Concord International (P) Ltd.,

New Delhi, India;
 Xebro Inc., Tokyo, Japan;
 BHE, Rio de Janeiro, Brazil;
 High Technology Trading Corp.,
 Islamabad, Pakistan

Contacts:

Jim McFarlane, President
 Mike Macdonald, Senior Vice
 President (604) 942-5223

International Submarine Engineering Ltd. (ISE) is a manufacturer of remotely operated vehicles (ROVs) and autonomous underwater vehicles for government and industry. The company has built more than 30 per cent of the ROVs in use today. This success is based on the policy of developing vehicles to meet the customer's specific requirements and of minimizing cost through modular design. ISE is a leader in the development of autonomous vehicles and sophisticated manipulator systems, provides on-site acceptance and training services, and has a well-developed field services and support capability.



The Dolphin, developed by International Submarine Engineering for the government, is a remotely operated vehicle for high-speed gathering of hydrographic data. Several Dolphins can be operated simultaneously from a mother vessel for major surveys.

ITRES Research Limited
141, 6815 – 8th Street N.E.
Calgary, Alberta
Canada T2E 7H7
Tel: (403) 274-7440

Contact:

Clifford Anger, President

ITRES designs, builds and supplies airborne electro-optical instrumentation for ocean surveys. The company was a pioneer in the development of an airborne imaging spectrograph utilizing two-dimensional charged coupled device (CCD) sensor arrays for the Canadian Department of Fisheries and Oceans and is currently working on a compact, low-cost, and user-programmable instrument for multispectral imaging with the aim of making this commercially available within the next year. Personnel have extensive experience with space imaging systems and have served as principal investigators for two satellite imaging instruments, one of them utilizing an intensified CCD camera for low-light-level imaging.

Jasco Research Ltd.
 102 Marine Technology Centre
 9865 West Saanich Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-0656

Contact:
 Joseph A. Scrimger, President

Jasco Research Ltd. carries out applied research in physical oceanography, underwater acoustics, data analysis, theoretical and operational research, and feasibility studies. The company's highly trained research team also provides short-term services in the areas of oceanographic consulting, computer programming and systems analysis and maintenance. Currently, Jasco is developing oceanographic instrumentation including a digital spectrometer. The spectrometer is hard-wired using the TMS 320 10 digital signal processor and permits the derivation of spectra in the range 0-50 kHz in real-time. The analyzer is integrated with an IBM XT, AT or clone and so can be produced cheaply. Development of a 16-channel, 12-bit resolution data logger and a communication link PC to PC, on a shipboard data loop, and wind-driven power generators is also under way.

Keith Philpott Consulting Limited
 P.O. Box 938
 Thornhill, Ontario
 Canada L3T 4A5
 Tel: (416) 889-1976

Contact:
 Keith L. Philpott, President

Keith Philpott Consulting Limited provides specialized engineering services for the management and execution of studies, plans and projects relating to coasts, harbours, the offshore environment, estuaries, rivers and canals. Capabilities include the following: design of harbours, marinas, ports, breakwaters, groynes, revetments, shore protection works, artificial beaches, beach nourishment schemes, coastal reclamation, dredging projects; development and utilization of advanced hydrodynamic and coastal process numerical models, data processing and analysis; design and execution of hydraulic models, investigations and studies; planning, direction and participation in coastal surveys and multidisciplinary design and environmental studies. Overseas experience includes projects in the United States, the Caribbean, Europe, South America and Southeast Asia.

Knudsen Engineering Limited
 77 Gore Street
 Perth, Ontario
 Canada K7H 1H8
 Tel: (613) 267-1165

Contact:
 D.C. Knudsen, President



ALICE, Knudsen Engineering's high-performance image enhancement and display system for airborne remote sensing, is used for oil spill reconnaissance, search and rescue, and many land applications.

Involved initially with the manufacture of advanced digital electronic systems for the airborne remote sensing market, Knudsen Engineering Limited is developing its patented technology in underwater acoustic sonar imaging systems. Essentially a camera that uses sound instead of light to form the image, DAISY is ideally suited for any underwater surveillance inspection or reconnaissance role for which conventional video is unsatisfactory because of limited range or poor visibility, and for which conventional sonar technology has inadequate resolution. Initial market strategy is focussed on the military applications of MCM (mine countermeasures) and under-ice-sea surveillance. Several commercial applications, including offshore construction site survey, salvage operations, and remotely operated vehicle obstacle avoidance, are being reviewed for future product development.

Lavalin Inc.
1100 Dorchester Boulevard W.
Montreal, Quebec
Canada H3B 4P3
Tel: (514) 876-4455
Telex: 055-61250

Branch offices, subsidiaries and affiliates worldwide

Lavalin Inc. is a major engineering consulting and contracting firm, composed of some 50 technical divisions that provide a full range of services in virtually all fields of engineering, applied sciences, and construction.

Lavalin International Inc. has been established specifically to handle all overseas work outside North America for the Lavalin Group.

Lavalin Offshore Inc., which is a wholly owned subsidiary of Lavalin Inc., is responsible for co-ordinating and managing Lavalin's resources related to marine and offshore projects. For the successful conduct of a project, Lavalin Offshore often utilizes the capabilities of a number of Lavalin's technical divisions. In particular, the following divisions have pertinent skills for oceanic projects:

Fenco Engineers Inc. is involved in the design of marine structures in temperate and arctic

Contacts:
Canada and U.S. markets
 Dr. H.R. Kivisild, Vice President
 Lavalin Offshore Inc.
 909 – 5th Avenue S.W.
 Calgary, Alberta
 Tel: (403) 294-2100
 Telex: 03-827910

Other overseas markets
 Marcel Dufour, President
 Lavalin International Inc.
 Montreal, Quebec

zones and has a long history of arctic investigation and development technology.

Fenco Newfoundland offers the offshore industry ice and iceberg research services and aerial reconnaissance, offshore ice and weather observers, oceanographic and meteorological data collection and analysis, ice data management services and computer support services.

MacLaren Plansearch Limited provides meteorological and oceanographic services and studies to marine designers and operators. It has also been involved in ice and iceberg forecasts and development of criteria for operating in waters affected by ice and/or icebergs.

Digim (1983) Inc. is the Lavalin division that specializes in the digital processing of remote sensing data. Having highly developed software at its disposal, Digim offers state-of-the-art technology.



Lavalin's offshore services are applied in the whole range of solving complex problems affecting Arctic facilities, petroleum terminals and offshore drilling and exploration platforms.

Specializations include engineering software, oceanographic studies, geotechnical exploration, marine and submarine projects, and ice technology. Shown here is Gulf's Kulluk Arctic exploratory drilling unit.

LGL Limited Environmental Research Associates
 P.O. Box 280, 22 Fisher Street
 King City, Ontario
 Canada L0G 1K0
 Tel: (416) 833-1244

Affiliates:

LGL Ecological Research Associates, Inc., Bryan, TX, U.S.A.;
 LGL Alaska Research Associates, Inc., Anchorage, AK, U.S.A.

Contacts:

Rolph A. Davis, President
 William E. Cross, Manager,
 International Programs



LGL Limited's William Cross took this spectacular photo of the firm's oil-under-ice experiment at Baffin Island in the Arctic.

LGL Limited provides environmental consulting services. Professional staff are terrestrial, freshwater, and marine biologists, biological oceanographers, biostatisticians, computer programmers, and technicians. Services include research planning; literature review and evaluation; experimental field and laboratory research; resource surveys and management; fisheries management; habitat classification, sensitivity mapping, and protection; data analysis and simulation modeling; environmental effects monitoring and impact assessment; design of deterrent and mitigative measures; and practical, on-the-job training. For interdisciplinary studies, LGL arranges and is responsible for subcontracts to experts in geology, chemistry, physical oceanography, socio-economics and engineering. LGL knows tropical, temperate, and polar environments.

Lobsiger Associates Limited
 P.O. Box 3008 S
 Halifax, Nova Scotia
 Canada B3J 3G6
 Tel: (902) 429-0283
 Telex: 019-23616 MSL HFX

Contacts:

Ulrich Lobsiger, President
 Greg Cochkanoff, Assistant
 Manager

Lobsiger Associates Limited manufactures underwater camera systems, performs contract research and development in subsea imaging and related fields, and offers consulting services in visual monitoring and documentation in oceanic environments. The firm's product line includes underwater still cameras for science and military applications; electronic flash guns (strobes); accessories, acoustic range-finders and pressure sensors. Contract research involves subsea imaging instruments, i.e., low-light electronic still cameras; underwater photogrammetry; and image data interpretation. Lobsiger also offers complete subsea imaging services.



Lobsiger's underwater camera instruments are built for close-range measurements and photo documentation under any marine condition.

Logimer Inc.
 820 St. John-Baptiste Street
 Suite 192
 Quebec, Quebec
 Canada G2E 5E2
 Tel: (418) 871-1262
 Telex: 051-3276

Contact:
 André Légaré, Vice President,
 Development

■ Logimer Inc. offers consulting services in the areas of fisheries, oceanography, marine environment, ocean engineering, and trade negotiations on fish resources. The company's greatest asset is doubtless its own employees who have received diversified training and experience through various projects. The Logimer team provides unique expertise in the maritime sector, having also experience in international projects. Logimer is scheduled to undertake projects in Brazil, Nigeria, Mexico, Guatemala, Columbia and Sri Lanka.

Mann Testing Laboratories Ltd.
 5550 McAdam Road
 Mississauga, Ontario
 Canada L4Z 1P1
 Tel: (416) 890-2555
 Telex: 06-960496

Contacts:
 John W. Martin, President
 Pierre M. Beaumier, Vice
 President

■ A major offering of Mann Testing Laboratories Ltd. is purity analysis of compressed breathing gases for the diving industry, sports divers, hospitals, industry and fire departments. It is extremely important that people supported by these systems have gases that are clean and do not interfere with their duties and/or threaten life. As well as occupational health and safety concerns, other services of an analytical nature include environmental studies involving the fuels and wastes of society, research and development, inorganic chemistry and forensic analysis.



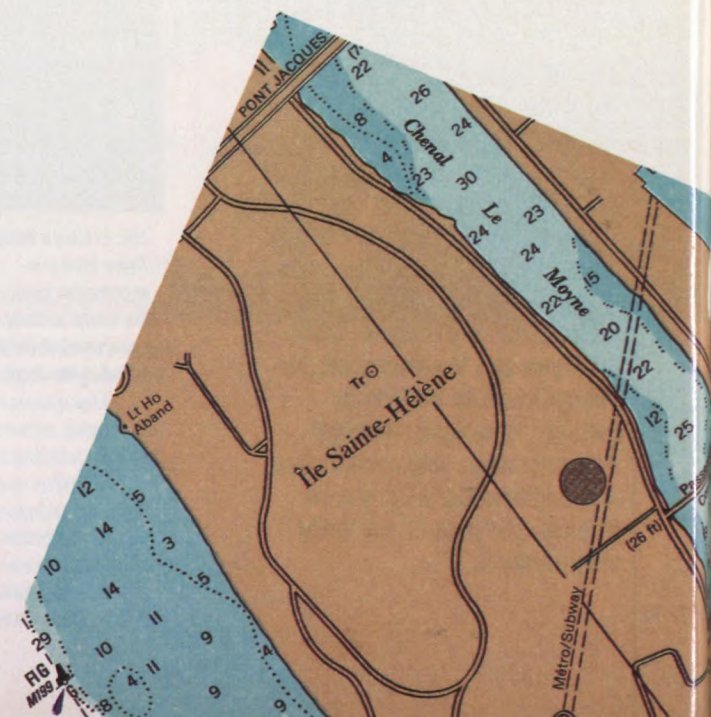
Mann Testing Laboratories specializes in identifying and measuring contaminants in the marine environment.

Marine Safe Electronics of Canada Ltd.
 37 Staffern Drive
 Concord, Ontario
 Canada L4K 2X2
 Tel: (416) 738-3744
 Telex: 06-964698 MARSAFE
 CCD

Branch office:
 Marine Safe Electronics, Inc.,
 Iselin, NJ, U.S.A.

■ Marine Safe manufactures and markets an electric motor insulation resistance monitor which gives an early warning BEFORE motor burn-out, in time to take corrective action and prevent motor failure. The MotoSafe device is widely used on shipboard motors for the following reasons: electric motors on ships are exposed to harsh environmental conditions and insulation-related failure is a frequent occurrence; proper motor function on ships is critical to a vessel's operation; and rewinding of a burned-out motor is a very expensive proposition. MotoSafe is a sensible investment in preventive maintenance for shipboard electric motors.

Contacts:
 S. Silas, Sales Administrator
 A. Lapsker, Vice President,
 Engineering



Maritime Offshore Services
 17 Pleasant Street
 Bedford, Nova Scotia
 Canada B4A 1W8
 Tel: (902) 835-9274

Contacts:

Erik Banke, President
 John Banke, Malmö, Sweden

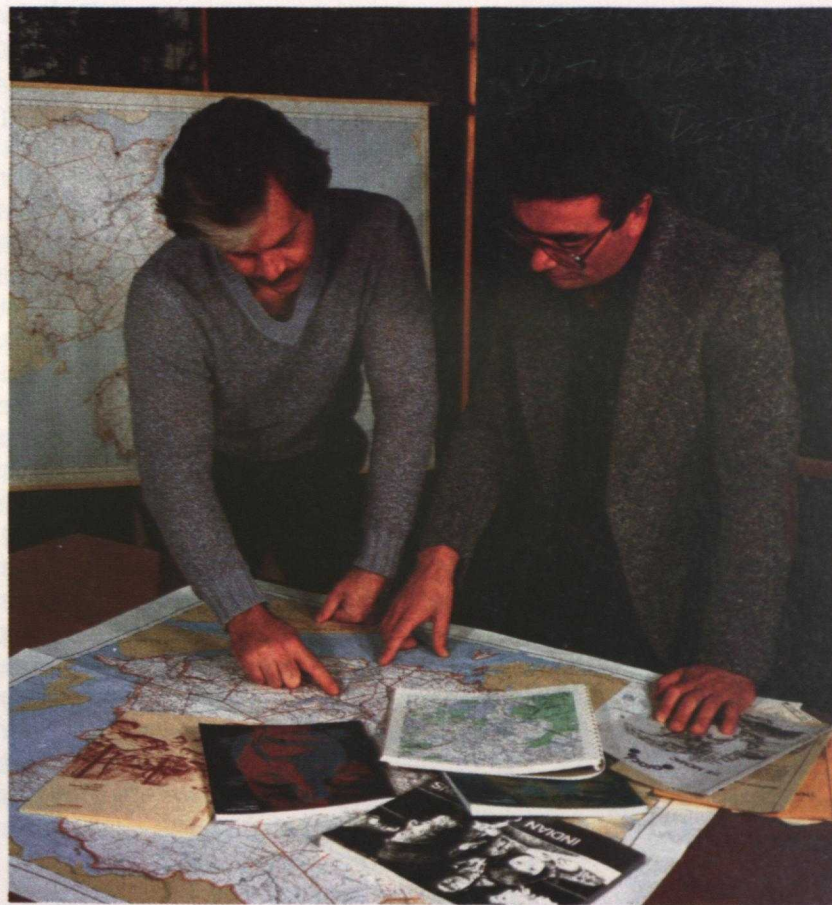
Maritime Offshore Services manufactures equipment for cutting large diameter holes in sea ice. The company also offers marine environmental engineering consulting services and specializes in ice and icebergs and project management.

Maritime Resource Management Service (MRMS) Inc.
 P.O. Box 310, 16 Station Street
 Amherst, Nova Scotia
 Canada B4H 3Z5
 Tel: (902) 667-7231
 Telex: 019-22827

Contacts:

R.N. Seely, Vice President,
 Sales and Marketing
 C.J. Mooring, Assistant to Vice
 President, Sales and Marketing

Maritime Resource Management Service was formed to provide resource mapping and information management services and products to government and industry. Primary areas of expertise and service are environmental and resource planning; aerial photographic acquisition and analysis; information inventories; water resource assessments, studies and mapping; marine resources including small craft harbours planning and mapping, habitat information databases, marine atlases, and coastal zone mapping; manual and digital thematic mapping; urban mapping; coastal and marine resource information systems design; data collection; database development; geographic information management and analysis; and complete project management.



Maritime Resource's people are expert marine environmental and resource planners.

Maritime Technical Services Limited

4408 Dalhart Road N.W.
Calgary, Alberta
Canada T3A 1B7
Tel: (403) 286-6462

Contact:

Colin J. Langford, President

Maritime Testing (1985) Limited

116 – 900 Windmill Road
Dartmouth, Nova Scotia
Canada B3B 1P7
Tel: (902) 463-2486

Affiliate:

Fugro Consultants International
B.V., Leidschendam, the
Netherlands

Contacts:

Michael T.G. Brown, President
K.W. Strong, Vice President

Martec Limited

5670 Spring Garden Road
Halifax, Nova Scotia
Canada B3J 1H6
Tel: (902) 425-5101
Telex: via New York Western
Union, 961000 (Mailbox
#FJL0046)
FAX: (902) 421-1923

Contact:

A.Y. McLean, President

Maritime Technical Services Limited (M.T.S.L.) uses its experience and flexibility in its approach to the management of oceanic programs for clients in the oil industry, offshore survey companies, universities and government. In project management, program organization and planning, cost estimating, selection of contractors, on-site supervision, maintenance of specifications and budget control are services offered. M.T.S.L. is dedicated to its clients' interests and provides capable contract supervision and client-contractor liaison. Areas of expertise are in the fields of hydrography and marine environmental surveys and forecasting. The company also provides business development services and staff training, involving organization and preparation of programs and materials, selection of trainees, grading and counselling.

Maritime Testing (1985) Limited (MTL) is a consulting firm that has provided engineering and professional services for 20 years. Clients are offered multi-disciplinary services that include geotechnical engineering, materials science and environmental sciences. The MTL Environmental Division provides fresh water and marine environmental consulting and professional services internationally from the high arctic to the tropics. Recent projects have included such specialties as environmental impact assessment; oil spill contingency plans; environmental baseline studies, surveys and inventories; habitat analysis, rehabilitation and enhancement design; coastal land use and zone management; environmental constraint analysis and mapping; biological laboratory analysis; management, including multidisciplinary, multiconsultant projects; and asbestos management.

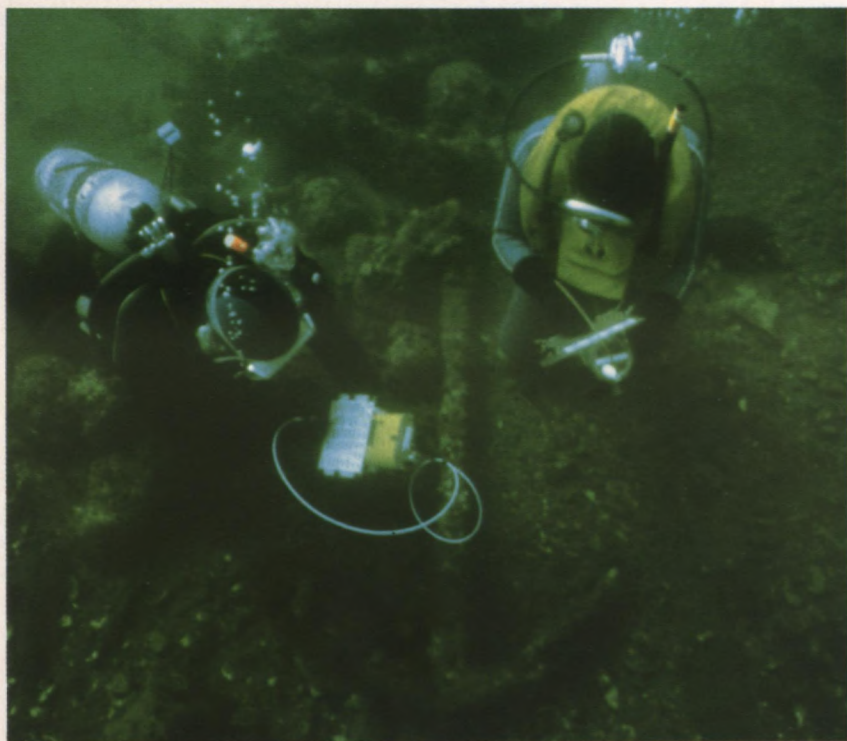
Martec consultants, with interdisciplinary skills and practical expertise, specialize in ocean engineering, structural analysis, ice investigation, and environmental impact assessment. In ocean engineering, Martec collects and analyzes physical data to identify wind, wave, and current conditions and determines how these forces affect floating structures, the stability of pipelines, and sediment movement in nearshore areas. The company has developed data processing software for spectral and extreme event analysis, and computer programs for sediment movement and scour predictions (SEDMO), and ice movement prediction (ICEMO). Martec uses sophisticated numerical modelling and remote sensing techniques for environmental prediction and assessment in coastal and offshore

areas. The ice group offers comprehensive assessments of ice-related problems. Martec provides skilled services in finite element and experimental stress analysis.

McQuest Marine Research & Development Company Limited
489 Enfield Road
Burlington, Ontario
Canada L7T 2X5
Tel: (416) 639-0931
Telex: 061-8503 McQUEST BUR

Contact:

R.K. McMillan, President



Martec scientists use a company-developed submersible computer and data acquisition system.

■ McQuest Marine Research & Development and its sister company McQuest Marine Sciences Limited offer services in all aspects of geophysical surveying, on and under water, on land and in the air. Specializing in side-scan sonar surveys, McQuest has expanded its expertise to include hydrographic, offshore positioning and navigation, bathymetric, oceanographic, environmental, geophysical and underwater inspection surveys using a state-of-the-art inventory of instrumentation. Underwater equipment includes acoustic positioning systems, scanning sonars, sub-bottom profilers, magnetometers, environmental samplers, fathometers, transponders, black and white and colour TV cameras, and a remotely controlled vehicle, DART. Company personnel

have extensive experience in all areas of the world. McQuest Research & Development designs, modifies and manufactures geophysical instrumentation, generates in-house software and databases for data compilation, interpretation, and research into survey methods and techniques. Training courses are offered overseas.



Mesotech Systems Ltd.
 2830 Huntington Place
 Port Coquitlam, British
 Columbia
 Canada V3C 4T3
 Tel: (604) 464-8144
 Telex: 04-353637 MESOTECH
 PTCQ

Affiliates:

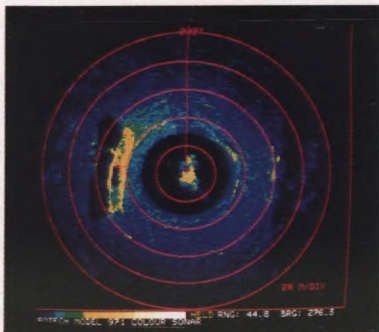
SIMRAD UK Ltd., Dyce,
 Scotland;
 SIMRAD Subsea A/S, Horten,
 Norway;

Mesotech Systems Ltd. designs, develops and manufactures underwater acoustic equipment. The company supplies customers throughout the world with a broad range of equipment including high-resolution imaging and profiling sonars, echo sounders, underwater telephones, pingers, acoustic releases, and telemetry systems. Mesotech's colour imaging sonar can be mounted on manned submersibles or ROVs, deployed over the side of surface vessels, or towed. The underwater telephone is an acoustic transmitter/receiver for voice communication designed for use in small submersibles. An in-house machine shop provides precision machining of housings and integral parts. Purchased by SIMRAD Subsea A/S of Norway in 1985, Mesotech now offers the added experience and technology of an international organization.

Ocean Research (Technology)
 A/S, Bergen, Norway

Contacts:

Carl G. Christensson, General
 Manager
 Teresa S. Smith, Marketing
 Co-ordinator



*Mesotech's colour
 sonar image of a 60-
 metre shipwreck.*

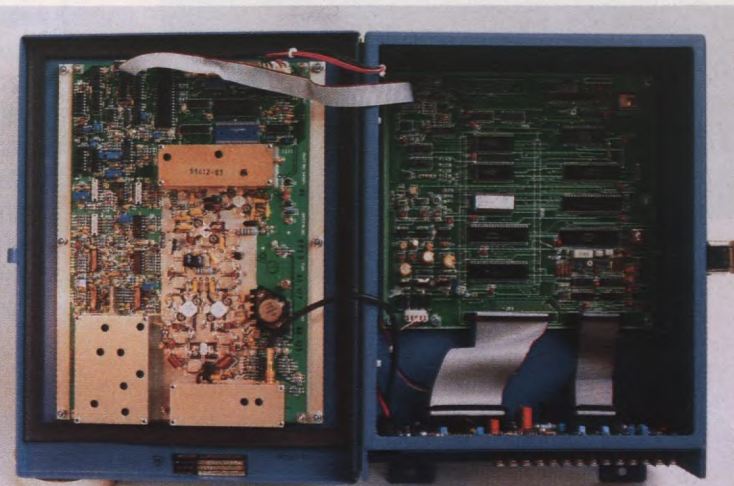
**Meteor Communications
 (Canada) Corporation**
 830 D Pembroke Street
 Victoria, British Columbia
 Canada V8T 1H9
 Tel: (604) 381-4452
 Telex: 049-7497
 METEORCOMM VIC

Contacts:

Kathy Wreggitt, Office Manager
 David Gregson, Engineering
 Manager

Meteor Communications (Canada) Corporation, develops, manufactures and sells meteor burst and other communications equipment, including oceanographic radio controlled buoys. The meteor burst communication system provides reliable, error-free, two-way digital communication between any two points within a 2000 km radius of a master station. It is especially well suited to Arctic use as it is unaffected by sunspots

and other atmospheric disturbances. The system provides round-the-clock data acquisition from remote, unmanned sites, for oil and mineral exploration activities, communication with work crews, ship-to-shore teletype, vessel tracking, and disaster and emergency communications. Communications are completely private and cannot be monitored by other stations.



*Meteor
 Communications'
 MCC-971 remote data
 terminal weighs less
 than 4.5 kilograms.*

Meteorological and Environmental Planning Ltd.
 100 – 7050 Woodbine Avenue
 Markham, Ontario
 Canada L3R 4G8
 Tel: (416) 477-0870
 Telex: 06-966599 MEP MKHM

Contact:
 Boris Weisman, President

■ Meteorological and Environmental Planning Ltd. (MEP) was formed in 1972 and over the first decade was involved primarily in consulting services in the areas of air pollution and forecasting. It now provides consulting services in atmospheric physics, meteorology, climatology, air pollution, simulation modelling, physical oceanography, systems and software development and system implementation to private industry, utilities and government. Specializations in oceanography and related disciplines include coastal oceanography; ocean wave forecasting; sea ice and iceberg detection/prediction; sediment transport; severe weather event, oil spill and ocean current modelling. MEP also provides forecast services through subsidiary and associated companies to industry, the media, and the marine and aviation industries in Canada and the United States.

MMM Surveys and Consultants Limited
 275 Duncan Mill Road
 Don Mills, Ontario
 Canada M3B 2Y1
 Tel: (416) 449-2500
 Telex: 06-966695
 FAX: 416-449-6076

Contact:
 J.H. O'Donnell, President

■ MMM Surveys and Consultants Limited, a subsidiary of Marshall Macklin Monaghan Limited, provides the firm's full range of professional surveying and mapping services. Principal activities include applied, cadastral, geodetic and hydrographic surveying; remote sensing applications; digital mapping and photogrammetric services; geographic information systems (GIS); digital terrain modelling; and computer systems. Among services offered in the surveying field are satellite Doppler positioning, offshore positioning and sounding, geochemical sampling, current measurements and bathymetric surveys. The GIS department specializes in program development for specific project requirements and provides systems analysis, management, and design services for geographically referenced information systems.



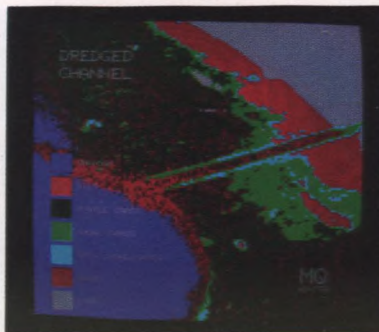
An MMM Surveys crew prepares for hydrographic operations.

MONITEQ Ltd.
630 Rivermede Road
Concord, Ontario
Canada L4K 2H7
Tel: (416) 669-5334
Telex: 06-964776 MONTEQ CCD

Contacts:

T.V. Ward, Vice President,
 Marketing
 R.A. Buxton, Export Manager

MONITEQ is an innovative high-technology company providing airborne electronic imaging systems and services to resource, environmental, and survey and charting industries. MONITEQ's advanced sensors and sophisticated processing software reflect the company's strong capability in research and development. Airborne systems and software are offered as end-to-end systems or as a service to provide coastal water depth and bottom type mapping. Water quality parameters, including suspended solids, chlorophyll and dissolved organic materials, may also be mapped. Circulation patterns and deposition locations may be determined by mapping the migration of effluent and sediment plumes.



Airborne multispectral imaging systems, developed by MONITEQ, are used for depth mapping, water quality assessment and underwater bottom type classification. This is near Panama City, Florida, U.S.A.

MSE Engineering Systems Ltd.
265 Canarctic Drive
Downsview, Ontario
Canada M3J 2N7
Tel: (416) 661-5646
Telex: 06-23982

Subsidiary: MSE International Ltd., St. John's, Antigua, B.W.I.

Contacts:

Alfred W. Egerton, President
 and General Manager
 William F. Baksi, Assistant
 General Manager

MSE Engineering Systems Ltd. designs, manufactures and markets marine and energy products and security products. The Marine and Energy Division supplies nuclear science, geophysical, and oceanographic products internationally to industries and governments involved in nuclear energy and resource based areas. These and other related products are developed by MSE engineers into instrumentation systems such as harsh-environment closed-circuit television systems; underwater closed-circuit television systems; systems for data collection and interrogation from meteorological, environmental, geophysical and oceanographic instruments via telemetry to a remote receiver, data logger and control processor; supervisory monitoring and control systems; and radiation resistant television systems.



MSE's environmental dome housing for outdoor television systems.

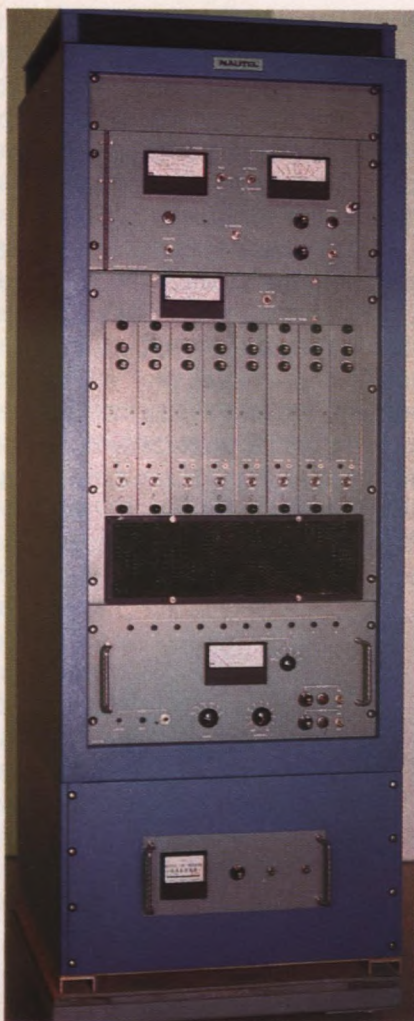
Nautical Electronic Laboratories Ltd.
 R.R. 1 Tantallon
 Halifax County, Nova Scotia
 Canada B0J 3J0
 Tel: (902) 823-2233
 Telex: 019-22552

Subsidiary:

Nautel Maine Incorporated,
 Bangor, ME, U.S.A.

Contacts:

Jorgen Jensen, Sales Manager,
 A/M Broadcast
 Robert Perry, Sales Manager,
 Navigation and Communications



Nautical Electronic Laboratories Ltd., established in 1969, manufactures high-power, totally solid state radio transmitters for use as marine radio beacons; medium frequency telegraph transmitters; shipboard aeronautical radio beacons; transmitting antennas; associated equipment such as antenna timing units; remote control systems; and chronometer keyers. The company produces equipment intended for reliable operation for extended periods without maintenance in harsh climates. All exports originate from the Canadian head office and have been sold in over 90 countries. Training is available in Canada and abroad.

The Nautel 500-watt radiobeacon for marine navigation.

NORDCO Limited
 P.O. Box 8833, 34 Glencoe Drive
 Mount Pearl, Newfoundland
 Canada A1B 3T2
 Tel: (709) 364-1200
 Telex: 016-4596 NORDCO SNF

Contact:

Frank D. Smith, President and
 Chief Executive Officer

NORDCO offers a multidisciplinary approach to the development of ocean resources from the initial research and development to consultative studies and direct services and products. Special emphasis is placed on ice and cold water environments; remote sensing and image processing; environmental forces on structures; marine engineering and naval architecture; economic modelling and socioeconomic studies; environmental forecasting and studies; marine surveys including bathymetric, hydrographic, geophysical and geotechnical; engineering services including instrument design; and project management and large scale computer modelling services. A range of ocean floor sampling devices, on-board motion, stability and environmental monitoring systems, and ballast control are some of the products available from NORDCO.

Nortech Surveys (Canada) Inc.
 319 - 2nd Avenue S.W.
 Calgary, Alberta
 Canada T2P 0C5
 Tel: (403) 262-0800
 Telex: 03-827983 NORTECH CGY

Branch:

Nortech Surveys (UK) Ltd.,
 London, England

Contacts:

Alex Hittel, Chairman
 Ronald Collie, President

Nortech Surveys is a high-technology surveying and navigation company that has been offering services to all parts of the world for some ten years, with operational offices in London, England; Muscat, Oman; and Sydney, Australia. Each offers a complete range of services including inertial positioning for geodetic and photo, airborne laser terrain profiling for route surveys and corridor mapping, and global positioning systems for marine and airborne navigation and high accuracy geodetic control. In addition, Nortech has been involved in the integration and implementation of unique surveying systems, particularly for airborne profiling, rig positioning and aircraft navigation. These high-technology services are augmented by Nortech's abilities in traditional land surveying and marine positioning.

North West Survey Group
 17203 – 103rd Avenue
 Edmonton, Alberta
 Canada T5S 1J4
 Tel: (403) 483-8033
 Telex: 037-3039 SURVEYOR
 EDM

Branches:

Lagos, Nigeria; San Jose, CA, U.S.A.; Bangkok, Thailand; Harare, Zimbabwe; and Lima, Peru

Contact:

J.F. Welter, Vice President,
 Projects



North West Survey emphasizes excellence in cartography.

■ The North West Survey Group comprises professional service companies specializing in aerial photography, photogrammetric mapping and geodetic/cadastral surveys. North West combines inertial survey and global positioning systems for control surveys, and has completed pipeline surveys, control for large blocks of topographic mapping and geodetic surveys. Conventional photogrammetric maps and quality orthophoto maps are produced with equipment including a Wild AC1 analytical stereo plotter interfaced to a Vax Computer System. Semi-analytical aerial triangulation, digital mapping and earth quantity calculations in real-time mode are performed. North West, operating internationally since 1967, offers coastal zone mapping and real-time ice surveillance.

Nova Scotia Research Foundation Corporation
 P.O. Box 790
 100 Fenwick Street
 Dartmouth, Nova Scotia
 Canada B2Y 3Z7
 Tel: (902) 424-8670
 Telex: 019-22719 NSRF DRT

Agencies in United States, Europe and Southeast Asia

Contact:

John A. Gillis, Marketing Director

■ Nova Scotia Research was established in 1946 by the province of Nova Scotia. Its product development division is an ocean-related engineering, manufacturing and marketing group that offers products for world export, including marine electrical slip rings, fluid rotary unions, diving life-support equipment, geophysical marine equipment and underwater instrumentation. The firm offers contract research and development and consulting services along with marine surveys for geotechnical and geological studies.



Nova Scotia Research manufactures this electro-fluid slip ring for marine seismic winches.

Oceanprobe Systems Manufacturing Inc.
1986 Mills Road
Sidney, British Columbia
Canada V8L 3S1
Tel: (604) 656-0188
Telex: 049-7476

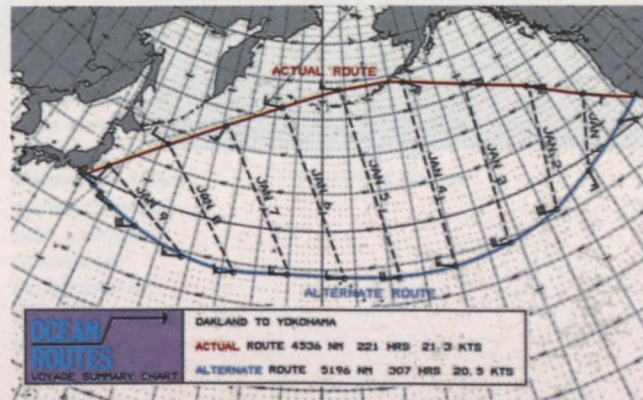
Contact:
Gary Wilton, General Manager

■ Oceanprobe Systems Manufacturing Inc., a wholly owned subsidiary of Arctic Sciences Ltd., develops and manufactures oceanographic products. An experienced team is available for the design, manufacture and testing of custom underwater acoustic measurement systems. Services are offered for all aspects of a proposed measurement system, including electronic hardware and software, underwater housings and support structures. A scintillation system to measure current flows through channels using forward scattering acoustics is manufactured. The Hot Water Ice Drill (ice hole melter), an innovative system of greater reliability than mechanical drilling, is offered. It is comparable in speed and cost to conventional systems but needs no trained drill crew. Meteor communication drifting buoys are also available.

Oceanroutes Canada Incorporated
200 - 1496 Bedford Highway
Bedford, Nova Scotia
Canada B4A 1E5
Tel: (902) 835-1617
Telex: 019-22888

Offices:
Oceanroutes Inc., Sunnyvale, CA, U.S.A.;
Oceanroutes (Australia) Pty. Ltd., Subiaco, Western Australia;

■ Oceanroutes Canada Incorporated is one of an international group of Oceanroutes companies specializing in the provision of meteorological and oceanographic services. Oceanroutes Canada has developed a spectral wave model expressly suited to the Canadian Atlantic area. The company performs marine meteorological studies and offers, under the name Weather Network, direct access to its database of worldwide weather information. In the field of oceanography, the company has been active in the



Oceanroutes' voyage summary chart shows the achieved reduction in sailing hours.

Oceanroutes (U.K.) Ltd.,
Aberdeen, Scotland;
Oceanroutes Hong Kong Ltd.,
Hong Kong

Contacts:
Hugh A. Macpherson, President
Terry J. Deveau, Software Manager

development of acoustic range prediction systems and specialized databases. The Oceanroutes group has been providing marine meteorological services for some 30 years and now has offices supporting the major offshore operations throughout the world. Training is offered in Canada and abroad.

OCEANS Ltd.
31 Temperance Street
St. John's, Newfoundland
Canada A1C 3J3
Tel: (709) 753-5788
Telex: 016-4702 AES SNF

Contact:
Judith Bobbitt, President

■ OCEANS Ltd. is involved in research and development, service contracts involving ocean measurements, oceanographic analysis reports, design of oceanographic field projects, and instrumentation development to improve data collection. Techniques have been developed to enhance the understanding of ocean circulation in order to tackle oceanography problems. The work carried out is directly related to offshore oil exploration and development, marine transportation, and fisheries research. Services are used mainly by fishery biologists and marine structures engineers. The staff includes physical oceanographers, electrical engineers, and technologists; and the company is equipped with an electronics lab and oceanographic instruments.

Offshore Marketing International
 973 Beaufort Avenue
 Halifax, Nova Scotia
 Canada B3H 3X9
 Tel: (902) 429-2205
 Telex: 019-21671
 FAX: (902) 425-0314

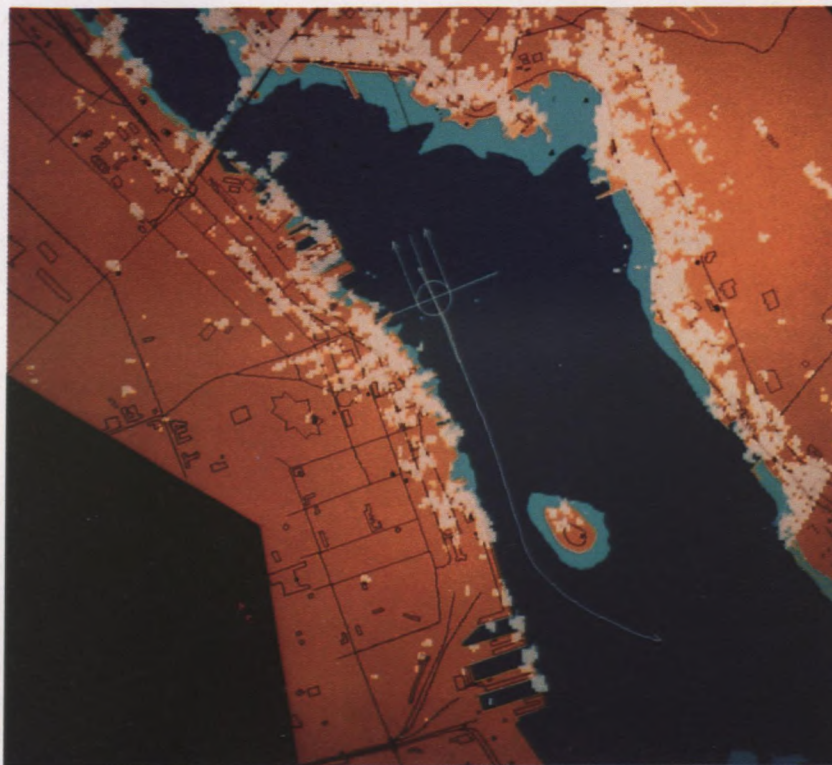
Contact:
 David P. Lyons, President

Offshore Marketing International supplies subsea equipment, instrumentation, and systems, including the design and engineering required for offshore and marine-related industry. The company offers proven international technology, rapid equipment mobilization, systems engineering, comprehensive service and maintenance, project financing, and sale, lease and rental options. Products include remotely operated underwater vehicles; diving equipment and life support systems; underwater video systems; subsea lighting and inspection systems; navigational and marker buoys; oceanographic data acquisition systems; underwater acoustics; and specialized support and survey vessels. Clients are diving contractors, surveyors, oil companies, oceanographic and research and development institutes, and environmental engineering firms.

Offshore Systems Ltd.
 1974 Spicer Road
 North Vancouver,
 British Columbia
 Canada V7H 1A2
 Tel: (604) 929-7961
 Telex: 04352838
 FAX: (604) 929-3260

Branch:
 Offshore Survey Inc.,
 Jackson, GA, U.S.A.

Contacts:
 L.J. Swann, Manager, Marketing
 and Sales
 Barry Ridgewell, Vice President,
 Research and Development



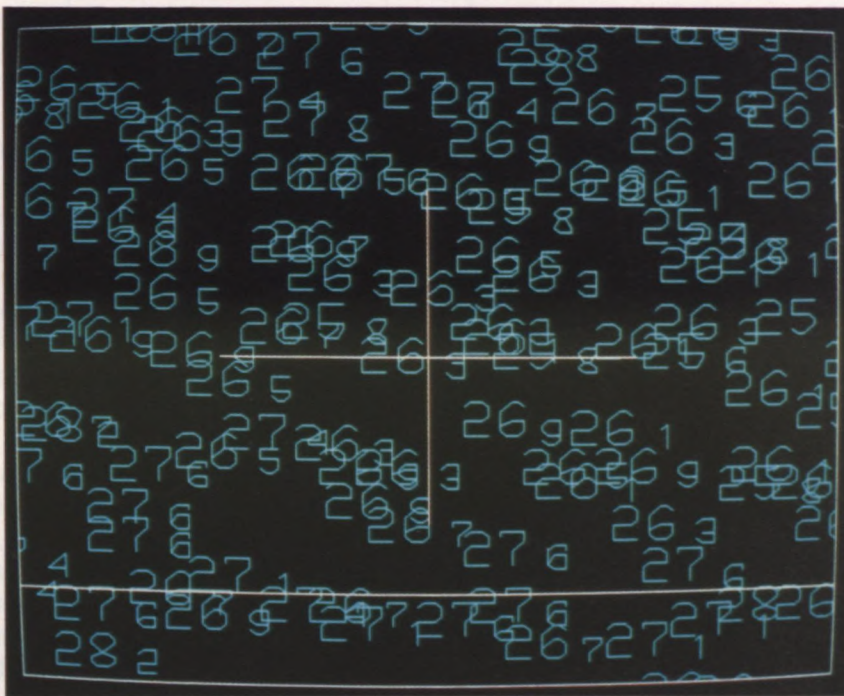
Working electronic charts with real-time display of ship's position have been developed by Offshore Systems and are installed aboard Canadian vessels.

Offshore Systems Ltd. (OSL) is an established company dedicated to the advancement of navigation and to the marine industry. OSL's precise integrated navigation system, PINS 9000, is an established, off-the-shelf navigation system incorporating full-colour graphics, electronic charts, and proprietary-developed navigation software. PINS 9000 is considered by industry to be a leader in its field. Precise vessel positioning and a high level of user friendliness provide the mariner with an easy-to-use, fully automated, real-time, integrated navigation system for advanced shipboard use or harbour management applications.

Optech Inc.
 701 Petrolia Road
 Downsview, Ontario
 Canada M3J 2N6
 Tel: (416) 661-5904
 Telex: 06-217577

Contact:
 Bill Matvichuk, Marketing
 Manager

■ Since 1974 Optech Inc. has been operating in the field of applied laser and electro-optical technology, specializing in prototype laser radar systems. Employing extensive capability in modern laser technology, the firm produces customized systems that are designed and built for industry and government. Fully computerized systems can be provided when required. Products and services offered also include custom electro-optical systems; consulting and design services; research and development and engineering services; custom laser rangefinders; scanning laser bathymeter for water depth monitoring; custom bathymetric and atmospheric lidars; laser terrain profiling systems; and laser ocean wave height monitors.



Canada is the world leader in airborne laser surveys for shallow water nautical charting. Developed under government contracts and manufactured by Optech, the LARSEN system is flown by

Terra Surveys, producing data 10 times faster than conventional methods.

Optech Systems Corp.
 701 Petrolia Road
 Downsview, Ontario
 Canada M3J 2N6
 Tel: (416) 661-5904
 Telex: 06-217577

Contact:
 Bill Matvichuk, Marketing
 Manager

■ Optech Systems Corp. manufactures and markets the laser radar based instruments developed by its associate company, Optech Inc. The product line consists of standard gallium arsenide laser rangefinders and component subsystems. The compact and rugged Optech Wave Height Monitor provides an extremely reliable, accurate and low maintenance method of measuring wave height. It is economical and ideal for offshore use even in the most adverse environments. The Near and Inshore Hydrographic Positioning System is designed for hydrographic surveying of inland and coastal waters, position fixing and tracking of waterborne construction vehicles, offshore units and vessels, tracking of sensing buoys and other oceanographic applications.

Orion Electronics Limited
 Church Point
 Digby County, Nova Scotia
 Canada B0W 1M0
 Tel: (902) 769-3059
 Telex: 019-38506
 FAX: (902) 769-2496

Contacts:

Hugh Roddis, President
 T.J. Thibodeau, Sales and
 Marketing

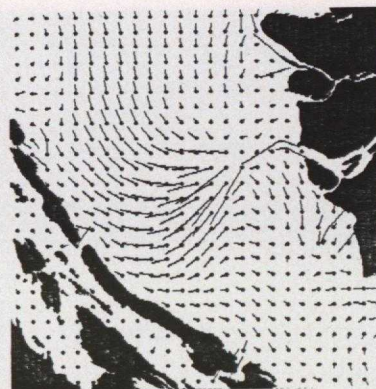
Orion Electronics Limited specializes in the design, development and manufacture of electronic direction finding systems and equipment for land and marine use. With agents in over 20 countries, Orion equipment and services are being used by government agencies, major oil companies, police forces, universities, research groups, marine equipment manufacturers and consultants. Products include a wide range of compatible direction-finding transmitters, receivers and antennas (systems for tracking ocean currents, buoys, ice floes, oil spills and ocean craft). Professional staff have the skills to solve the most unique and complex tracking problems. Services available are custom research and design, prototype development, installation, and operation training.

Pacific Ocean Sciences Ltd.
 103A – 3700 Gilmore Way
 Burnaby, British Columbia
 Canada V5G 4M1
 Tel: (604) 438-9207

Contacts:

James A. Stronach, Principal
 James A. Helbig, Principal

Pacific Ocean Sciences Ltd. is a consulting company, primarily in numerical modelling of currents, tide and waves, for various "hindcasting" and forecasting purposes. Types of physical situations modelled to data are surface currents driven by tide, wind and river runoff; tidal currents; stratified estuarine currents; wind-driven waves, both locally generated waves and waves propagating in the open ocean, modified by coastal bathymetry and currents; and deep-ocean waves. Data from these models can be used for engineering calculations (wave energy, currents); search and rescue (tracking disabled vessels); and oil-spill modelling (real-time tracking, sensitivity analysis, threat analysis).



Pacific Ocean Sciences' computer graphic plot of surface currents at low water, produced on an inexpensive personal computer and graphics printer.

Pallister Resource Management Ltd.
 4116 – 64th Avenue S.E.
 Suite 105
 Calgary, Alberta
 Canada T2C 2B3
 Tel: (403) 236-2345
 Telex: 03-821172

Branch:

Pallister Resource Management,
 Malibu, CA, U.S.A.

Contact:

A.E. Pallister, President

Pallister Resource Management Ltd. provides a technical report service. The InfoPall Report Service specializes in prompt delivery of reports of studies done by industry, research associations, and government agencies. These selective works are not widely known, not widely distributed, and are often out of print. They cover the technical and socio-economic aspects of resource development in arctic and offshore areas of North America. Prices are based on reproduction, handling, and mailing costs. Where the work remains proprietary, the prices reflect a fee to the owner. Owners wishing wider distribution of their reports are invited to add them to the InfoPall listings. Infopall also offers a custom service that searches, obtains, and delivers similar reports not in the InfoPall Report Service.

PAMAP Graphics Ltd.
 301 - 3440 Douglas Street
 Victoria, British Columbia
 Canada V8Z 3L5
 Tel: (604) 381-3838
 Telex: 049-7232 PAMAP VIC

Contact:
 Pamela Sallaway, President

PCI Inc.
 80 Bloor Street West
 11th Floor
 Toronto, Ontario
 Canada M5S 2V1
 Tel: (416) 928-6733
 Telex: 06-217652 PCI TOR

Affiliates:
 MATRA, SA, Paris, France;
 Swedish Space Corp.,
 Stockholm, Sweden;
 Data Quest, Washington, DC,
 U.S.A.;

Terra-Control Technologies,
 Kuala Lumpur, Malaysia;
 SPECK Systems, Hyderabad,
 India

Contacts:
 W. Murray Strome, President
 E. David, General Manager

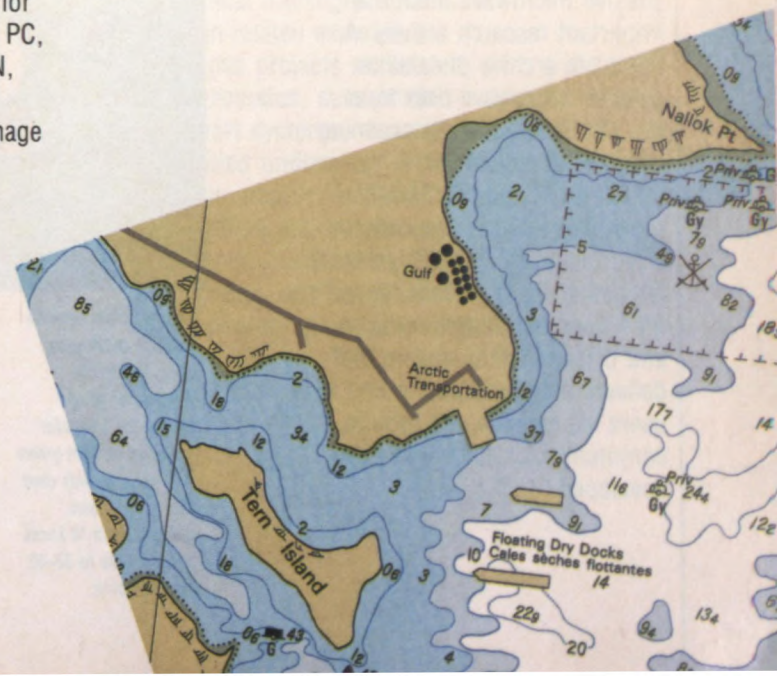


PAMAP's geographic information system (GIS) serves a wide variety of marine applications.

PAMAP Graphics Ltd. is a high-technology company specializing in software development and information processing. The PAMAP Geographic Information System has been designed to interface with image analysis systems. Operators achieve greater productivity and work more quickly with fewer errors on this friendly, easy-to-use system. PAMAP's applications professionals can customize nearly every function, tailoring the system to client requirements. A full range of after-sale support and service is offered, including training. Applications and disciplines served are surveys; seabed mapping; fisheries; environmental studies; search and rescue; and atmospheric studies. There is a range of land use applications. Consulting services are available to help the client define and fill information processing needs.

■ With a complete range of products, from fully integrated systems like the IMAVISION image analysis workstation to software-only packages, PCI is committed to providing the highest quality products and services in digital image processing and analysis, geographic information systems, and digital archiving systems. Its digital image analysis software (EASI/PACE) is offered for a variety of computers (IBM PC, DEC VAX, Perkin-Elmer, SUN, 680XO UNIX, Control Data Cyber) supporting several image

display devices. This package is used by major oceanographic and atmospheric research centres. PCI offers systems, consulting and training to provide users with expertise to develop new applications or to analyze data from LANDSAT, SPOT, NOAA, CZCS and airborne optical and radar image sensors. . .

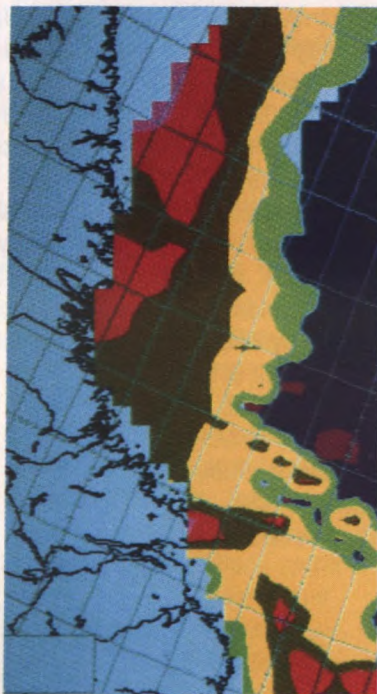


Ph.D. Associates, Research, Consulting, Invention, Inc.
 200 – 4700 Keele Street
 North York, Ontario
 Canada M3J 1P3
 Tel: (416) 736-5295

Contacts:

Ross Williams, Applications Analyst
 Frank E. Bunn, President

■ Ph.D. Associates Inc. specializes in scientific computer applications, with expertise in receiving, interpreting and displaying remote sensing data from satellites, aircraft and ground-based systems. Numerical modelling of geophysical parameters – wind speeds, cloud cover and rain rates over the open ocean, and sea ice concentration – from satellite passive microwave data is an important research activity. A complete archive of satellite passive microwave data from the ESMR (electrically scanning microwave radiometer) (1972-1977) and the SMMR (scanning multichannel microwave radiometer) (1978-present) resides at Ph.D. offices. A real-time operational data retrieval and dissemination system that delivers data products to end users via satellite and ground communication links has been developed.



Derived from satellite passive microwave data, this Ph.D. Associates photo shows the Labrador ice edge in light green and wind speeds over the open ocean, ranging from 10 knots in light blue to 30-40 knots in pink.

Polar Tech Ltd.
 676 Wain Road
 Sidney, British Columbia
 Canada V8L 3R9
 Tel: (604) 656-9131
 Telex: 049-7184 GEOTERREX

Affiliate:

Jon B. Jolly Inc., Seattle, WA., U.S.A.

Contact:

Rick Hudson, President

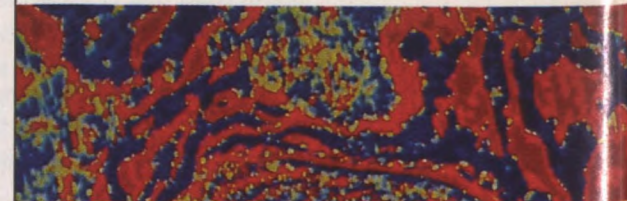
■ Polar Tech provides electronic instrumentation engineering and related services, designing electronic and mechanical systems, remote sensing devices, micro-processor-based data collection systems and Arctic modified equipment capable of surviving hostile environments. The group evaluates problems and designs, tests, installs, debugs, and field-modifies equipment. A variety of unusual and innovative instruments have been tested and deployed to measure previously unmeasurable parameters in harsh climates. Among these is an on-ice accelerometer system capable of providing scientists with a replay of ice floe collision, denoting its forces and pressures.

Pulsonic Geophysical Ltd.
 700 – 10201 Southport Road S.W.
 Calgary, Alberta
 Canada T2W 4X9
 Tel: (403) 255-2820
 Telex: 03-821486

Contacts:

Hugh Stanfield, President
 Doug Bogstie, Marketing Manager

■ Pulsonic Geophysical Ltd. is a seismic research and processing company, one of the largest marine and land data processors in Canada. In addition, Pulsonic has become one of the foremost three-dimensional processing centres in the geophysical community. Competent, experienced people provide total service to clients. Better seismic technology is one of the keys to lower finding costs, and Pulsonic is a leader in state-of-the-art developments in seismic data processing and acquisition. A solid commitment to applied research and development is maintained at Pulsonic. Training on the job in Canada or abroad is available.



Pulsonic is one of the largest marine and land data processors in Canada.

Quester Tangent Corporation
4252 Commerce Circle
Victoria, British Columbia
Canada V8Z 4M2
Tel: (604) 727-6677
Telex: 049-7309 INTER VIC

Affiliate:

Quester Tangent Australia Pty Ltd., Victoria, Australia

Sales Representatives:

Burmarc Ltd., Liphook, U.K.;
 Seismic Supply International,
 Brisbane and Perth, Australia;

Seismic Supply International,
 Singapore, Singapore;
 Trident Data Systems, Quezon
 City, Philippines

Contacts:

John V. Watt, Vice President,
 Marketing, and Export Manager
 Paul R. Lacroix, Vice President,
 Special Projects

■ Quester Tangent Corporation (QTC), a marine science systems company, offers high-level expertise in hydrographic, oceanographic and geophysical disciplines. It manufactures and delivers field-proven, turnkey systems designed using ISAH, the Integrated System for Automated Hydrography – a production instrument for the survey environment. ISAH provides the hydrographer with data acquisition, real-time navigation and processing capabilities in a field-rugged instrument. QTC's team of engineers, hydrographers and scientists together with its worldwide network of qualified representatives provide professional services through all phases of a project. QTC specifies, delivers and installs field-ready systems and ensures high-level training and quality, long-term product support.



ISAH, the integrated system for automated hydrography made by Quester Tangent and operated routinely by the Canadian Hydrographic Service, provides hydrographers with rugged data acquisition, real-time navigation and processing capabilities.

R & D Lyons Consultants Limited
973 Beaufort Avenue
Halifax, Nova Scotia
Canada B3H 3X9
Tel: (902) 429-2205
Telex: 019-21671
FAX: (902) 425-0314

Contact:

David P. Lyons, President

■ R & D Lyons Consultants Limited assists international clients with new technology commercialization. Services include the identification and assessment of new technological opportunities; technology brokering; strategic market development; project financing; development of technology transfer strategies; establishment of licensing arrangements; and provision of technical training programs. Ocean-related experience includes projects associated with robotics, subsea life support systems, remotely operated underwater vehicles, oceanographic instrumentation, navigation and positioning systems, technical training programs, and subsea video and photographic technologies.

Robert Allan Ltd.
 500 – 1380 Burrard Street
 Vancouver, British Columbia
 Canada V6Z 2H3
 Tel: (604) 684-8102
 Telex: 04-508363
 FAX: (604) 684-6927

Contact:
 Robert G. Allan, President

Robert Allan Ltd. is a company of naval architects and marine engineers. Services offered are design, construction supervision, owner's representation, vessel inspection and survey, working drawing preparation (especially for smaller shipyards), marine legal consultancy, marine research and investigation, and transportation economic studies. Utilizing complete computer-aided design and drafting facilities for all aspects of ship design, Robert Allan Ltd. designs tugboats, supply vessels, shallow-draught vessels, fishing vessels, ferries, patrol boats, submersible support vessels, barges, Arctic class vessels, and specialized commercial craft of all types.

Roche Ltd., Consulting Group
 2535 Laurier Boulevard
 Sainte-Foy, Quebec
 Canada G1V 4M3
 Tel: (418) 654-9600
 Telex: 051-31593

Branch:
 Roche Ltée, Groupe-conseil,
 Dakar, Sénégal

Roche Ltd., Consulting Group offers consulting services and research and development in the fields of fisheries and marine environment. Its activities include planning and development (technical and economic studies, financial analysis, management, personnel training); fisheries resources and marine environment (field surveys, impact studies, fishing gear,

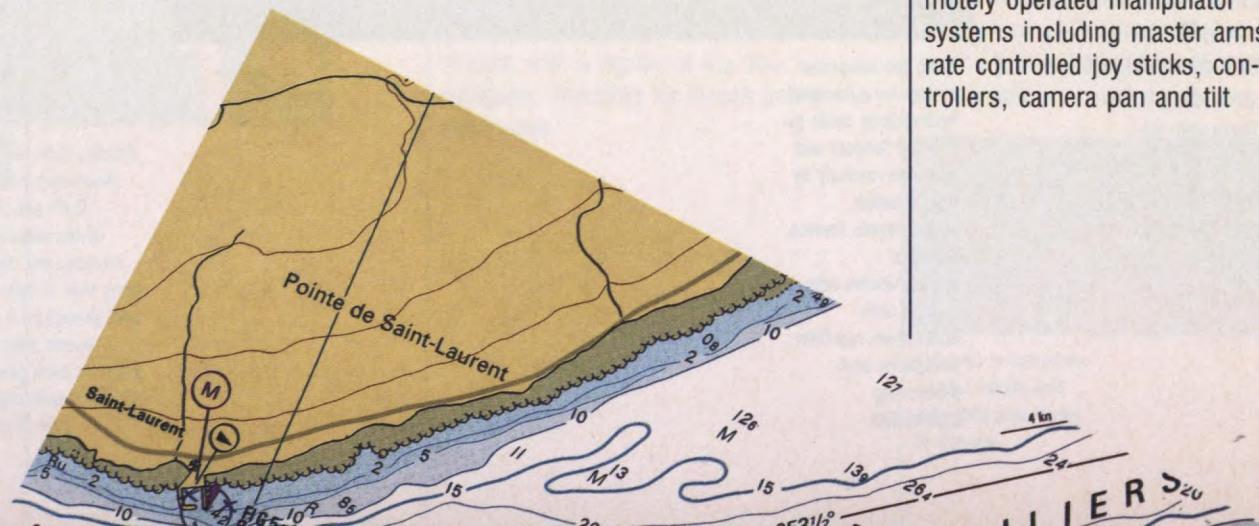
Contacts:
 Pierre Lacroix, Vice President,
 Resources Management and
 Planning
 Pierre Brulotte, Export Manager,
 Director Fisheries and
 Environment

resource assessment); marine engineering and naval architecture (infrastructures design and construction, numerical modeling, hydrology). Roche Ltd. also provides expertise in industrial engineering and food processing (fish processing plants, quality of marine products, fish handling); and marketing and market planning (market studies, sales strategies).

RSI Robotic Systems International Ltd.
 9865 W. Saanich Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-0101
 Telex: 049-7292 RSIROBOTIC
 SID

Contacts:
 Jack Wilson, President
 Chris Roper, Export Manager

RSI Robotic Systems International Ltd. designs, manufactures, and markets robotic and telerobotic systems. RSI and its associates have the combined expertise to deliver feasibility and cost/benefit studies and engineering services for proven robotic or telerobotic applications. RSI, a world leader in remote manipulator technology, has an extensive range of subsea manipulator products and control systems. The Subsea Division manufactures an on-going product line of four-, five- and seven-function remotely operated manipulator systems including master arms, rate controlled joy sticks, controllers, camera pan and tilt





Robotic Systems' remote manipulator is shown attached to HydroProduct's drill ship system vehicle.

units, telemetry and special tools. RSI products are both standard and customized for use on remotely operated vehicles (ROVs). After the tragedy of NASA's *Challenger* explosion in the United States, RSI was immediately contacted to provide remote manipulators for deployment on a subsea ROV being mobilized to search for parts on the seabed.

S.L. Ross Environmental Research Limited
346 Frank Street
Ottawa, Ontario
Canada K2P 0Y1
Tel: (613) 232-1564
Telex: 063666 (CNCP EOS TOR)
.TO ID:21XRE001

Contact:
 S.L. Ross, President

■ S.L. Ross Environmental Research Limited specializes in marine oil spills and their control. Because of its high level of specialized knowledge, its commitment to improving the state of the art in oil spill counter-measures, and its proven track record, S.L. Ross has maintained a virtually unchallenged position in the Canadian oil spill consulting marketplace. More than 100 projects have been performed in the United States, Africa, South America, and for government and all the major oil companies in Canada. The work has covered oil spill concerns – from the preparation of equipment catalogues, response manuals, counter-measures evaluations, and contingency plans to laboratory and field research in areas such as dispersant effectiveness and skimmer and shoreline cleanup equipment – and the fate, behaviour and effects of oil spills.

Scintrex Limited
222 Snidercroft Road
Concord, Ontario
Canada L4K 1B5
Tel: (416) 669-2280
Telex: 06-964570 SCINTREX

Branch:
 Scintrex Pty Ltd., West Perth,
 West Australia

Contact:
 Jon G. Baird, Senior Vice
 President

■ Scintrex Limited manufactures a broad range of instrumentation for geophysical and geochemical measurements on land, in the air, or at sea. Instrumentation with oceanic applications includes proton and cesium magnetometers, radiometric bottom loggers, and data acquisition systems. The company provides installation services and training in operation and maintenance of its products. Training is available in English, French, Spanish and Mandarin, on the job or in a classroom setting.

**Sea Scan Technology
(Canada) Inc.**
Unit 1, 4393 – 14th Street N.E.
Calgary, Alberta
Canada T2E 7A9
Tel: (403) 250-5577
Telex: 03827703

Contacts:

Rick Harrison, Director, Marketing and Distribution
Peter Jess, President



The Sea Whip, made by Sea Scan Technology, is a heavy-duty, low-cost remotely operated vehicle (ROV) which operates to 366 metres.

Sea Scan Technology (Canada) Inc. manufactures submersible, remotely controlled video vehicles known as Low Cost Remotely Operated Vehicles (LCROV). The Sea Whip is a well-established heavy industrial LCROV with an operation depth of up to 366 metres, weighing 38 kilograms. Sea Scanner is a portable (12 kilogram), light industrial or recreational remotely operated vehicle providing underwater colour television. It requires only 120 voltage alter-

nating current, is rated to a depth of 153 metres, and is suitable for observation, inspection and salvage operations. Contract research and development, consulting services, and training related to these vehicles are offered.

SEA-I Research Canada Ltd.
P.O. Box 2282
10992 Madrona Drive
Sidney, British Columbia
Canada V8L 3S8
Tel: (604) 656-2821
Telex: 049-7472 SEA-I SID

Contacts:

Thomas J. Barnes, President
David S. Woodroffe, Operations Manager

SEA-I Research Canada Ltd. designs, manufactures, and operates the MANTA series of underwater dynamic towed systems (linear ROVs). MANTAs are designed and equipped for high-speed, high-precision sub-sea surveys in areas of strong currents and poor visibility. MANTA carries and controls a silicon intensified target-type video camera, stereo still camera/strobes, four sonars (including sidescan), an ocean data sensor package, and other devices. Applications for the MANTA system include engineering, geotechnical and dredging surveys; fisheries studies; cable/pipeline inspection; environmental studies; and mine counter-measures studies/corridor conditioning surveys. MANTAs have been deployed throughout the world, from polar to tropical regions.

**Seaconsult Marine
Research Ltd.**
820 – 1200 West 73rd Avenue
Vancouver, British Columbia
Canada V6P 6G5
Tel: (604) 266-9135
Telex: 045-07625

Contacts:

Donald O. Hodgins, President
Sandra L.M. Hodgins,
Secretary-Treasurer

Seaconsult Marine Research Ltd. provides professional engineering and oceanographic consulting services to the offshore oil industry and to governments requiring environmental monitoring, scientific research and forecasting. Expertise includes oceanography, coastal engineering and meteorology. Seaconsult's service specialities are in the fields of offshore hydrocarbon development, civil marine construction, pollutant dispersion and environmental research, and include oceanographic data acquisition, analysis and interpretation; environmental modelling and forecasting; and the design of applied oceanographic systems. Personnel combine high academic qualifications with extensive project experience, involving analytical studies, field work and directed research programs.

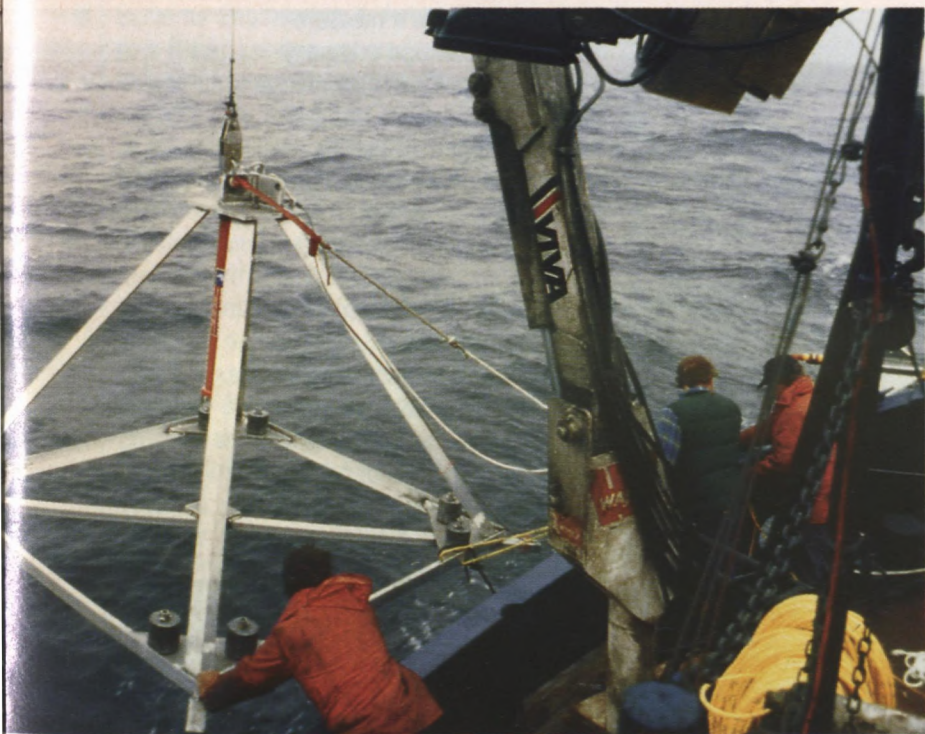
Seastar Instruments Ltd.
 P.O. Box 2430, 2045 Mills
 Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-0891
 Telex: 049-7526

Branch:

Seastar Instruments Inc.,
 Seattle, WA., U.S.A.

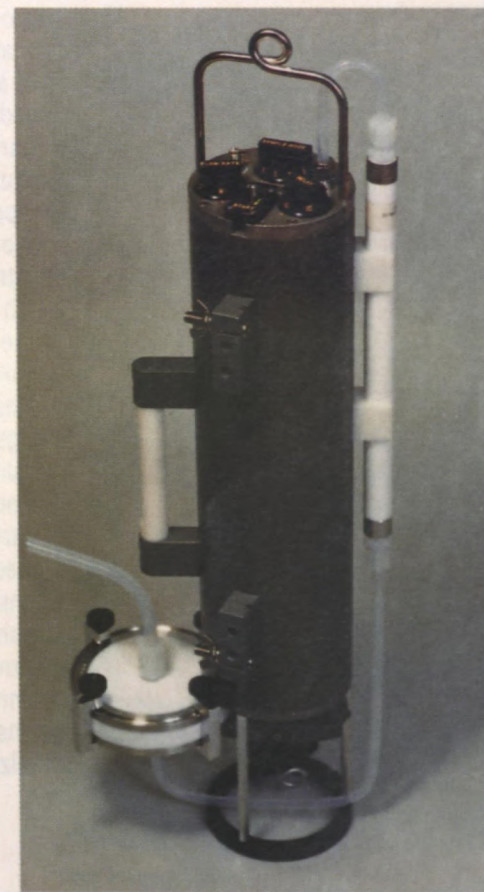
Contacts:

Mary E. McFarland, Sales and
 Marketing
 David Green, Vice-President,
 Seastar Instruments Ltd.,
 Dartmouth, Nova Scotia
 Tel: (902) 464-0939
 Telex: 019-31664



*Seaconsult deploys
 current meters for an
 offshore monitoring
 program.*

- Seastar Instruments Ltd. manufactures ocean instrumentation and equipment, acoustic equipment, laser/fibre optic products, meteorological equipment, ultra pure chemicals for use in trace chemical analysis, and sampling modules for in-situ water samples. Some products available in the field of oceanographics are a real-time, impact-resistant telemetry buoy system (RIOT), an intelligent serial interface for Mini-Ranger III* positioning system (*Reg. TM Motorola Inc.), a bottom referencing underwater towed instrument vehicle (BRUTIV), and an on-bottom retrievable seismometer. Greatly involved in underwater acoustics, Seastar has developed and manufactures the portable ECOLOG acoustic system designed to report geographical position, size, number and biomass of fish for fish stock assessment.



*Seastar's in-situ water
 sampler is capable of
 large-volume ultra-
 trace operations.*

SEATECH Investigation Services (1980) Ltd.
 P.O. Box 2161, Station M
 Halifax, Nova Scotia
 Canada B3J 3C4
 Tel: (902) 423-5296

Contacts:

Clive MacGregor, President
 Andrew Hebda, Senior Staff
 Biologist

SEATECH Investigation Services Ltd. maintains a multidisciplinary research and development team backed up by an analytical laboratory and field equipment. Capable of carrying out a wide range of studies, SEATECH offers services ranging from individual chemical analyses to interdisciplinary environmental impact assessments. The firm has conducted studies in various geographical locations and ecotypes – inshore, nearshore, offshore, estuarine, salt marsh, rivers and lakes. Research staff also produce specialty monitoring products for contaminants and pollutants. Research and analytical services are offered in environmental impact assessment and monitoring; hazardous materials; fisheries; and marine chemistry and gas analysis. Training is offered.

Seatronics Technologies Ltd.
 306 Discovery Park
 3700 Gilmore Way
 Burnaby, British Columbia
 Canada V5G 4M1
 Tel: (604) 437-4781

Contact:

Jacques Heyrman, President

Seatronics Technologies Ltd. is dedicated to research, development and consulting services related to more efficient forms of marine transportation and shipbuilding and is a leader in the application of computer technology for the marine industry. Management and research teams were responsible for the design and marketing of Hydralift Skegs, the device that enables barge towing power savings of up to 30 per cent. Hydralift II is now available. Seatronics will develop designs for particular vessels and supply all specifications for fabrication and installation; enter into exclusive, long-term, licensing agreements with shipyards to accommodate stock and custom designs; and develop complete, optimized barge designs.

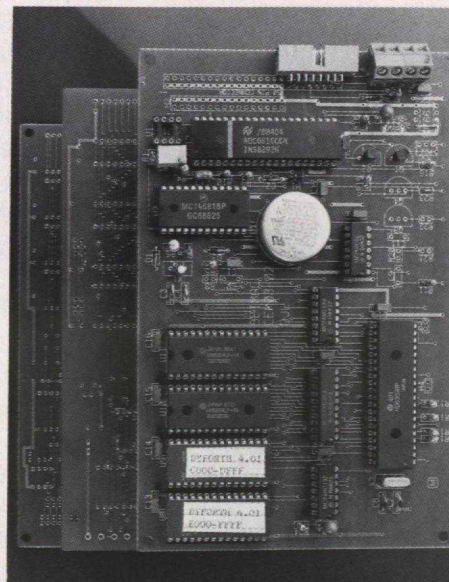
Seimac Limited
 1378 Bedford Highway
 Bedford, Nova Scotia
 Canada B4A 1E2
 Tel: (902) 835-9686
 Telex: 019-22888 SEIMAC HFX
 FAX: 902-835-6589

Affiliates:

General Oceanics, Incorporated,
 Miami, FL, U.S.A.
 Engineering Service Associates,
 Inc., Washington, DC, U.S.A.

Contacts:

Joseph H. Seiler, President and
 Export Manager
 Richard E. Coates, Technical
 Manager



Seimac's cold electronics module series of single board computers interface to ARGOS satellite transmitters, making worldwide remote data collection possible.

Seimac Limited is a measurement system design company whose principal activities are the design, development, production and support of marine electronic devices and systems; and training, consultation and system integration. Most devices are microprocessor based. Seimac holds special expertise in the production of low-power and arctic data logging equipment. Products include weather stations; wave measuring structures; specialized drifting buoys; arctic data logging systems; ships' scientific and military data acquisition systems; mass storage devices for underwater use; instrument networks; electronics interfacing of all kinds; vessel efficiency monitoring including fuel consumption and fleet management systems; and remote data retrieval using satellites.

Systems Engineering & Automation Limited
 P.O. Box 13606, 39 Pippy Place
 St. John's, Newfoundland
 Canada A1B 4G1
 Tel: (709) 364-2075
 Telex: 016-4526 SEA

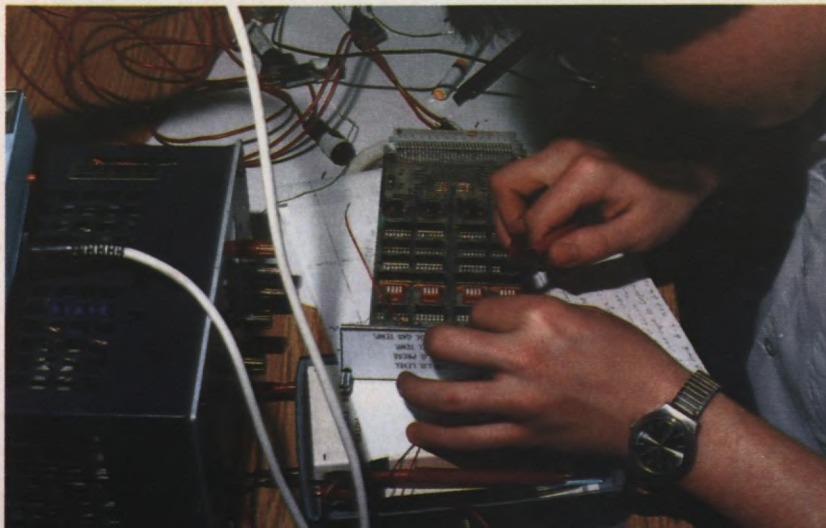
Contact:

Jerome P. Byrne, Export
 Manager

Systems Engineering & Automation (SEA) Limited serves the industrial, commercial and marine/offshore sectors in the field of microprocessor technology. With a highly motivated and dedicated team, SEA designs, develops and manufactures motor control circuits; process control loops; data collection systems; pump control systems; robots; fixed and variable mimic displays; colour graphics for process and digital control; programmable controller (PC) systems; energy management systems; telemetry systems;

and computer interfacing equipment. The systems are of rugged industrial and marine construction using quality manufacturing techniques; they are thoroughly tested; and they undergo careful quality control inspection. SEA Limited provides in-house or on-site training for any equipment or systems designed by the company.

Systems Engineering and Automation (SEA) specializes in microprocessor technologies for the marine and offshore sectors.



Targa Electronics Systems Inc.
 P.O. Box 8485
 3101 Hawthorne Road
 Ottawa, Ontario
 Canada K1G 3H9
 Tel: (613) 731-9941

Contacts:

Brad Jones, Export Manager
 and Applications Engineer
 Gavin McLintock, President

Targa Electronics Systems Inc. is a leading manufacturer of bubble memory systems designed to operate in harsh industrial environments. The product line consists of a series of solid state, non-volatile memory systems for field-mobile, factory, marine and airborne data storage and program load applications – situations where traditional computer memory systems cannot be relied upon. These memory systems are configured for use as both fixed and removable cartridge data storage. Targa's first entry into the field of rugged data storage technology was in shipboard hydrographic surveying. Since then the company has supplied these systems for the oil industry, power utilities, military, mining applications, vehicle development, and the aerospace industry.



Targa Electronics leads in making bubble memory systems for shipboard hydrographic surveys.

Techno Scientific Inc.
60 Caster Avenue
Woodbridge, Ontario
Canada L4L 4X2
Tel: (416) 851-9958
Telex: 06-986766 TOR

Contact:
M. Macecek, President



Techno Scientific makes ultrasonic transducers, automated inspection systems, and Doppler ultrasonic emboly units for decompression monitoring of divers.

Techno Scientific Inc. (TSI) manufactures a range of products applicable to oceanic and marine environments: ultrasonic transducers for depth sounding and water level measurements; automated inspection systems for dry or immersion testing of welds, and corrosion of large welded structures; concrete testing system to test concrete structures for wall thicknesses of up to 15 metres, using the pulse-echo method; and Doppler ultrasonic emboly units for

decompression monitoring of divers are available. TSI offers total research and development, engineering, design, and manufacturing capabilities for a turnkey system.

Techwest – A Division of Fleet Aerospace Corporation
200 – 7680 River Road
Richmond, British Columbia
Canada V6X 1X6
Tel: (604) 273-6336

Contacts:
W.D.R. Thomas, Manager,
Mechanical and Marine
D.G. Roth, Manager, Electronics

Techwest designs and manufactures motion compensation systems, stabilized antenna platforms, and mobile data acquisition systems. Facilities include laboratories for advanced work in the fields of electrical and electronic engineering, electro-mechanics, mechanics and hydraulics. As part of the design process, Techwest makes extensive use of computers. Very sophisticated programs have been created for the design and analysis of complex motion

compensation systems for rough sea, surface to sub-surface operation, and for the design and analysis of closed loop control systems. Consulting services involving motion compensation systems, dynamic analysis of complex systems (existing and proposed), and control system analysis and development are offered.

A motion compensating crane, custom designed and built by Techwest for the U.S. Navy.



Tektrend International Inc.
170 – 8200 Decarie Boulevard
Montreal, Quebec
Canada H4P 2P5
Tel: (514) 341-5343

Contacts:

Elan Wasserman, Marketing and
 Export Manager
 R. Hay, President



Tektrend International Inc. produces hardware and software systems that analyze complex data. Combining pattern recognition with automated intelligence techniques, Tektrend provides an easy-to-use, off-the-shelf software system called ICEPAK, the Intelligent Classifier Engineering Package. ICEPAK is a valuable developmental tool for seismology, radar and sonar applications. It can process, interpret and classify a wide range of signals. This product is particularly well suited for large databases and is compatible

Tektrend's ICEPAK, the Intelligent Classifier Engineering Package, is used in sonar/radar applications and for geophysical exploration.

with most computer systems. Whether the application is exploration or military, ICEPAK is offered both as a stand-alone package and as a complete turn-key system. Tektrend also offers services in integrating existing hardware/software systems to enhance efficiency. Training is available.

Terra Surveys Limited
2060 Walkley Road
Ottawa, Ontario
Canada K1G 3P5
Tel: (613) 731-9571
Telex: 053-3502 GEOTERRA

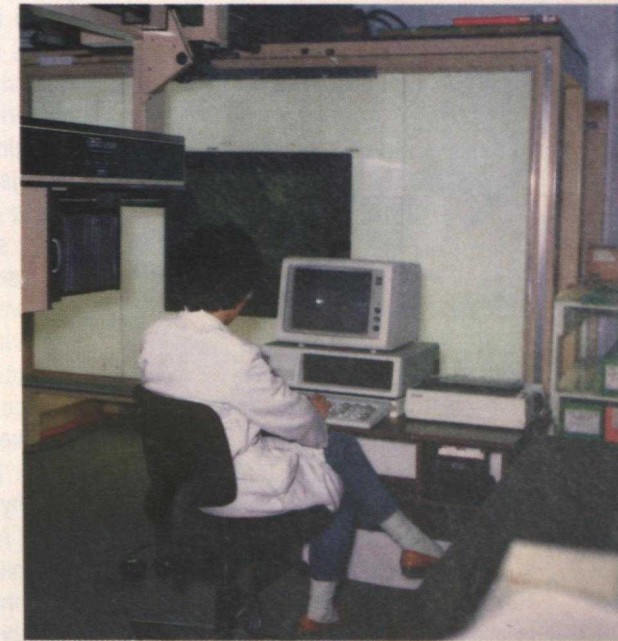
Branches:

Abu Dhabi, United Arab
 Emirates
 Georgetown, Guyana

Contacts:

J.R. Depper, President
 A.S. Calder, Planning

Established in 1966, Terra Surveys Limited provides consulting, engineering and technical services in the hydrographic (surface and airborne), photogrammetric and geophysical fields. The Hydrographic Division provides complete surveying services in all waters – offshore, coastal, inland and Arctic. Services use conventional launches with sounding equipment, or are airborne, utilizing the Larsen 500 Scanning Lidar Bathymeter System. Other divisions provide services for the establishment of geodetic control by ground, airborne, satellite and inertial methods; vertical controls by ground methods and airborne profile recording systems; acquisition of aerial photography; and preparation of topographical mapping by conventional and digital methods. Training is available and may be given in English, French, or Chinese.



Terra Surveys' computerized copy camera station.

The Eastcan Group of Survey Consultants Limited
 408 – 5251 Duke Street
 Halifax, Nova Scotia
 Canada B3J 1P3
 Tel: (902) 420-8338
 Telex: 019-23648 EASTCANGRP
 HFX

Contacts:

David Steeves, Manager
 Ken Clifford, Manager

The Eastcan Group of Survey Consultants Limited was formed in recognition of a need for a large, multidisciplinary survey organization to service expanding and increasingly complex survey requirements throughout the world. The company specializes in offshore surveying and navigation services required for rig positioning, geophysical surveys, hydrographic surveys of coastal areas, harbours and rivers, and other scientific studies. Rental of marine equipment – including Argo, Syledis and Mini-Ranger Navigation systems and Atlas, Innerspace and Raytheon sounding equipment – is available. The Eastcan Group also provides underwater stereo-photography and subsequent mapping for applications such as biological studies, underwater historical and wreck sites, and monitoring of hull damage.

The McElhanney Group Ltd.
 200 – 1166 Alberni Street
 Vancouver, British Columbia
 Canada V6E 3Z3
 Tel: (604) 683-8521
 Telex: 04-51474

Branch:

McElhanney Surveys Pte. Ltd.,
 Singapore

The McElhanney Group Ltd. offers comprehensive, integrated services in surveying, civil engineering, photogrammetric engineering and urban planning projects. Marine specialists provide services in rig positioning, site survey navigation, seismic vessel navigation, hydrographic surveys, precise positioning and channel navigation, acoustic positioning, streamer tracking, through ice sounding, dredging surveys and project quality control. McElhanney carries out bathymetric reconnaissance and multi-instrument, high-resolution geophysical and geotechnical marine surveys for utility transmission line and pipeline route investigations, using high-resolution echo sounders, towfish positioned side-scan sonar systems, sub-bottom profiler systems, magnetometer systems, piston corers, sediment samplers and

Contacts:

D.P. Mahony, Manager,
 Marketing
 D. Powell, Manager, Marine
 Services, (Halifax Office)
 1 – 101 Thornhill Drive,
 Dartmouth, Nova Scotia
 Tel: (902) 463-0041
 Telex: 019-31670



A McElhanney crew retrieves a narrow beam sounding fish.

seabed cameras. Major marine route surveys have been successfully completed in offshore, coastal and inland marine environments worldwide.

The Seakem Group Limited
 P.O. Box 2219, 2045 Mills Road
 Sidney, British Columbia
 Canada V8L 3S1
 Tel: (604) 656-0881
 Telex: 049-7460 SEAKEM SID

Contacts:

David J. Thomas, President
 Andrew L. Wood, General
 Manager

The Seakem Group Limited provides consulting services in physical, chemical and biological oceanography to the offshore petroleum industry, to engineering, mining, and pulp and paper companies, and to government through offices in Sidney and Vancouver, British Columbia, and Dartmouth, Nova Scotia. Projects include marine environment impact assessments; meteorological, current and wave studies for engineering offshore and coastal structures, including submarine pipelines; and resource inventories and mapping programs. Among its resources are laboratory facilities; in-house main frame and micro-computers; biological and water-quality field sampling gear; in-situ recording instruments for wave, tide and current studies; and repair and maintenance facilities. Seakem provides training to students in co-operation with Canadian universities, and has similar programs for visiting scientists from other nations.

T.M. Thomson & Associates Ltd.
 1006 Government Street
 Victoria, British Columbia
 Canada V8W 1X7
 Tel: (604) 385-4468
 Telex: 049-7345 TMT FORENG
 VIC

Contact:

Rudolf G. Kind

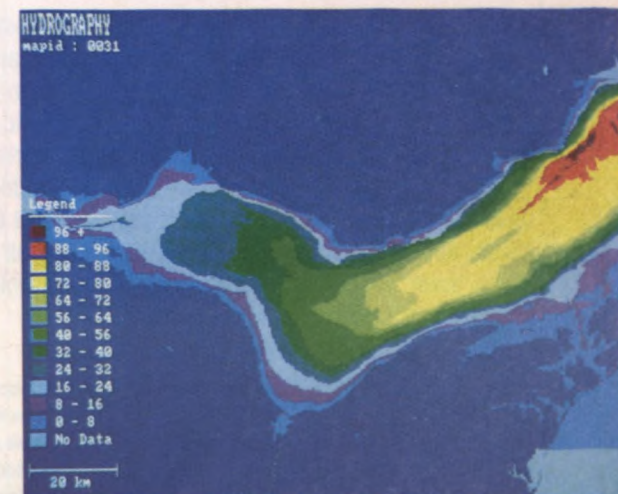
T.M. Thomson & Associates Ltd. is a firm of consulting engineers experienced in all aspects of civil, municipal, transportation and structural engineering, including feasibility studies; preliminary site investigations; design; contract drawings and documentation; cost estimating; resident site supervision; and project management. Specialties include bridges, marine terminals, marine structures, dams, and docks.

TYDAC Technologies Inc.
 1600 Carling Avenue
 Ottawa, Ontario
 Canada K1Z 8R7
 Tel: (613) 238-5614
 Telex: 053-4517

Contact:

Giulio Maffini, President

TYDAC Technologies Inc. has developed and markets micro-computer-based geographic information systems and software. SPANS (Spatial Analysis System) will enhance the productivity of professional resource managers and researchers concerned with coastal and oceanic management. SPANS performs overlay analysis on up to 14 maps simultaneously, will convert point data (temperature and other sample data) to thematic maps, and can be used for predictive spatial models. Rectified satellite imagery, classified or not, can be entered. Geographic data can be downloaded or entered directly in either raster or vector formats. Uses of SPANS include display, analysis and modelling of oceanographic and atmospheric data; monitoring and prediction of contaminants; environmental impact assessments; habitat evaluation and analysis; and fisheries management.



TYDAC's
 microcomputer
 geographic
 information systems
 appeal to coastal and
 oceanic resource
 managers.

Underwater Specialists Ltd.
 Bay 7, 3601 – 19 Street N.E.
 Calgary, Alberta
 Canada T2E 6S8
 Tel: (403) 250-9296

Contact:
 H.W.R. Jackson, President

Underwater Specialists Ltd. is a firm of commercial divers and marine contractors, formed in 1959 to support the oil and construction industries. The company now offers underwater inspections of oil and gas pipelines, sub-sea well-heads, ship hulls, hydro dams, and under-ice surveys (arctic specialists) using the Sea Whip remotely controlled vehicle and other specialized diving equipment. Pipe and river profiling services are available. A wide variety of services is provided in marine contracting, including pipeline

construction, maintenance and repair; dredging; bridge work; dam inspection and repairs; toxic environment work; and marina restoration. In 1983 Underwater Specialists built the first floating backhoe to assist in all types of marine work. Training is available.

Appropriate technology can be simple and effective, as shown by the floating backhoe developed by Underwater Specialists.



Unicore Services Ltd.
 201 – 7382 Winston Street
 Burnaby, British Columbia
 Canada V5A 2G9
 Tel: (604) 420-3332

Contacts:
 Jim Thomas, Projects Director
 Chris McKenzie, Assistant Director

Unicore Services Ltd. is an environmental and fisheries biology consulting firm specializing in the development, implementation and management of sample surveys and involved with the analysis and data processing of biological databases. Its focus has been on fish tagging, tag recovery programs in commercial and sport fisheries, analysis of tagging and tag recovery data, and report writing. The company is extensively involved with the enhancement and fertilization of lakes to increase sockeye salmon production. The work in fisheries management involves determination and assessment of commercial salmon catches on an in-season basis and the allocation of catches among various user groups.

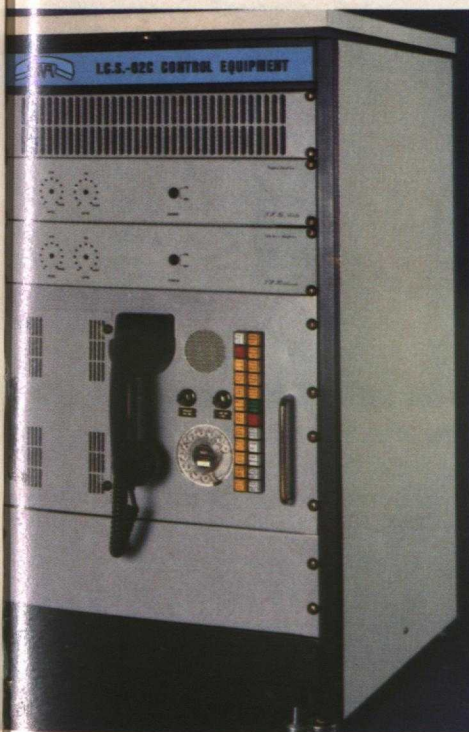
United Marine Electronics and Communications Inc.
 34 Capital Drive
 Nepean, Ontario
 Canada K2G 0E9
 Tel: (613) 226-6860
 Telex: 053-3521 KWA OTT

Subsidiary:
 United Marine Electronics and Communications Inc.,
 St. James, NY., U.S.A.

United Marine Electronics and Communications Inc. designs, manufactures and installs marine communication systems. Internal stand-alone systems offer features such as marine automatic telephone, loudhailer, intercom/talkback, public address, entertainment, crew call, fire alarm and general alarms. The company designed the KWA Integrated Shipboard Communication System for the Canadian Coast Guard and has installed approximately 100 systems. These systems integrate internal shipboard communication systems and long-range radio communication by means of a common wiring network and central control device. The internal system approach permits maximum flexibility, ease of operation, reduced costs and higher reliability. Systems can be custom designed to meet special requirements.

Contacts:

Klaus W. Wilk, President
Harry A. Keays, Executive Vice
President



United Marine Electronics' Wilk Division manufactures this marine integrated communications system for use on marine structures.

Universal Systems Ltd.
P.O. Box 3391, Station B
Fredericton, New Brunswick
Canada E3A 5H2
Tel: (506) 458-8533
Telex: 7601184 USLS

Contacts:

S.E. Masry, President
Ricky Nyarady, Applications
Engineer

■ Universal Systems Ltd. is a digital mapping company that develops and markets state-of-the-art software systems with extensive applications in computer-assisted mapping and topological database management. The system marketed under the name of CARIS (Computer Aided Resource Information System) was designed on a base of extensive research in data structures and the management of geographical data. All CARIS hardware consists of unmodified, off-the-shelf components. The company also engages in contract research and development. Under contract with the Canadian Hydrographic Service, the firm has developed an electronic chart system that integrates radar, hydrographic chart data, ship's position, and other related information to provide geographic information. Universal Systems also produces digital maps, charts and plans.

UPDATA Information Network
P.O. Box 2186, Station D
Ottawa, Ontario
Canada K1P 5W4
Tel: (613) 733-4335

Contact:

John Hall, Executive Vice
President

■ UPDATA provides value-added information products and services in key industrial and resources sectors to governments, industry, associations, and consultants. Specializing in the oceanic field, the company tracks, records, and manages data from Canadian and worldwide sources, combining facts and figures into custom business intelligence and marketing reports. UPDATA supplements client resources for marketing studies, surveys, industry forecasts, foreign market opportunities, economic studies, investment analysis, and directory compilation. Consulting services are offered to clients requiring custom reports, joint venture studies, information research, science writing, and media services.

Usher Canada Limited
101, 10335 - 172 Street
Edmonton, Alberta
Canada T5S 1K9
Tel: (403) 484-4644
Telex: 037-2966

Contacts:

Roger W. Leeman, President
and Surveys Manager
William K. Anderson, Vice Pres-
ident, Business Development

■ Usher Canada Limited has been providing professional surveying services to the public and private sector for 30 years. Its professional and technical staff is fully qualified through education and experience to address surveying problems within any of the following disciplines: geodesy, hydrography, cadastral and engineering surveys.



Engineering surveys for ports and harbours construction are among the services of Usher Canada Limited.

Usher Canada Limited

Expertise has been developed in surveying and charting inland and near offshore waters, utilizing microwave range/range positioning systems integrated with secondary sensors and logging devices to provide a comprehensive integrated hydrographic survey system. The system as developed is best suited to hydrographic surveys of lakes, rivers, reservoirs and harbours.

VEMCO Limited
R.R.4 Armdale
Halifax County, Nova Scotia
Canada B3L 4J4
Tel: (902) 852-3047
Telex: 019-21828 HFX APPMBC

Contact:
 F. Voegeli, President

VEMCO Limited is a company of engineering and manufacturing specialists in custom underwater telemetry and tracking systems for fisheries research, underwater location, and oceanographic measurements. Component parts for these systems include miniature pingers for fish tracking; depth and temperature transmitters; conductivity, temperature and depth sensing, and telemetry; ultrasonic receivers and microcomputer data decoders; directional and omnidirectional hydrophones; personal computer interface for ultrasonic receiver system; and a low-cost, subsurface thermometer. This digital thermometer, the SEATEMP, is a general-purpose, rugged instrument for spot measurement of water temperature at a chosen depth. It can be used by fisheries biologists, the aquaculture business, universities, divers and fishermen.

W.F. Baird & Associates
Coastal Engineers Ltd.
150 - 38 Antares Drive
Ottawa, Ontario
Canada K2E 7V2
Tel: (613) 225-6560
Telex: CNCP EOS 21:WDL001

Contact:
 W.F. Baird, President



W.F. Baird & Associates completes physical hydraulic model studies to simulate complex coastal processes for many projects abroad.

W.F. Baird & Associates Coastal Engineers Ltd. provides professional engineering services in coastal and ocean engineering to consulting engineers and planners, government, the oil industry, and other clients. Extensive experience in documenting coastal processes includes documentation of shoreline changes from aerial photography; numerical modelling of shallow water transformations, tidal and river hydraulics; numerical hindcasts of the wave climate; calculation of sand transport rates and sediment budgets; and physical

modelling of wave transformation, sand transport and tidal hydraulics. W.F. Baird & Associates designs structures for shoreline protection using the best available engineering technology and providing low-cost, effective, long-term solutions. Harbour and marina design services are also available.

**Wm. C. Thompson &
Associates Ltd.**
112 Varsity Green Bay N.W.
Calgary, Alberta
Canada T3B 3A7
Tel: (403) 266-4492

Contact:

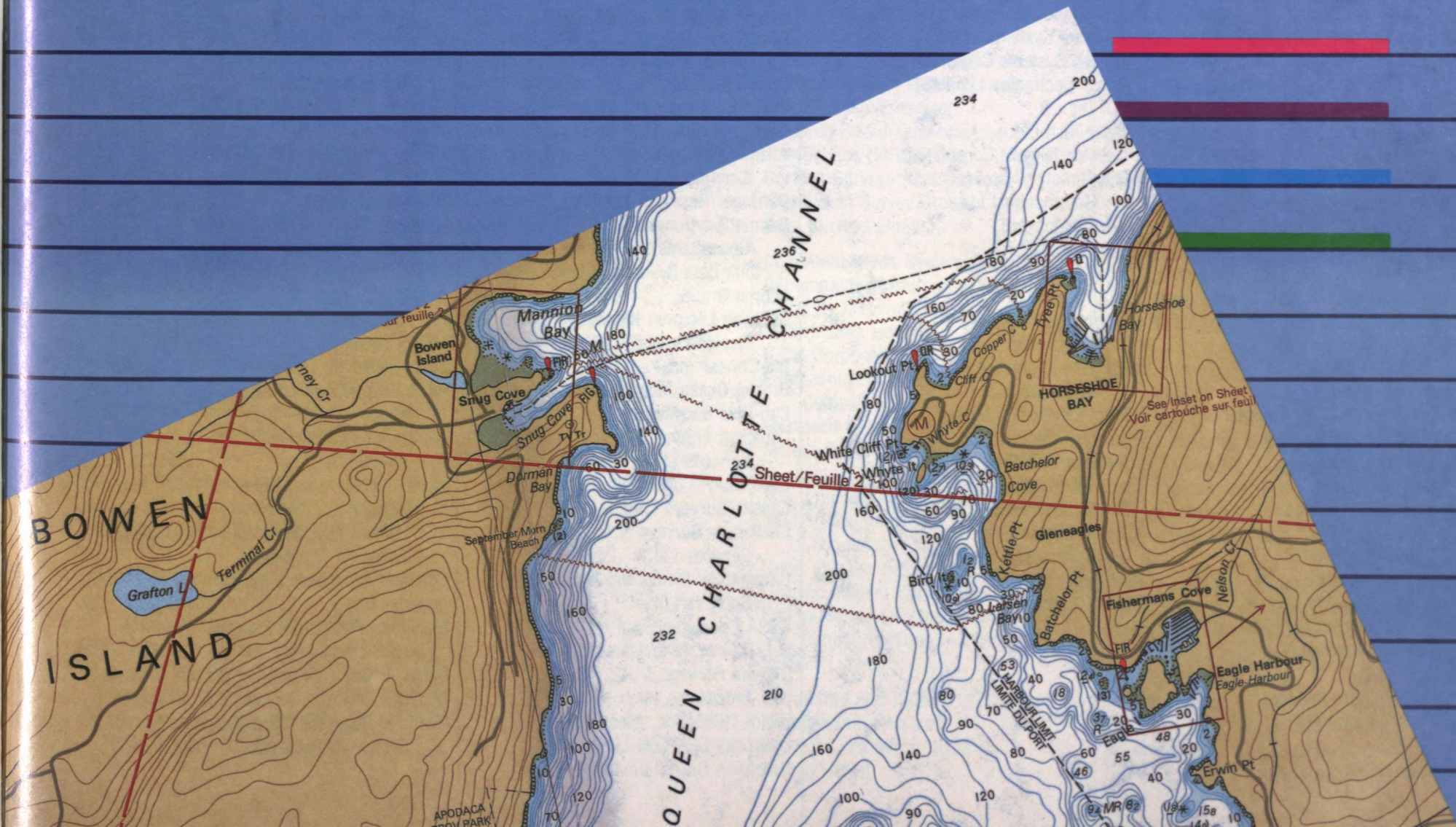
W.C. Thompson, President

■ Wm. C. Thompson & Associates Ltd. is a consulting firm providing meteorological and oceanographic services to governments, engineering and consulting companies, and industry. Its goal is to make meteorological and oceanographic information and technology available to a broad range of users by offering the services of specialists skilled in weather and seastate prediction; pack ice and iceberg monitoring; ice and iceberg motion prediction; ice accretion; storm tides; current modelling; and extreme event calculations for design. Also available are design and project management services for data acquisition systems; warning, control and emergency response; environmental data collection, management and prediction services; and instructional services.



*Thompson &
Associates provides
meteorological and
oceanographic
services to
governments and the
private sector.*

APPENDICES



Appendix I – Oceanic Products Manufacturers

Manufacturers of Oceanic Products and Systems

AGE Instruments Inc.
 Applied Microsystems Ltd.
 Barringer Research Limited
 Can-Dive Services Ltd.
 Canadian Astronautics Limited
 Canadian Instrumentation and Research Limited
 Canadian Marconi Company
 CANPOLAR Consultants Ltd.
 Caulfield Engineering – A Division of Caulfield Creative Arts Ltd.
 Eastern Marine Services Limited
 ECS Group of Companies
 Fathom Oceanology Limited
 Focal Marine Limited
 Fullerton, Sherwood Engineering Ltd.
 Guildline Instruments Ltd.
 Hermes Electronics Limited
 HYMARC Engineering Ltd.
 Indal Technologies Inc.
 Instrumar Limited
 Ineract Research & Development Corporation
 International Datacasting Company
 International Submarine Engineering Ltd.
 ITRES Research Limited
 Jasco Research Ltd.
 Knudsen Engineering Limited
 Lobsiger Associates Limited
 Marine Safe Electronics of Canada Ltd.
 Maritime Offshore Services
 Mesotech Systems Ltd.
 Meteor Communications (Canada) Corporation

MONITEQ Ltd.
 MSE Engineering Systems Ltd.
 Nautical Electronic Laboratories Ltd.
 NORDCO Limited
 Nova Scotia Research Foundation Corporation
 Oceanprobe Systems Manufacturing Inc.
 Offshore Systems Ltd.
 Optech Systems Corporation
 Orion Electronics Limited
 PCI Inc.
 Polar Tech Ltd.
 Quester Tangent Corporation
 RSI Robotic Systems International Ltd.
 Scintrex Limited
 Sea Scan Technology (Canada) Inc.
 SEA-I Research Canada Ltd.
 Seastar Instruments Ltd.
 Seimac Limited
 Systems Engineering & Automation Ltd.
 Targa Electronics Systems Inc.
 Techno Scientific Inc.
 Techwest – A Division of Fleet Aerospace Corporation
 TYDAC Technologies Inc.
 United Marine Electronics and Communications Inc.
 Universal Systems Ltd.
 VEMCO Limited

Appendix II – Oceanic Services Firms

Services and Consultants

Acres International Limited
 ADGA Systems International Ltd.
 Aero Photo Inc.
 Agrodev Canada Inc.
 Alconsult International Ltd.
 Applied Microelectronics Institute
 Aquarius Flight Inc.
 Archipelago Marine Research
 Arctec Nfld. Ltd.
 Arctic Sciences Ltd.
 ASA Consulting Ltd.
 Atlantic Engineering Consultants Ltd.
 Barringer Research Limited
 Bennett Environmental Consultants Ltd.
 Beothuk Data Systems Ltd.
 Bercha Group
 Bert van Leeuwen Industrial Design Limited
 Bio-Conseil inc.
 Brooke Ocean Technology Ltd.
 Can-Dive Services Ltd.
 Canadian Engineering Services Ltd.
 CANPOLAR Consultants Ltd.
 Cansite Surveys Limited
 Challenger Surveys & Services Ltd.
 Commercial Diving and Marine Services Ltd.
 CSSA Consultants Ltd.
 D.F. Dickins Associates Ltd.
 Dighem Surveys & Processing Inc.
 Digm (1983) Inc. (See Lavalin)
 Dobrocky SEATECH Limited
 Dominion Diving Limited

ECS Group of Companies
 ESL Environmental Sciences Limited
 Fenco Engineers Inc. (See Lavalin)
 Fenco Newfoundland Limited (See Lavalin)
 Follett Gosse & Associates Limited
 G.A. Borstad Associates Ltd.
 Geomarine Associates Limited
 GeoTech Surveys Limited
 German & Milne Inc. (See ECS Group)
 Hunter and Associates Ltd.
 HYMARC Engineering Ltd.
 IDON Corporation
 Innotech Aviation (1986) Limited
 Instrumar Limited
 Intera Technologies Ltd.
 Interact Research & Development Corporation
 ITRES Research Limited
 Jasco Research Ltd.
 Keith Philpott Consulting Limited
 Lavalin Inc.
 Lavalin International Inc. (See Lavalin)
 Lavalin Offshore Inc. (See Lavalin)
 LGL Limited Environmental Research Associates
 Lobsiger Associates Limited
 Logimer Inc.
 MacLaren Plansearch Limited (See Lavalin)
 Mann Testing Laboratories Ltd.
 Maritime Offshore Services
 Maritime Resource Management Service (MRMS) Inc.

Maritime Technical Services Limited
 Maritime Testing (1985) Limited
 Martec Limited
 McQuest Marine Research & Development Company Limited
 Meteorological and Environmental Planning Ltd.
 MMM Surveys and Consultants Limited
 MONITEQ Ltd.
 NORDCO Limited
 Nortech Surveys (Canada) Inc.
 North West Survey Group
 Oceanroutes Canada Incorporated
 OCEANS Ltd.
 Offshore Marketing International
 Offshore Systems Ltd.
 Pacific Ocean Sciences Ltd.
 Pallister Resource Management Ltd.
 PAMAP Graphics Ltd.
 PCI Inc.
 Ph.D. Associates, Research, Consulting, Invention, Inc.
 Polar Tech Ltd.
 Pulsonic Geophysical Ltd.
 Quester Tangent Corporation
 R&D Lyons Consultants Ltd.
 Robert Allan Ltd.
 Roche Ltd., Consulting Group
 S.L. Ross Environmental Research Limited
 SEA-I Research Canada Ltd.
 Seaconsult Marine Research Ltd.
 Seakem Oceanography Ltd. (See The Seakem Group)

SEATECH Investigation Services (1980) Ltd.
 Seatronics Technologies Ltd.
 Seimac Limited
 Systems Engineering & Automation Ltd.
 Techwest Division of Fleet Aerospace Corporation
 Tektrend International Inc.
 Terra Surveys Limited
 The Eastcan Group of Survey Consultants Limited
 The McElhanney Group Ltd.
 The Seakem Group Limited
 T.M. Thomson & Associates Ltd.
 TYDAC Technologies Inc.
 Underwater Specialists Ltd.
 Unicore Services Ltd.
 United Marine Electronics and Communications Inc.
 Universal Systems Ltd.
 UPDATA Information Network
 Usher Canada Limited
 W.F. Baird & Associates Coastal Engineers Ltd.
 Wm. C. Thompson & Associates Ltd.

Appendix III – Company Categories

■ Aerial Surveyors

Aero Photo Inc.
 Aquarius Flight Inc.
 Barringer Research Limited
 Bercha Group
 Dighem Surveys & Processing Inc.
 Digim (1983) Inc. (See Lavalin)
 Fenco Newfoundland Limited (See Lavalin)
 Hunter and Associates Ltd.
 Innotech Aviation (1986) Limited
 Intera Technologies Ltd.
 Maritime Resource Management Service (MRMS) Inc.
 Nortech Surveys (Canada) Inc.
 North West Survey Group
 Terra Surveys Limited

Communications Systems and Components Manufacturers

Canadian Marconi Company
 Focal Marine Limited
 IDON Corporation
 International Datacasting Company
 Mesotech Systems Ltd.
 Meteor Communications (Canada) Corporation
 MSE Engineering Systems Ltd.
 Nautical Electronic Laboratories Ltd.
 Orion Electronics Limited
 Quester Tangent Corporation
 United Marine Electronics and Communications Inc.
 VEMCO Limited

Computing and Data Management Services

Beothuk Data Systems Ltd.
 Bercha Group

Canadian Engineering Services Ltd.
 Digim (1983) Inc. (See Lavalin)
 Dobrocky SEATECH Limited
 ESL Environmental Sciences Limited
 Fenco Newfoundland Limited (See Lavalin)
 IDON Corporation
 International Datacasting Company
 LGL Limited Environmental Research Associates
 MacLaren Plansearch Limited (See Lavalin)
 Maritime Resource Management Service (MRMS) Inc.
 Martec Limited
 McQuest Marine Research & Development Company Limited
 Meteor Communications (Canada) Corporation
 MMM Surveys and Consultants Limited
 MONITEQ Ltd.
 MSE Engineering Systems Ltd.
 NORDCO Limited
 Oceanroutes Canada Incorporated
 PAMAP Graphics Ltd.
 PCI Inc.
 Ph.D. Associates, Research, Consulting, Invention, Inc.
 Pulsonic Geophysical Ltd.
 Seakem Oceanography Ltd. (See The Seakem Group)
 Seimac Limited
 The Seakem Group Limited
 Universal Systems Ltd.
 UPDATA Information Network

Wm. C. Thompson &
Associates Ltd.

Consulting Engineers

Acres International Limited
Atlantic Engineering
Consultants Ltd.
Bercha Group
Fenco Engineers Inc. (See
Lavalin)
Follett Gosse & Associates
Limited
Fullerton, Sherwood
Engineering Ltd.
GeoTech Surveys Limited
Hunter and Associates Ltd.
Lavalin Inc.
Lavalin International Inc. (See
Lavalin)
Lavalin Offshore Inc. (See
Lavalin)
Martec Limited
MMM Surveys and Consultants
Limited
NORDCO Limited
Roche Ltd., Consulting Group
The McElhanney Group Ltd.
T.M. Thomson &
Associates Ltd.
W.F. Baird & Associates Coastal
Engineers Ltd.

**Contract Research and
Development**

*These firms will undertake
research and development
contracts in their fields of
expertise*

Able Dive Company Inc.
AGE Instruments Inc.
Applied Microelectronics
Institute

Applied Microsystems Ltd.
Archipelago Marine Research
Arctec Nfld. Ltd.
Arctic Sciences Ltd.
ASA Consulting Ltd.
Barringer Research Limited
Bert van Leeuwen Industrial
Design Limited
Bio-Conseil inc.
Brooke Ocean Technology Ltd.
Can-Dive Services Ltd.
Canadian Engineering
Services Ltd.
Canadian Instrumentation and
Research Limited
Canadian Marconi Company
CANPOLAR Consultants Ltd.
Caulfield Engineering – A
Division of Caulfield
Creative Arts Ltd.
Challenger Surveys &
Services Ltd.
CSSA Consultants Ltd.
D.F. Dickins Associates Ltd.
Dighem Surveys &
Processing Inc.
Dobrocky SEATECH Limited
ECS Group of Companies
ESL Environmental Sciences
Limited
Fathom Oceanology Limited
Fenco Newfoundland Limited
(See Lavalin)
Focal Marine Limited
Fullerton, Sherwood
Engineering Ltd.
G.A. Borstad Associates Ltd.
Geomarine Associates Limited
GeoTech Surveys Limited
Hermes Electronics Limited
Hunter and Associates Ltd.

HYMARC Engineering Ltd.
IDON Corporation
Instrumar Limited
Intera Technologies Ltd.
Interact Research &
Development Corporation
International Datacasting
Company
International Submarine
Engineering Ltd.
ITRES Research Limited
Jasco Research Ltd.
Knudsen Engineering Limited
Lavalin Inc.
LGL Limited Environmental
Research Associates
Lobsiger Associates Limited
Logimer Inc.
MacLaren Plansearch Limited
(See Lavalin)
Mann Testing Laboratories Ltd.
Maritime Offshore Services
Maritime Resource Management
Service (MRMS) Inc.
Martec Limited
McQuest Marine Research &
Development Company
Limited
Meteorological and Environmental
Planning Ltd.
MMM Surveys and Consultants
Limited
MONITEQ Ltd.
NORDCO Limited
Nortech Surveys (Canada) Inc.
Nova Scotia Research
Foundation Corporation
Oceanprobe Systems
Manufacturing Inc.
Oceanroutes Canada
Incorporated

OCEANS Ltd.
Optech Inc.
Orion Electronics Limited
Pacific Ocean Sciences Ltd.
PAMAP Graphics Ltd.
Ph.D. Associates, Research,
Consulting, Invention, Inc.
Polar Tech Ltd.
Pulsonic Geophysical Ltd.
Quester Tangent Corporation
Roche Ltd., Consulting Group
RSI Robotic Systems
International Ltd.
S.L. Ross Environmental
Research Limited
Sea Scan Technology
(Canada) Inc.
SEA-I Research Canada Ltd.
Seaconsult Marine
Research Ltd.
Seakem Oceanography Ltd. (See
The Seakem Group)
Seastar Instruments Ltd.
SEATECH Investigation Services
(1980) Ltd.
Seatronics Technologies Ltd.
Seimac Limited
Techno Scientific Inc.
Techwest, – A Division of Fleet
Aerospace Corporation
Tektrend International Inc.
The Seakem Group Limited
Unicore Services Ltd.
Universal Systems Ltd.
VEMCO Limited

Diving Services

Able Dive Company Inc.
Can-Dive Services Ltd.
Commercial Diving and Marine
Services Ltd.

Dominion Diving Limited
Hunter and Associates Ltd.
Underwater Specialists Ltd.

**Electronics Systems and
Products Manufacturers**

Canadian Astronautics Limited
Canadian Marconi Company
Caulfield Engineering – A
Division of Caulfield
Creative Arts Ltd.
Focal Marine Limited
Guildline Instruments Ltd.
Hermes Electronics Limited
HYMARC Engineering Ltd.
IDON Corporation
Instrumar Limited
International Datacasting
Company
International Submarine
Engineering Ltd.
Knudsen Engineering Limited
Lobsiger Associates Limited
Marine Safe Electronics of
Canada Ltd.
Mesotech Systems Ltd.
Meteor Communications
(Canada) Corporation
MONITEQ Ltd.
MSE Engineering Systems Ltd.
Nautical Electronic
Laboratories Ltd.
NORDCO Limited
Nova Scotia Research
Foundation Corporation
Oceanprobe Systems
Manufacturing Inc.
Offshore Systems Ltd.
Optech Systems Corporation
Orion Electronics Limited
Quester Tangent Corporation

RSI Robotic Systems
International Ltd.
Scintrex Limited
Sea Scan Technology
(Canada) Inc.
SEA-I Research Canada Ltd.
Seastar Instruments Ltd.
Seimac Limited
Targa Electronics Systems Inc.
Techno Scientific Inc.
Techwest, – A Division of Fleet
Aerospace Corporation
Tektrend International Inc.
VEMCO Limited

Fisheries Consultants

Agrodev Canada Inc.
Beothuk Data Systems Ltd.
Bert van Leeuwen Industrial
Design Limited
ESL Environmental Sciences
Limited
LGL Limited Environmental
Research Associates
Maritime Resource Management
Service (MRMS) Inc.
OCEANS Ltd.
Roche Ltd., Consulting Group
SEATECH Investigation Services
(1980) Ltd.
Unicore Services Ltd.

**Geographic Information
Services – marine applications**

Bercha Group
Digim (1983) Inc. (See Lavalin)
G.A. Borstad Associates Ltd.
Maritime Resource Management
Service (MRMS) Inc.
MMM Surveys and Consultants
Limited
PAMAP Graphics Ltd.

PCI Inc.
TYDAC Technologies Inc.

Hydrographic Surveyors

Alconsult International Ltd.
Canadian Engineering
Services Ltd.
Cansite Surveys Limited
Challenger Surveys &
Services Ltd.
Dighem Surveys &
Processing Inc.
Dobrocky SEATECH Limited
Hunter and Associates Ltd.
McQuest Marine Research &
Development Company
Limited
MMM Surveys and Consultants
Limited
NORDCO Limited
Nortech Surveys (Canada) Inc.
North West Survey Group
Terra Surveys Limited
The Eastcan Group of Survey
Consultants Limited
The McElhanney Group Ltd.
Usher Canada Limited

Ice Specialists

Alconsult International Ltd.
Arctec Nfld. Ltd.
Arctic Sciences Ltd.
Bercha Group
Can-Dive Services Ltd.
D.F. Dickins Associates Ltd.
Dobrocky SEATECH Limited
Fenco Newfoundland Limited
(See Lavalin)
G.A. Borstad Associates Ltd.
Innotech Aviation (1986) Limited
Instrumar Limited
Intera Technologies Ltd.

Maritime Offshore Services
Martec Limited
Meteorological and Environmental
Planning Ltd.
NORDCO Limited
Nortech Surveys (Canada) Inc.
Oceanprobe Systems
Manufacturing Inc.
Polar Tech Ltd.
Seakem Oceanography Ltd. (See
The Seakem Group)
Terra Surveys Limited
The McElhanney Group Ltd.
The Seakem Group Limited
Wm. C. Thompson &
Associates Ltd.

**Marine Environmental
Consultants**

Alconsult International Ltd.
Bennett Environmental
Consultants Ltd.
Bercha Group
Dobrocky SEATECH Limited
ESL Environmental Sciences
Limited
Hunter and Associates Ltd.
LGL Limited Environmental
Research Associates
Martec Limited
S.L. Ross Environmental
Research Limited
Seaconsult Marine
Research Ltd.
Seakem Oceanography Ltd. (See
The Seakem Group)
SEATECH Investigation Services
(1980) Ltd.
The McElhanney Group Ltd.
The Seakem Group Limited
Unicore Services Ltd.

W.F. Baird & Associates Coastal Engineers Ltd.
Wm. C. Thompson & Associates Ltd.

Marine Geophysical Surveys

Aero Photo Inc.
Aquarius Flight Inc.
Barringer Research Limited
Canadian Engineering Services Ltd.
Dighem Surveys & Processing Inc.
Digim (1983) Inc. (See Lavalin)
Dobrocky SEATECH Limited
Geomarine Associates Limited
GeoTech Surveys Limited
McQuest Marine Research & Development Company Limited
MMM Surveys and Consultants Limited
NORDCO Limited
Nortech Surveys (Canada) Inc.
Nova Scotia Research Foundation Corporation
Terra Surveys Limited
The Eastcan Group of Survey Consultants Limited

Meteorological Consultants and Services

Alconsult International Ltd.
ESL Environmental Sciences Limited
Fenco Newfoundland Limited (See Lavalin)
MacLaren Plansearch Limited (See Lavalin)
Meteorological and Environmental Planning Ltd.

Oceanroutes Canada Incorporated
Ph.D., Associates, Research, Consulting, Invention Inc.
Seaconsult Marine Research Ltd.
Seakem Oceanography Ltd. (See The Seakem Group)
The Seakem Group Limited
Wm. C. Thompson & Associates Ltd.

Naval Architects and Marine Architectural Services for offshore structures

ECS Group of Companies
Fenco Engineers Inc. (See Lavalin)
German & Milne Inc. (See ECS Group)
HYMARC Engineering Ltd.
NORDCO Limited
Robert Allan Ltd.
Roche Ltd., Consulting Group

Navigation and Positioning Services

Canadian Engineering Services Ltd.
Cansite Surveys Limited
Challenger Surveys & Services Ltd.
Dominion Diving Limited
McQuest Marine Research & Development Company Limited
MMM Surveys and Consultants Limited
Nortech Surveys (Canada) Inc.
The Eastcan Group of Survey Consultants Limited
The McElhanney Group Ltd.

Oceanographic Equipment Manufacturers

AGE Instruments Inc.
Applied Microsystems Ltd.
Caulfield Engineering – A Division of Caulfield Creative Arts Ltd.
Fathom Oceanology Limited
Focal Marine Limited
Guildline Instruments Ltd.
Hermes Electronics Limited
Instrumar Limited
Jasco Research Ltd.
Meteor Communications (Canada) Corporation
MSE Engineering Systems Ltd.
NORDCO Limited
Nova Scotia Research Foundation Corporation
Oceanprobe Systems Manufacturing Inc.
OCEANS Ltd.
Offshore Marketing International
Offshore Systems Ltd.
Optech Systems Corporation
Orion Electronics Limited
Polar Tech Ltd.
Quester Tangent Corporation
RSI Robotic Systems International Ltd.
Sea Scan Technology (Canada) Inc.
SEA-I Research Canada Ltd.
Seastar Instruments Ltd.
Seimac Limited
Targa Electronics Systems Inc.
Techno Scientific Inc.
Techwest, A Division of Fleet Aerospace Corporation
VEMCO Limited

Pollution and Spill Monitoring

Alconsult International Ltd.
Aquarius Flight Inc.
Bennett Environmental Consultants Ltd.
Digim (1983) Inc. (See Lavalin)
Dobrocky SEATECH Limited
ESL Environmental Sciences Limited
Innotech Aviation (1986) Limited
Intera Technologies Ltd.
Martec Limited
Meteorological and Environmental Planning Ltd.
MONITEQ Ltd.
Pacific Ocean Sciences Ltd.
S.L. Ross Environmental Research Limited
Seaconsult Marine Research Ltd.
Seakem Oceanography Ltd. (See The Seakem Group)
The Seakem Group Limited

Project Management

These firms offer management services for multidisciplinary projects

ADGA Systems International Ltd.
Alconsult International Ltd.
CSSA Consultants Ltd.
D.F. Dickins Associates Ltd.
Dobrocky SEATECH Limited
ESL Environmental Sciences Limited
Innotech Aviation (1986) Limited
Lavalin Inc.
Lavalin International Inc. (See Lavalin)

Lavalin Offshore Inc. (See Lavalin)
 LGL Limited Environmental Research Associates
 MacLaren Plansearch Limited (See Lavalin)
 Maritime Testing (1985) Limited
 NORDCO Limited
 The McElhanney Group Ltd.
 Wm. C. Thompson & Associates Ltd.

Radar Manufacturers

Canadian Astronautics Limited
 Canadian Marconi Company
 Optech Systems Corporation
 Tektrend International Inc.

Remote Sensing Services and/or Systems

Aquarius Flight Inc.
 Barringer Research Limited
 Bercha Group
 Canadian Astronautics Limited
 CANPOLAR Consultants Ltd.
 Dighem Surveys & Processing Inc.
 Digim (1983) Inc. (See Lavalin)
 G.A. Borstad Associates Ltd.
 Hermes Electronics Limited
 Hunter and Associates Ltd.
 Innotech Aviation (1986) Limited
 Intera Technologies Ltd.
 ITRES Research Limited
 Maritime Resource Management Service (MRMS) Inc.
 MMM Surveys and Consultants Limited
 MONITEQ Ltd.
 NORDCO Limited
 Nortech Surveys (Canada) Inc.
 Optech Inc.

Optech Systems Corporation
 PAMAP Graphics Ltd.
 PCI Inc.
 Ph.D. Associates, Research, Consulting, Invention Inc.
 Terra Surveys Limited

Sounder Manufacturers

Canadian Marconi Company
 Fathom Oceanology Limited
 Hermes Electronics Limited
 Mesotech Systems Ltd.
 NORDCO Limited
 Oceanprobe Systems Manufacturing Inc.
 Optech Systems Corporation
 Techno Scientific Inc.
 Tektrend International Inc.
 VEMCO Limited

Software Developers

ADGA Systems International Ltd.
 AGE Instruments Inc.
 Applied Microelectronics Institute
 Arctec Nfld. Ltd.
 Arctic Sciences Ltd.
 ASA Consulting Ltd.
 Barringer Research Limited
 Beothuk Data Systems Ltd.
 Canadian Engineering Services Ltd.
 Caulfield Engineering – A Division of Caulfield Creative Arts Ltd.
 Challenger Surveys & Services Ltd.
 Dighem Surveys & Processing Inc.
 G.A. Borstad Associates Ltd.
 HYMARC Engineering Ltd.

IDON Corporation
 Instrumar Limited
 Intera Technologies Ltd.
 Interact Research & Development Corporation
 International Datacasting Company
 Jasco Research Ltd.
 Lavalin Inc.
 MacLaren Plansearch Limited (See Lavalin)
 Maritime Resource Management Service (MRMS) Inc.
 Martec Limited
 Meteorological and Environmental Planning Ltd.
 MMM Surveys and Consultants Limited
 MONITEQ Ltd.
 NORDCO Limited
 Nortech Surveys (Canada) Inc.
 Oceanroutes Canada Incorporated
 OCEANS Ltd.
 Offshore Systems Ltd.
 PAMAP Graphics Ltd.
 PCI Inc.
 Ph.D. Associates, Research, Consulting, Invention, Inc.
 Polar Tech Ltd.
 Pulsonic Geophysical Ltd.
 Quester Tangent Corporation
 SEA-I Research Canada Ltd.
 Systems Engineering & Automation Ltd.
 Techwest – A Division of Fleet Aerospace Corporation
 Tektrend International Inc.
 TYDAC Technologies Inc.
 Universal Systems Ltd.
 VEMCO Limited

Submersible and ROV Manufacturers

Can-Dive Services Ltd.
 International Submarine Engineering Ltd.
 RSI Robotic Systems International Ltd.
 Sea Scan Technology (Canada) Inc.
 SEA-I Research Canada Ltd.

Training

The following firms offer training to client personnel – contact the company direct for details on the nature and location of training capabilities

ADGA Systems International Ltd.
 Aero Photo Inc.
 AGE Instruments Inc.
 Agrodev Canada Inc.
 Aquarius Flight Inc.
 ASA Consulting Ltd.
 Barringer Research Limited
 Bennett Environmental Consultants Ltd.
 Beothuk Data Systems Ltd.
 Bercha Group
 Bio-Conseil inc.
 Canadian Astronautics Limited
 Canadian Engineering Services Ltd.
 Canadian Marconi Company
 CANPOLAR Consultants Ltd.
 Caulfield Engineering – A Division of Caulfield Creative Arts Ltd.
 CSSA Consultants Ltd.
 Dighem Surveys & Processing Inc.

Digim (1983) Inc. (See Lavalin)
 Dobrocky SEATECH Limited
 ECS Group of Companies
 Fathom Oceanology Limited
 Focal Marine Limited
 Fullerton, Sherwood
 Engineering Ltd.
 Geomarine Associates Limited
 Guildline Instruments Ltd.
 HYMARC Engineering Ltd.
 IDON Corporation
 Innotech Aviation (1986) Limited
 Intera Technologies Ltd.
 Interact Research &
 Development Corporation
 International Datacasting
 Company
 International Submarine
 Engineering Ltd.
 Jasco Research Ltd.
 Keith Philpott Consulting Limited
 Lavalin Inc.
 LGL Limited Environmental
 Research Associates
 Lobsiger Associates Limited
 Logimer Inc.
 MacLaren Plansearch Limited
 (See Lavalin)
 Marine Safe Electronics of
 Canada Ltd.
 Maritime Resource Management
 Service (MRMS) Inc.
 Maritime Technical Services
 Limited
 Maritime Testing (1985) Limited
 Martec Limited
 McQuest Marine Research &
 Development Company
 Limited
 Mesotech Systems Ltd.

MMM Surveys and Consultants
 Limited
 MONITEQ Ltd.
 Nautical Electronic
 Laboratories Ltd.
 NORDCO Limited
 North West Survey Group
 Oceanprobe Systems
 Manufacturing Inc.
 Optech Systems Corporation
 Orion Electronics Limited
 PAMAP Graphics Ltd.
 PCI Inc.
 Ph.D. Associates, Research,
 Consulting, Invention, Inc.
 Polar Tech Ltd.
 Pulsonic Geophysical Ltd.
 Quester Tangent Corporation
 R&D Lyons Consultants Ltd.
 Roche Ltd., Consulting Group
 RSI Robotic Systems
 International Ltd.
 S.L. Ross Environmental
 Research Limited
 Scintrex Limited
 Sea Scan Technology
 (Canada) Inc.
 SEA-I Research Canada Ltd.
 Seaconsult Marine
 Research Ltd.
 Seakem Oceanography Ltd. (See
 The Seakem Group)
 SEATECH Investigation Services
 (1980) Ltd.
 Seatronics Technologies Ltd.
 Seimac Limited
 Systems Engineering &
 Automation Ltd.
 Techwest - A Division of Fleet
 Aerospace Corporation
 Tektrend International Inc.

Terra Surveys Limited
 The Eastcan Group of Survey
 Consultants Limited
 The McElhanney Group Ltd.
 The Seakem Group Limited
 T.M. Thomson &
 Associates Ltd.
 TYDAC Technologies Inc.
 Underwater Specialists Ltd.
 Unicore Services Ltd.
 United Marine Electronics and
 Communications Inc.
 Universal Systems Ltd.
 Usher Canada Limited
 VEMCO Limited
 Wm. C. Thompson &
 Associates Ltd.

Underwater Video Manufacturers

Lobsiger Associates Limited
 MSE Engineering Systems Ltd.

LIBRARY E A/BIBLIOTHEQUE A E



3 5036 20002855 6

Storage
CA1 EA409 87C15 ENG
Canada's ocean industries :
products and services for world
industries
43253722



60984 81800

Canada

