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canadian defence industry

Product areas of particular expertise



Government
of Canada

Gouvernement
du Canada

Industry, Trade
and Commerce

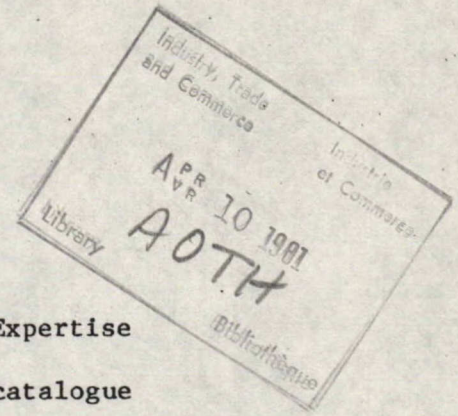
Industrie
et Commerce

*Defence Program
Branch*

N O T E

Please note that the Canadian Defence Expertise outlined in the following pages is not a catalogue but is only intended to provide the reader with a cross section of Canadian expertise in the Defence industry, including the names and addresses of companies.

The Canadian Trade Commissioner in your territory will be very pleased to provide you with greater in-depth information on any product area in which you may be interested.



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19-24

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Canada



PRODUCT AREAS OF PARTICULAR EXPERTISE IN CANADIAN DEFENCE INDUSTRY

Several product areas of technology have become prominent in the evolution of Canadian defence industry. Characteristic of the emergence of some of these product areas is a history of military-supported research and development, extending over the past 20 years. The specific areas are as follows:

- (a) STOL AND SPECIAL PURPOSE AIRCRAFT
- (b) AIRCRAFT HYDRAULIC SYSTEMS AND LANDING GEAR
- (c) SMALL GAS TURBINE ENGINES AND ENGINE FUEL SYSTEMS
- (d) AERIAL DELIVERY SYSTEMS EMERGENCY EQUIPMENT
- (e) AIRCRAFT AND PERSONNEL LOCATOR BEACONS AND PERFORMANCE MONITORING EQUIPMENT
- (f) AIR CREW AND AIR TRAFFIC CONTROL TRAINING SIMULATORS, CONTROL TOWERS
- (g) SURVEILLANCE EQUIPMENT
- (h) COMMUNICATIONS EQUIPMENT
- (i) NAVIGATION EQUIPMENT
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- (s) AIR CUSHION VEHICLES
- (t) SPECIAL MARINE EQUIPMENT
- (u) FIRE CONTROL SYSTEMS
- (v) ELECTRO-OPTICAL PRODUCTS
- (w) NBCW PROTECTIVE EQUIPMENT, SPECIALIZED CLOTHING, AND ACCESSORIES.
- (x) PATROL BOATS
- (y) SHIPBOARD TOWED & HANDLING SYSTEMS
- (z) ROCKETS

A further description of these special areas is as follows:

Aerospace

The Canadian aerospace industry has gained world recognition in building aircraft to overcome the difficult Canadian environmental problems which require aircraft to be rugged, reliable and easily maintained. Hence the airframe, engine and aircraft systems and components both mechanical and electronic have been designed with the above qualities. In addition, Canada has manufactured various fighter type aircraft under licence during the past 30 years.

(a) SHORT TAKE OFF AND LANDING AND SPECIAL PURPOSE AIRCRAFT

deHavilland Aircraft of Canada Limited is well known for its line of STOL aircraft which includes the Twin Otter, the Buffalo and more recently the DHC-7. The DHC-7 is a 48 passenger STOL transport with particular application for short haul routes using STOL-ports which require a quiet aircraft. The DHC-7R aircraft is a proposed surveillance version for fishery patrol, smuggling control and other sovereignty applications. The DHC-8 (Dash-8) is a 30 passenger Twin-Engine Commuter aircraft now in development. Canadair Limited produces the CL-215 flying boat for use as a water bomber, crop duster, surveillance, Search and Rescue, and general purpose aircraft. The Canadair Challenger is the first wide-bodied business jet capable of flying Paris to New York non stop.

(b) AIRCRAFT HYDRAULIC SYSTEMS AND LANDING GEAR

Dowty Equipment of Canada Limited specializes in the design, development, and production of hydraulic systems and landing gear for both military and commercial aircraft.

Menasco Canada Limited designs and manufactures landing gear and flight control systems for helicopters, and aircraft ranging in size from the commuter to wide body jets. Their products include fly-by-wire electro-hydraulic systems variable wing, wing sweep and ramp and door actuation systems.

Heroux Limited also manufactures aircraft landing gear and is producing the Twin Otter nose gear.

(c) SMALL GAS TURBINE ENGINES AND ENGINE FUEL SYSTEMS

Pratt and Whitney Canada Limited (formerly United Aircraft of Canada Limited) produces the well known PT-6 and JT-15 turbine engines which have application in many types of aircraft and helicopters throughout the world. The PT-6 engine has also been successfully used in many multi-fuel applications in numerous marine and vehicle installations. The PT-7 is a new fuel-efficient turbo prop engine for short haul and commuter aircraft.

Aviation Electric Limited produces the fuel control units for the PT-6 and JT-15 engines and specialized hydraulic and fuel test stands to test and calibrate hydraulic, and fuel control systems.

(d) AERIAL DELIVERY SYSTEMS EMERGENCY EQUIPMENT

Irvin Industries of Canada has designed and manufactured a wide variety of man carrying parachutes and aerial delivery systems for cargoes weighing up to 20 tons. Deceleration systems for high performance aircraft and

Remotely Piloted Vehicles, restraint systems, cargo tie down, inflatable emergency equipment, parachute automatic opening and cutting devices, survival seat packs, life vests, anti-g-equipment are examples of the company's broad product line in this field.

WIRE STRIKE PROTECTION SYSTEM

Bristol Aerospace has designed a Wire Strike Protection System for installation in helicopters. It is a passive system requiring little maintenance. Should a helicopter accidentally run into electrical cables, the system will cut the cable thus reducing the danger to the helicopter and crew.

(e) AIRCRAFT AND PERSONNEL LOCATOR BEACONS AND PERFORMANCE MONITORING EQUIPMENT

Leigh Instruments Ltd. is the world leader in design and production of aircraft flight data recorders and crash position indicators, mounted in airfoils automatically thrown clear of crashing aircraft. Cockpit warning signals of malfunctions are available as part of flight data recording systems. Associated ground equipment is produced; also the system can be provided with the mechanical strain recorder which permanently records airframe flexure. The recordings can be analyzed for use in diagnostic maintenance procedures.

Garrett Manufacturing Limited produces a line of emergency locator transmitters. The RESCU99, for use at sea with life rafts, is widely used. Other models, such as the DAL, the RESCU88, and the RESCU77C are made for

non-over-water aircraft. Garrett also produces Personal Locator Beacons, which let survivors of downed aircraft communicate directly with search and rescue parties.

(f) AIR CREW AND AIR TRAFFIC CONTROL TRAINING SIMULATORS,
CONTROL TOWERS

CAE Electronics Ltd. has exported aircraft flight training simulators for both military and civil aircraft around the world. The company's unique six degrees-of-freedom motion system, its visual simulation and its all-digital approach have enabled it to win orders for simulators for almost all large civil aircraft flying today, from the DC-9 and 737 through the 727, DC-8, 707, DC10, L-1011, 747, 757, 767, A-300 and A310. Military simulators produced include the UH-1, CH-47, and CH-53 helicopters, as well as the European MRCA, the Alpha Jet, the Lockheed C-130, "Hercules", and a major part of the F-15 simulators.

Litton Systems Canada Limited produces shipboard command and Control systems and tactical training and air traffic control training simulators.

Skykeesh Limited manufactures a wide range of fixed and portable control towers to ICAO and military standards.

Garrett Manufacturing Limited designs and makes ground-to-air radios for air traffic control communications.

(g) SURVEILLANCE EQUIPMENT

Canadair Limited has developed and produced the AN/USD-501 reconnaissance drone (also known as the CL-89) under a tripartite agreement among the U.K., German, and Canadian governments. Development work has been initiated on a longer range version designated as the CL-289.

Canadair is also developing a Remotely Piloted Vehicle (RPV) with hovering capability designated as the CL-227.

Electronics

(h) COMMUNICATIONS EQUIPMENT

Canadian Marconi Company designed and produces the AN/GRC-103 radio relay systems. This equipment is in service in nearly 30 countries as the backbone of tactical communications systems. It is usable with a wide variety of modulation and multiplex schemes.

In the area of manpack communications equipment, Canadian Marconi produces the CP-44 radio which provides rapid frequency selection over the HF band from 2 MHz to 18 MHz. Collins Canada, division of Rockwell International of Canada, produces the AN/PRC-515 HF manpack for Canada and other customers which offers 280,000 frequencies over the band 2 MHz to 30 MHz. Collins also designed and makes the widely used AN/PRC-66 which operates in the UHF band (225-400 Mhz) and is used for ground-to-air communications. In a slightly different configuration this set is known as the AN/PRC-75.

Presentey Engineering Products Ltd. has completed development of a Universal Remote Control Group which provides for remote operation of any vehicle-mounted radio.

Codalex Ltd. manufactures a variety of terminal devices that permit telephone and telegraph circuits to be multiplexed onto radio communications channels. Power supplies for the terminals and radios are also available. These are all fully militarized equipment.

In the field of light-route microwave, **Canadian Marconi** produces the MCS-6900 digital system. Analogue microwave is made by **Farinon Electric of Canada Ltd.**, **AEL Microtel Ltd.**, **Northern Telecom Ltd.**, and **Raytheon Canada Ltd.** Some of these also provide for digital input if needed. These commercial-grade systems are complemented by heavy-route systems available in most cases from the same sources. A special type is the Subscriber Radio by **Farinon**, which connects remote subscribers to the telephone system by a microwave link.

Hermes Electronics Ltd. designs and manufactures special radios for automatic ionospheric sounding; this permits quick selection at any time of the best frequencies for communication in the HF band. **Hermes** also manufactures a remarkably compact loop antenna for HF reception.

Special antennas, particularly for marine applications, are designed and constructed by **Spilsbury Communications Ltd.** Whip antennas for a variety of fixed and mobile applications, including very severe environments, are made by **Valcom Ltd.** At the other end of the scale, large

antenna structures, such as are used in satellite communication earth stations and large ground radars, are designed and built by T.I.W. Systems Ltd.

Bayly Engineering Ltd. has a line of automatic radio direction finding equipment for fixed and mobile uses which has had wide acceptance around the world.

Spar Aerospace Limited is engaged in the design, development, manufacture and servicing of systems and products for space, air, marine, and ground transportation. Many of the products and systems developed have applications in the military and defence fields. These include: Satellite and Satellite Sub-systems, Satellite Earth Stations, Gear Transmission Systems, Repair and Overhaul Services, Infra-Red Surveillance Systems, and Remote Manipulator System (RMS).

(1) NAVIGATION EQUIPMENT

Computing Devices Company is one of the foremost manufacturers of airborne display systems. The Projected Map System (PMS) permits a pilot of either fixed or rotary wing aircraft to see his position on an illuminated map at all times. The Combined Display System provides, in addition, video information such as radar.

Canadian Marconi Company established itself in airborne navigation with a full line of doppler sensors and doppler navigation systems. It now also has a number of airborne Omega receivers, and aircraft radar altimeters. The company also offers satellite navigation receivers which provide extremely precise positional information for marine

or land use from signals received from the "Transit" satellite network. It is now developing a product line of user equipment for the Navstar Global Positioning System. Related product lines include cockpit solid state vertical displays for engine instruments.

Litton Systems (Canada) Ltd. is one of the world's leading manufacturers of airborne inertial navigation systems. The LTN-51 and LTN-72 inertial navigation, and earlier models, are in world-wide use for both civil and military applications. Litton also manufactures area navigation systems for aircraft.

In the field of surface navigation, **Aviation Electric Ltd.** has developed a reputation of expertise in navigation systems for army tactical vehicles. Beginning with the original Canadian Army NAVAID, Aviation Electric now has a range of systems for any type of wheeled or tracked vehicles.

Internav Ltd. manufactures Loran-C receivers for marine navigation.

Several Canadian companies make equipment used as ground-based navigation aids to aircraft. **Spilsbury Communications Ltd.** and **Nautical Electronics Ltd.** (Nautel) both have lines of non-directional beacons (NDB's). **Philips Electronics Ltd.** has both Instrument Landing Systems and VHF Omni Range (VOR) with Distance Measuring Equipment (DME) available as an add-on. **Raytheon Canada Ltd.** also offers VOR, with DME available as well.

(j) RADAR EQUIPMENT

Very little radar equipment is made in Canada. Litton Systems (Canada) Ltd. is producing the AN/APS-504 (V) airborne radar for fixed wing and rotary wing aircraft. It is a surface search set designed principally for the maritime patrol role. It can also be used in a navigation mode. Variants are available with either conventional PPI or scan conversion display.

The Canadian Marconi Company LN-66 radar has found application as a general surface warning radar for riverine and harbour craft, and as a navigation radar for large ships. It is also available in an airborne version as a surface search radar of somewhat limited range. Bayly Engineering Ltd. has completed development of its new SRT-7 solid state secondary radar which can be used with any current primary radar in A.T.C. applications.

Raytheon Canada Limited has the ASR-8000 radar for air traffic control surveillance.

(k) COMMAND, CONTROL, AND INFORMATION SYSTEMS

There is no standard off-the-shelf command and control system, because each application requires a system to meet its needs. The same is true of information systems, and required versatility is achievable by incorporating programmable data processors (computers) in the system. Some examples of current Canadian systems are as follows:

CAE Electronics Ltd. is delivering computer/display systems to the Canadian Ministry of Transport for its Joint

Enroute Terminal System (JETS), the modernization program for Canada's air traffic control system. This system provides air traffic controllers with a fully digital map display of the air situation.

Goodwood Data Systems Ltd. is supplying the Operational Information Display System for the JETS. This computer-driven system provides, on a TV type display, all information available on the operational status of an airfield and its various navigation aids.

Litton Systems Canada Ltd. is producing the Automatic Data-Link Processing Systems (ADLIPS) for shipboard use.

MacDonald, Dettwiler, and Associates Ltd. has a Flight Information Display System (FIDS) a computer-driven system to provide airlines with real-time operations information.

Sperry Univac Defence Systems, Division of Sperry Canada Inc. produces the AN/UYK-502(V) microcomputer, a full-scale, general purpose, 16-bit militarized computer for use in a shipboard system utilizing distributed system architecture. It is software - compatible with the AN/UYK-20 and the AN/AYK-14.

(1) DISPLAYS

As an outgrowth of the work on JETS (see above), CAE Electronics Ltd. can offer an advanced digital CRT display for a variety of applications.

Ferranti-Packard Ltd. has a proprietary "flip-disc" dot matrix display system which can display alphanumeric information up to almost any conceivable size.

Computing Devices Company has a digital TV display, which arose from military work in digital scan conversion. C-Tech produces a colour option display for sonars.

Raytheon Canada Ltd. offers standard analogue PPI displays, such as are commonly used in radar systems. Litton Systems Canada Limited is completing development of a multi-mode matrix solid-state cockpit display which will supersede CRT displays.

(m) FIBRE OPTICS

Northern Telecom, Canada Wire and Cable Limited, Phillips Cables Ltd., Digital Telecommunications Ltd., and Foundation Electronic Instruments Inc. Canada is a leading nation in developing fibre optics systems and currently has a number of unique field trial installations for both long distance transmission and connection to private residences. In addition, there are a number of commercial fibre optics systems commercially. Total capability: Research & Development, manufacture fibre cables and complete electronic systems, also bid on turn-key projects.

(n) REMOTE SENSING

Scintrex Ltd. has a complete line of geophysical instrumentation. Barringer Research Ltd. is also in this field, and has a laser fluorsensor for, inter alia, airborne detection of oil spills at sea.

MacDonald, Dettwiler, and Associates Ltd. designs systems for land-based reduction of data from remote sensors, as does SED Systems Ltd., which in addition manufactures certain portions of these systems. CAE Electronics Ltd. produces magnetometers for detecting magnetic anomalies associated with submarine detection, and compensation system for the magnetometers.

(o) ACOUSTIC SENSING AND PROCESSING

Westinghouse Canada Limited is increasingly well known internationally for its expertise in shipborne anti-submarine sonar. The well known AN/SQS-505 sonar, available with both hull-mounted and variable depth transducers, has been exported to several countries and is in service with the Canadian Forces. The HS-1001 series, also available with both types of transducers, is designed for smaller ships.

E.S.E. of Toronto produces a large capacity acoustic processor for the Canadian Navies SQS-510 Sonar. C-Tech Ltd. specializes in solid-state scanning switches and sonar transducers.

Hermes Electronics Ltd. and Sparton of Canada Ltd. both make sonobuoys used by many free world navies.

Computing Devices Company produces acoustic processors for fixed and airborne acoustic systems.

(p) SECURITY EQUIPMENT

A variety of devices is available from Canadian industry under this heading.

Computing Devices Company has completed development of the "Guidar" intrusion detection system, whose initial installation is operating successfully at a Canadian prison. This is a parameter alarm system which can be made invisible and is apparently foolproof.

Gebetex Inc. makes a number of interior intrusion devices and a line of handheld metal detectors for personnel screening.

Sparton of Canada Ltd. offers an intrusion alarm system with magnetic, seismic, and infrared sensors.

Industrial Products Division of Leigh Instruments Ltd. has developed two models of an explosive detector. One is a walk-through device similar in form to metal detectors used in major airports, and the other is a handheld unit for taking into confined spaces.

Sciex Ltd. has developed an explosives detector of high sensitivity which is suitable for fixed or vehicle installation. Changing the sensor head permits narcotic detection.

(q) CONSULTING SERVICES

Canadian consulting engineers are well known around the world for expertise in a number of areas. In the field of communication system design, there are four well known organizations: Bell Canada International; DGB division of SNC; Intel Consultants Ltd.; and Hoyles, Niblock Ltd.

Consulting services in remote sensing systems are available from: **Macdonald, Dettwiler, and Associates Ltd.;** **Barringer Research Ltd.;** and **Scintrex Ltd.** (see above under "Remote Sensing") and from **Interra Surveys Ltd.**

Armements/Vehicles & Ships

As with Canadian aircraft, the development of surface and water transportation equipment has responded to the special environment of the Canadian North and Canada's NATO commitment.

(r) SPECIAL PURPOSE TRACKED AND WHEELED VEHICLES

General Motors of Canada Ltd, Diesel Division, build the Mowag Piranha series of armoured vehicles under license for the Canadian Armed Forces and selected other countries. Mowag and General Motors jointly market the vehicles in major markets.

Foremost International Limited and **Bombardier-MLW Ltée,** are two Canadian companies which manufacture special purpose wheeled and tracked vehicles which are particularly well designed for off-road commercial or military work in snow, mud, muskeg, or sand.

Bombardier offers not only a military motorcycle but also the possibility to build a unit perfectly suited to your own end use, whether you are looking for pure off-road applications or a mixture of on and off-road.

The **Bombardier** Snowmobile is a 50 HP twin track vehicle well known for its range, strength and manoeuvrability. It has optional seating for 1 or 2 passengers with a platform for equipment and has traction capacity up to 3,000 pounds.

(s) AIR CUSHION VEHICLES

Bell Aerospace of Canada has developed and produces the 40 ton "Voyageur" air cushion cargo vehicles with both commercial and military applications. A similar version of this vehicle known as the "Viking" also has been developed. Both vehicles incorporate a basic flat bed design to which superstructures may be added to meet individual load and operation requirements.

(t) SPECIAL MARINE EQUIPMENT

DAF Indal Ltd. (formerly Dominion Aluminum Fabricating) supplies many of the world navies with telescopic hangars and shipboard helicopter recovery and handling equipment.

J.T. Hepburn Limited produces complete ship-to-ship replenishment-at-sea systems for both liquid and bulk stores transfer.

Velan Engineering Limited and Tyton Seal Inc. (formerly Huhn Seal) manufacture valves and seals respectively for both standard and nuclear ship propulsion systems.

Aircraft Appliances and Equipment Limited designs and manufactures filtration and coalescing subsystems for naval shipboard fuel systems.

(u) FIRE CONTROL SYSTEMS

Beginning with their work on the data processing requirements for the ABCA Sound Ranging System, Computing Devices Company has, during the past 10 years,

specialized in the design and development of digital data processing systems for artillery and tank fire control. A recent development is the MILIPAC battery level artillery computer which will be supplied to the Canadian Armed Forces. **Computing Devices** is in production on the fire control computer, an item which it designed for the US Army XM-1 tank.

(v) ELECTRO-OPTICAL PRODUCTS

Ernst Leitz Canada Limited specializes in the development and production of military optical products including panoramic sights for use with mortars, guns and rocket projectors, military binoculars, day/night sights, aircraft recording cameras and lenses for special applications.

RCA has developed a line of lasers and photodiodes and is Canada's major supplier in this area.

(w) NBCW PROTECTIVE EQUIPMENT, SPECIALIZED CLOTHING AND ACCESSORIES

Canadian Government research agencies, in conjunction with Canadian industry, have developed specialized NBCW protective equipment and specialized combat clothing and accessories. NBCW protective equipment includes gas masks, chemical detectors, decontamination equipment, radiation detection equipment, and radiation training devices. Specialized clothing has been designed to cater for both combat and peace-keeping roles, and for both Arctic and tropical environments. Arctic equipment such as tents, tobaggans, snowshoes and skis have been developed for use under severe cold-weather conditions.

(x) PATROL BOATS

There are some 20 patrol boat designers and builders in Canada. Craft can be produced up to about 60 metres in length and speeds in the 30 knot plus range.

(y) SHIPBOARD TOWED HANDLING SYSTEMS

Fathom Oceanology, Fleet Industries Ltd., and Techwest Enterprises, design and build motion compensating towed systems for any depth, practical speed range and towed body size.

(z) ROCKETS, HIGH ENERGY PROPELLANT

Bristol Aerospace initiated production in 1959 of the Black Brant research rocket having a payload capability from nine to 1000 pounds. Use of the propellant in the CRV-7 2.75 inch air-to-ground rocket improves the performance by three to four times over the standard motors. Other propellant applications include JATO and boost motor for CL-289.

In addition to the above, many Canadian companies in the casting, forging, machining and metal forming industries have developed considerable capability in military type work as subcontractors to major Canadian and U.S. primes as a result of the Canada/U.S. Production Sharing Program.

The Canadian Companies referred in the text of this brochure are listed on the pages that follow.

AEL Microtel Ltd.
7018 Lougheed Highway
Burnaby, British Columbia
V5A 1W3
Telex 04-354603

Bell Canada International
1 Nicholas Street
8th Floor
Ottawa, Ontario
K1G 3J4
Telex 053-4849

Aircraft Appliances & Equipment
152 East Drive
Bramalea, Ontario
L6T 1E1
Telex 06-97540

Bombardier Inc. MLW Industries Ltd.
P.O. Box 1000
1505 Dickson Street
Place d'Armes
Montreal, Quebec
H1N 2H7
Telex 05-828841

Aviation Electric Ltd.
200 Laurentien Blvd.
P.O. Box 2140
Montreal, P.Q.
H4L 4X8
Telex 05-826688

Bristol Aerospace Ltd.
P.O. Box 874
Winnipeg, Manitoba
R3C 2S4
Telex 07-577774-07-57804

Barringer Research Ltd.
304 Carlingview Drive
Rexdale, Ontario
M9W 5G2
Telex 06-989183

CAE Electronics Ltd.
8585 Cote de Liesse
P.O. Box 1800
Montreal, Quebec
H4L 4X4
Telex 05-827812

Bayly Engineering Ltd.
167 Hunt Street
Ajax, Ontario
L1S 1P6
Telex 06-981293

Canada Wire and Cable Ltd.
147 Laird Drive
Toronto, Ontario
M4G 3W1
Telex 065-24120

Bell Aerospace of Canada Ltd.
P.O. Box 1601
Grand Bend, Ontario
NOM 1T0
Telex 024-7268

Canadair Ltd.
P.O. Box 6087
St. Laurent
Montreal, P.Q.
H3C 3G9
Telex 05-826747

Canadian Foremost
3030 - 2nd Avenue, N.E.
Calgary, Alberta
T2A 5N7
Telex 03-822671

DAF Indal Ltd.
3570 Hawkestone Road
Mississauga, Ontario
L5C 2V8
Telex 06-961482

Canadian Marconi Ltd.
2442 Trenton Avenue
Montreal, Quebec
H3P 1Y9
Telex 05-825888

de Havilland Aircraft of Canada Ltd.
Garrett Blvd.
Downsview, Ontario
M3K 1Y5
Telex 06-22128

Codalex Ltd.
5780 Decelles Avenue
Montreal, Quebec
H3S 2C7
Telex 05-25225

Digital Telecommunications Ltd.
1305 Matheson Blvd.
Mississauga, Ontario
L4W 1R1
TWX 610-492-4728

Collins Radio Company of Canada
Division of Rockwell International
150 Bartley Drive
Toronto, Ontario
M4A 1C7
Telex 06-963573

Dowty Equipment of Canada Ltd.
574 Monarch Avenue
Ajax, Ontario
L1S 2G8
Telex 06-981295

Computing Devices Company
P.O. Box 8508
Ottawa, Ontario
K1G 3M9
Telex 053-4139

ESE Limited
1780 Albion Road
Rexdale, Ontario
M9V 1C1
Telex 06-989522

C-Tech Ltd.
1150 Montreal Road
(Courtaulds Complex)
Cornwall, Ontario
K6H 5S2
Telex 05-811538

Farinon Electric of Canada Ltd.
657 Orly Avenue
Dorval, Quebec
H9P 1G1
Telex 05-821893

Fathom Oceanology Ltd.
863 Rangeview Road
Mississauga, Ontario
L5E 1H1
Telex 06-960226

General Motors of Canada Ltd.,
Diesel Division
2035 Oxford St. East
London, Ontario
N6A 4N5
Telex 064-7112

Ferranti Packard Ltd.
121 Industry Street
Toronto, Ontario
M6M 4M3
Telex 06-969825

Goodwood Data Systems Ltd.
P.O. Box 210
150 Rosamond Street
Carleton Place, Ontario
K7C 3P4
Telex 053-3593

Fleet Industries Ltd.
Division of Ronyx Corporation
P.O. Box 400
Fort Erie, Ontario
L2A 5M9
Telex 061-5165

John T. Hepburn Ltd.
914 Dupont Street
Toronto, Ontario
M6H 1Z2
Telex 06-968793

Foundation Electronic
Instruments Inc.
1794 Courtwood Crescent
Ottawa, Ontario
K2C 3J2
Telex 053-4153

Hermes Electronics Ltd.
40 Atlantic Street
P.O. Box 1005
Dartmouth, Nova Scotia
B2Y 4A1
Telex 019-21744

Garrett Manufacturing Ltd.
255 Atwell Drive
Rexdale, Ontario
M9W 5B8
Telex 06-989142

Heroux Ltd.
755 Thurber Avenue
Longueuil, Quebec
J4H 3N1
Telex 055-60630

Gebetex Inc.
1625 Chabanel West
Suite 980,
Montreal, Quebec
H4N 2S7

Hoyles Niblock International Ltd.
2045 Stanley Avenue
Montreal, Quebec
H3A 2V4

Intel/CPM Consultants Ltd.
720 Spadina Avenue
Toronto, Ontario
M5S 2T9

MacDonald, Dettwiler & Associates
Ltd.
10280 Shellbridge Way
Richmond, British Columbia
V6X 2Z9
Telex 04-355599

Intera Surveys Ltd.
Centre 70 - 4th Floor
7015 McLeod Trail South West
Calgary, Alberta
T2H 2K6
Telex 03-824537

Marsland Engineering Ltd.
Leigh Industrial Products Division
350 Weber Street, North
Waterloo, Ontario
N2J 4E3
Telex 069-55440

Irvin Industries of Canada Ltd.
479 Central Avenue
Fort Erie, Ontario
L2A 5M9
Telex 061-5169

Menasco Canada Ltée
3495 Côte Vertu Road
St. Laurent,
Montréal, Québec
H4R 1R3
Telex 05-824579

Leigh Instruments Ltd.
P.O. Box 820
Carleton Place, Ontario
K7C 1S8
Telex 053-4148

Nautical Electronics Ltd.
Hackett's Cove
Halifax County, Nova Scotia
B0J 3J0
Telex 019-22552

Ernst Leitz Ltd.
28 Ellen Street
Midland, Ontario
L4R 2H2
Telex 06-875561

Northern Telecom Ltd.
1600 Dorchester Blvd. West
Montreal, Quebec
H3H 1R1
Telex 05-267414

Litton Systems Canada Ltd.
220 Laurier Avenue, West
Suite 730
Ottawa, Ontario
K1P 5Z9
Telex 053-4233

Phillips Cables Ltd.
King Street West
Brockville, Ontario
K6V 5W4
Telex 066-36512

TORONTO, ONTARIO
M5J 2J4
Telex 065-24136

M5J 2J2
Telex 065-24240

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Raytheon Canada Ltd.
400 Philip Street,
P.O. Box 1619,
Waterloo, Ontario
N2J 4K6
Telex 069-55431

Sciex Inc.
55 Glencameron Road,
Suite 202,
Thornhill, Ontario
L3T 1P2

Presentey Engineering Products Ltd.
2784 Fenton Road,
Box 919, R.R. #5,
Ottawa, Ontario
K1G 3N3

R.C.A. Limited,
Royal Bank Plaza,
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Toronto, Ontario
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