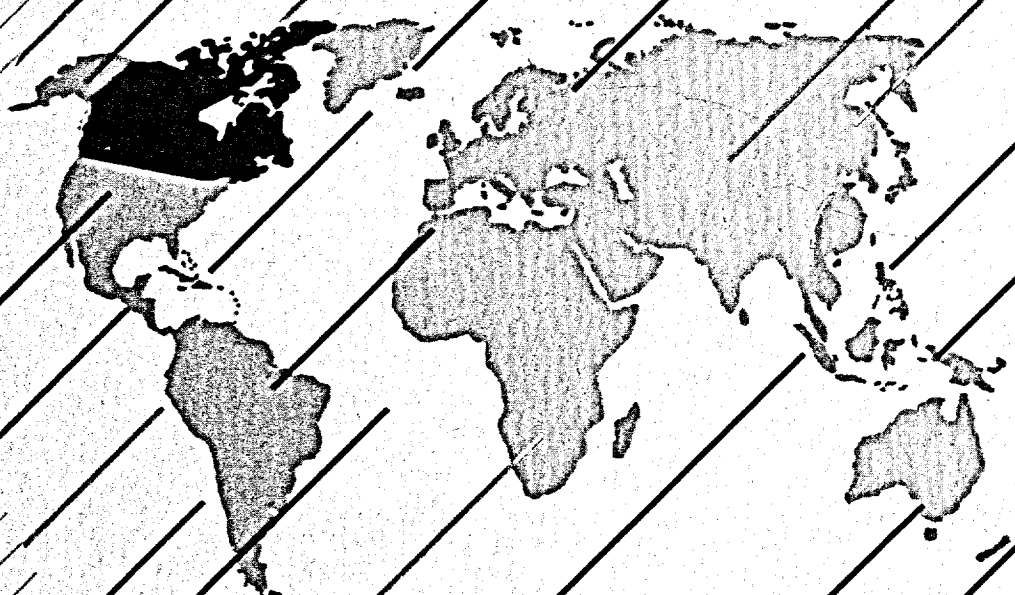


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Telecommunications  
Products and Services  
for World  
Markets

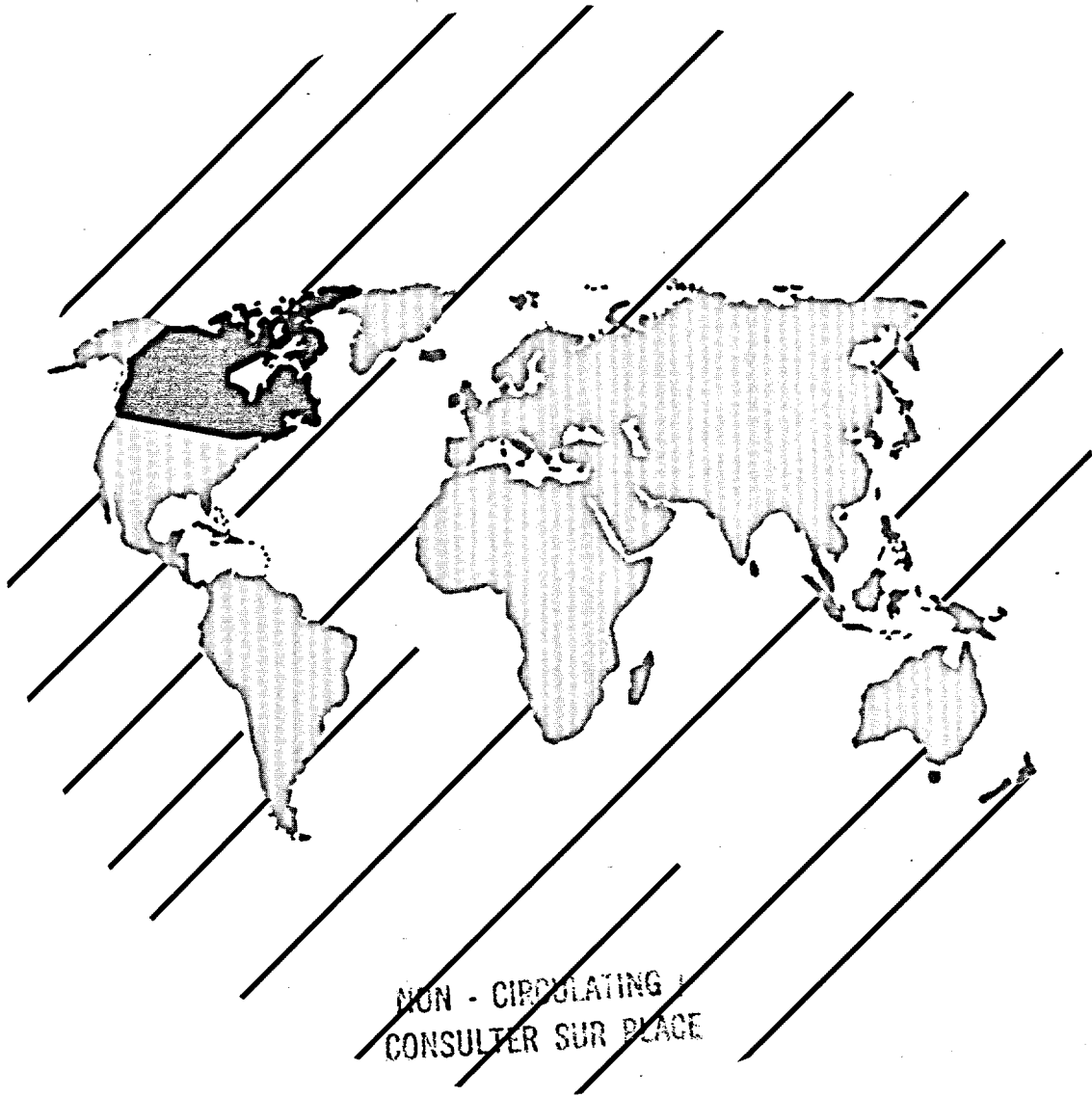


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# Telecommunications Products and Services for World Markets



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Every effort has been taken to ensure that the information given in this publication is correct. The companies profiled are responsible for the accuracy of statements made and provided by them.

For further information concerning telecommunications products and services, please contact:

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Electronics Division (TDE)  
Department of External Affairs  
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Ottawa, Ontario  
Canada K1A 0G2  
Telephone: (613) 996-1893  
Telex: 053-3745 TDE  
Fax: (613) 996-9288 TDE

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## Introduction

Canada has a long history as a pioneer in telecommunications. The invention of the telephone, the first long-distance telephone call and the first nation-wide domestic satellite communication system represent examples of Canadian ingenuity and skill as applied to the needs of this large and diverse country.

Canada is a country of contrasts. It has moderate to extremely cold climates, two official languages and a wide variety of cultures. The population resides in large cities, towns, small remote settlements and farms spread over a vast area across six time zones. Canadian telecommunications companies have as a result developed the unique ability to work with clients to solve specific telecommunications problems in whatever context or geographic area they may occur.

*Telecommunications Products and Services for World Markets* presents an overview of the Canadian expertise and products spectrum. It is of interest to the managers, engineers and decision makers of telecommunications organizations. Whether the requirement is for a subscriber radio system, communications satellites, network management systems, rural telecommunications, or other related products and services, you will find one, or more, Canadian companies capable of meeting your needs.

This catalogue is designed so that individual or groups of Canadian companies can be easily identified. Companies have been alphabetically grouped into one of several categories, based upon their primary area of business:

**Original Equipment  
Manufacturers  
Consulting Services  
Network Management  
Turnkey Telecommunications  
Systems  
Information Systems for  
Telecommunications  
Telecommunications Training  
Services  
Rural Telecommunications**

The above groupings can be used to identify companies that supply the products or services in which you have an interest.

A comprehensive description, or **Company Profile**, of each company, again arranged alphabetically, is also included in this catalogue, as is a **Product Reference List**.

An industry sector overview is being published as a companion publication to this directory.

## Listing of Companies by Services or Products Offered

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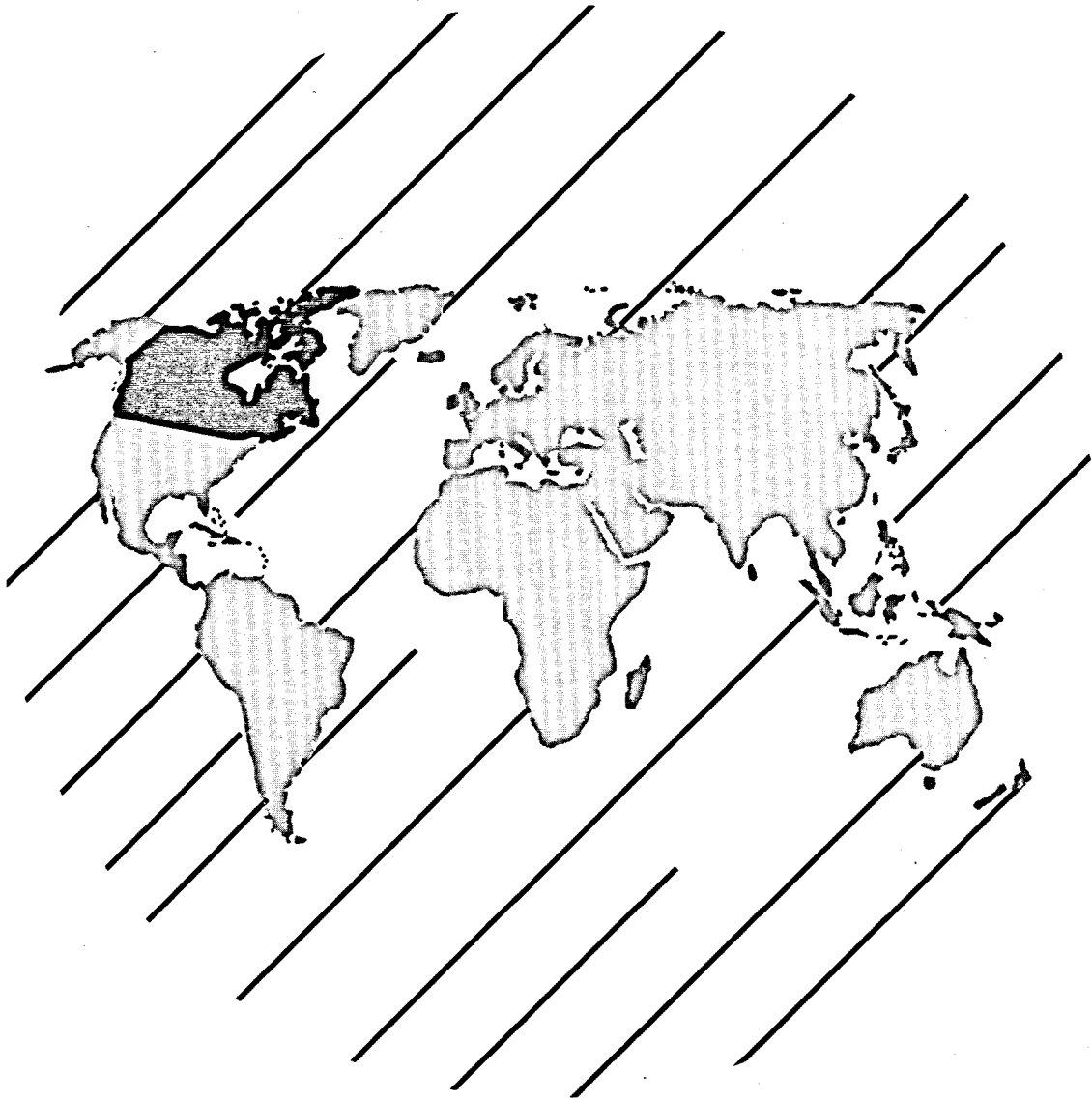
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**Company  
Profiles in  
Alphabetical  
Order**



## 4-12 Electronics Corp.

Unit 7 - 1391 St. James Street  
Winnipeg, MB R3J 0C3  
Telephone: (204) 783-8193  
Fax: (204) 783-9962  
KEY PERSONNEL:  
Chris Nelson, President  
Sheldon Nelson, Vice President

The 4-12 Electronics Corp. manufactures antennas which are very compact and easy to ship; electronic components; CATV equipment: complete satellite head-ends, VHF, UHF transmitters and antennas; and a wide variety of satellite-tracking devices, cable, and other forms of TVRO equipment.

The company is interested in expanding its export markets in the United States, Australia and New Zealand.

## 4C Technologies Ltd./Ltée

8500 Delmeade Road  
Mount Royal, PQ H4T 1L6  
Telephone: (514) 738-1188  
Fax: (514) 738-3988  
KEY PERSONNEL:  
Allan K. Chan, Vice President

4C Technologies is a designer and manufacturer of portable protocol analyzers/simulators for data communications service groups, development engineers, data network operators and end-users. The SEPTA line of analyzers, designed with multilingual-user interfaces and operating at 128 kbps, can monitor and simulate asynchronous, synchronous and bit-oriented protocols, such as CCITT X.25, HDLC, SDLC, IBM 3270 and IBM SNA.

4C Technologies also designs and manufactures a line of very small footprint single-board computers and co-processor boards. It incorporates state-of-the-art technologies in electronic design to achieve the high level of performance, reliability and compactness expected by the industry.

## Abroyd Communications Limited

614 Colby Drive  
Waterloo, ON N2V 1A2  
Telephone: (519) 746-1743  
Fax: (519) 746-0091  
KEY PERSONNEL:  
A.J. Nightingale, President  
J.T. Verlis, Vice President  
R.O. Saunders, Marketing and Sales

Abroyd Communications serves the telecommunications and broadcasting industries by offering the following products and services: design, engineering, supply and installation of towers for AM, FM, TV, CATV, HF and LF applications; design, supply and installation of towers for microwave telecommunications; design, plan and construction or supervision of the civil works associated with the above; supply and/or installation of antennas and transmission lines; tower maintenance and inspection services; special engineering services for tower modification or analysis of existing structures; antenna system orientation; tower accessories; and project management.

Major export projects have been completed for Dominican Telephone, the Tunisia PTT, and the Ministry of Communications of the Congo and Indonesia.

## Adcom Electronics Ltd.

310 Judson Street, Unit 1  
Toronto, ON M8Z 5T6  
Telephone: (416) 251-3355  
Telex: 06-984591  
Fax: (416) 251-3977  
KEY PERSONNEL:  
Peter J. McDonnell, President  
Gary McKoen, Vice President

Adcom Electronics is a distributor of commercial-grade audio/video equipment and a manufacturer of proprietary products for the professional video conferencing and telecommunications marketplace. The company's specialties include an electronic post-production editing management system, an audio/video routing switcher, fibre-optic transmission of video signals, and turnkey video conferencing systems.

## ADGA Systems International Ltd.

116 Albert Street, Suite 400  
Ottawa, ON K1P 5G3  
Telephone: (613) 237-3022  
Telex: 053-4568  
Fax: (613) 237-3024  
KEY PERSONNEL:  
R.A. Allan, President and Chief Executive Officer  
J.K. Burke, P.Eng., Vice President

The ADGA Group is a Canadian-based company providing professional engineering, consulting, and technical support services to a broad range of clientele in the fields of electronics and computer systems. Incorporated in 1969, ADGA has established a proven track record for both military and commercial applications of technology.

In addition to total project management, ADGA offers many functional services, including initial research, survey and report preparation; systems design; software development and implementation; preparation of specifications and technical manuals; and installation and operation of technical facilities, as well as field service and life-cycle maintenance management. The scope of services available includes the key service areas of engineering, integrated logistics, operations and maintenance, and computer systems. The ADGA Group's technical capabilities encompass satellite design, microwave-system maintenance, air traffic control, UHF/VHF communications, circuit/system prototyping, computer graphics, facility-security design and maintenance, vehicle life-cycle analysis and comprehensive personnel training.

## AEA Electronic Ltd.

P.O. Box 850  
6270 Perth Street  
Richmond, ON K0A 2Z0  
Telephone: (613) 838-2554  
Telex: 053-3878  
Fax: (613) 838-2326  
KEY PERSONNEL:  
David P. Miller, President

AEA is a privately owned, 100 per cent Canadian company specializing in the manufacture of auto-

matic test systems, telephone channel simulators, wireline simulators and ISDN test instruments and systems. These products are used to test data modems, wireline and ISDN data transmission equipment, and are addressed to both the end-user and modem OEM markets. The company also provides consulting and testing services for data modems.

Since its inception, AEA has been growing steadily both in terms of its hardware products and personnel. Most of the company's exports are to the United States, with substantial overseas sales to numerous countries throughout the world.

## AEG Bayly Inc.

167 Hunt Street  
Ajax, ON L1S 1P6  
Telephone: (416) 683-8200  
Telex: 06981293

Fax: (416) 683-0186

### KEY PERSONNEL:

Douglas E. Carl, President  
Ken Smith, Vice President,  
Manufacturing  
Grant G. Cooper, Division Manager,  
Telecommunications

AEG Bayly Inc. specializes in the research, development and manufacture of analog and digital telecommunications equipment. The product line includes voice/data multiplexers — drop and insert, T1 or CCITT standard program channels, digital/analog, stereo; party-line signalling equipment; control systems for radio and telephone communications; open wire carrier; telecommunications filters and wire-wound components; line conditioning products; and FM broadcast transmitters and associated products. The company has also established an OCR (optical character recognition) engineering group.

In business for over 40 years, AEG Bayly began by producing customized electronic equipment and providing instrumentation and calibration services. The company also designs and manufactures specialized analog communications systems for railways, utilities and telephone companies.

Since 1970, AEG Bayly has operated as a wholly owned subsidiary of AEG Aktiengesellschaft of West Germany. In 1987, the company acquired Uni-Tel Ltd. of Scarborough, Ontario, a specialist in control and voice communications.

## Alpha Technologies Ltd.

7033 Antrim Avenue  
Burnaby, BC V5J 4M5  
Telephone: (604) 430-1476  
Telex: 04-356760  
Fax: (604) 430-8908  
KEY PERSONNEL:  
Fred Kaiser, President

Alpha Technologies designs, manufactures and markets a complete line of AC and DC power products for computer, telecommunications and cable television applications.

These include a broad range of UPS systems, line conditioners, rectifiers/battery eliminators, DC-DC converters and complete power boards that provide complete protection against power problems such as blackouts, brownouts, surge spikes and noise.

All units are available in a variety of voltages and frequencies and are built to meet international standards.

## Alta Telecom International Ltd. (ATI)

411 - 1st Street SE, Suite 2430  
Calgary, AB T2G 4Y5  
Telephone: (403) 231-2980  
Telex: 038-21448  
Fax: (403) 231-8140  
KEY PERSONNEL:  
G.J. Pollock, President  
D.J. Fraser, Vice President, Marketing Support

Alta Telecom International Ltd. (ATI) is an international supplier of telecommunications, network advisory, engineering, installation and support services. Since its inception in 1981, ATI has grown and earned a worldwide reputation for its technical expertise and capability of transferring technology to both private and public organizations internationally.

ATI, a Canadian company, is a wholly owned subsidiary of Alberta Government Telephones (AGT). Serving a population of approximately 2.3 million people, AGT is a leading authority in the field of telecommunications and has pioneered the technologies of direct dialling, fibre optics, and digital switching. With its close liaison with AGT, ATI is backed by AGT's vast resources and 80 years of successful operating experience.

ATI is located corporately in Calgary, Alberta, with branch offices in South-east Asia; Cairo, Egypt; the Caribbean; Australia; and New Zealand. From these offices, ATI has successfully secured contacts in 17 countries around the world.

## Amdahl Communications Inc.

2330 Millrace Court  
Mississauga, ON L5N 1W2  
Telephone: (416) 821-9900  
Fax: (416) 826-5748  
KEY PERSONNEL:  
Sam Ezeckiel, General Manager  
Dave Dingle, Marketing Manager

Amdahl Communications Inc. designs and manufactures digital communications equipment, including multiplexing products that operate at trunk speeds from 56 kbps to 2.048 Mbps over such media as 4-wire line, terrestrial microwave links or satellite circuits. Channel rates range from 110 bps to 768 kbps. Other products include X.25 switches and protocol converters, limited-distance data sets, network synchronization equipment and digital repeater units, all of which may be integrated into networks under single network management capability. Amdahl has broad experience in large networks and is a supplier to Canada's Dataroute, the longest digital communications network in the world.

The company exports to the United States, where it has several major contracts for networking products with end users in the resource and banking communities, and to European and Far East markets.

Amdahl Communications Inc. is an operating business unit and product centre of the U.S.-based Amdahl Corp., with a world mandate for products designed and manufactured in Canada. Formerly called Tran Communications Ltd., the name was changed to reflect the 1980 purchase of Tran Corp. by its parent. The company has been operating in Canada since 1973.

### **Amphenol Canada Corp.**

20 Melford Drive  
Scarborough, ON M1B 2X6  
Telephone: (416) 291-4401  
Telex: 065-25210  
Fax: (416) 292-0647

**KEY PERSONNEL:**

*Mark T. Michalak, President*  
*Tom Whitley, Export Market Manager*

Amphenol Canada Corp. designs and manufactures EMI, RFI filter connectors for military/aerospace, telecommunications and computer industry applications. The company also provides related consulting services.

The company is an operating unit of the U.S.-based Amphenol group of companies (wholly owned by LPL Investments Ltd.) that operates manufacturing facilities in Canada, Great Britain, West Germany, France, Italy and the Far East, in addition to its U.S. plants.

### **Andover Telecommunications Inc.**

220 Alden Road  
Markham, ON L3R 4C1  
Telephone: (416) 479-5955  
Telex: 06-966795  
Fax: (416) 479-9685

**KEY PERSONNEL:**

*Len Burke, President*

Andover designs and manufactures telecommunications devices for the telex and electronic-office services market. The company is primarily involved in developing new products

and systems, and will adapt its standard design to specific regional or national requirements. Products are assembled in Canada as required, or may be licensed for manufacture in other nations.

The company currently has projects under way in India, Thailand, Mexico and the Philippines, and is exploring other opportunities in Southeast Asia.

### **Andrew Antenna Company Limited**

606 Beech Street  
Whitby, ON L1N 5S2  
Telephone: (416) 668-3348  
Telex: 06-981269  
Fax: (416) 668-8590

**KEY PERSONNEL:**

*Hugh J. Swain, President*  
*Alex R. Mackenzie, Business Development Manager, Commercial Products*  
*George Tong, Manager, Marketing*

Andrew Antenna is a designer and manufacturer of specialized antennas and transmission lines used throughout the world. The company's products include a complete line of terrestrial microwave antennas covering 1 to 23 GHz (1.8 to 12 m); satellite earth station antennas; HF antennas; HELIAX waveguide and coaxial cable; air traffic and weather radar antennas, navigation and landing aid antennas, special applications antennas designed to exacting customer requirements; tactical antennas; troposcatter antennas; airborne antennas; and special naval structures. The company offers fully equipped anechoic chamber and test range facilities and production to internationally recognized government/military quality standards.

Andrew designed and manufactured products are a major feature of telecommunication installations around the world. Andrew Antenna operates as part of an international company with nine plants in four countries.

Since its incorporation in Canada in 1953, the company has expanded its offices and manufacturing plant to 10 000 m<sup>2</sup>.

### **Angus TeleManagement Group Inc. (ATMG)**

1400 Bayly Street  
Office Mall Two, Suite 3  
Pickering, ON L1W 3R2  
Telephone: (416) 420-5050  
Fax: (416) 420-2344

**KEY PERSONNEL:**

*Ian Angus, President*  
*Elisabeth Angus, Executive Vice President*

Angus TeleManagement Group (ATMG) is a management consulting firm specializing in telecommunications. Consulting services focus on strategic planning, market research and executive advisory services for users and vendors of telecommunications equipment and services. ATMG also offers educational programs, sales and management training and executive briefings on telecommunication trends.

Through its strategic alliance with the CGI Group, Angus also provides a full range of technical and engineering consulting services to users and vendors.

### **Atlas Telecom International Ltd.**

809 Deslauriers Street  
Saint-Laurent, PQ H4N 1X3  
Telephone: (514) 335-0061  
Fax: (514) 332-4785

**KEY PERSONNEL:**

*Claude Charland, President*  
*Rock Savage, Vice President*

Atlas Telecom International specializes in the research, development and manufacture of peripheral products such as data and facsimile transmission equipment that is used mainly in the telecommunication marketplace.

The company's products are marketed in Canada, the United States, Europe, South America, Africa, Asia and the Orient, and are exclusively distributed in Nedco/Westburne (Canadian) outlets and Graybar (U.S.) outlets.

### **Audor Communications Inc.**

2700 Lancaster Road  
Ottawa, ON K1B 4T7  
Telephone: (613) 523-9933  
Telex: 053-3172  
Fax: (613) 523-0242

**KEY PERSONNEL:**

Robert P. Welland, *President*  
Robert Mogk, *Marketing Manager*

Audor Communications Inc. (ACI) specializes in the manufacture and turnkey supply of customized communication systems. Products and systems include air and marine traffic control communication systems; solid-state and microprocessor-based radio/telephone patching, radio/antenna switch systems; Quasi Doppler direction finders and VHF transmitters/receivers; lightning protectors; digital clocks; and master-slave systems. Air-traffic control and marine-communications control systems are designed to customer requirements. The company also provides consulting services, installation and offshore training.

Although established in 1979, ACI employees have many years of experience in telephony and communications. Most of the firm's business is from the sale of custom VHF and UHF ground-to-air communications systems to offshore customers. ACI has been active in Malaysia, West Africa (Ghana, Togo, Ivory Coast, Guinea, Liberia, Sierra Leone), Mexico, Cuba, Algeria, the United States, United Arab Emirates, Chile, Venezuela and the Caribbean.

### **B.E.L.-Tronics Limited**

2422 Dunwin Drive  
Mississauga, ON L5L 1J9  
Telephone: (416) 828-1002  
Telex: 06-960397  
Fax: (416) 828-2951  
**KEY PERSONNEL:**  
R.J.C. Sagl, *President*  
R.E. Şagl, *Vice President*

B.E.L.-Tronics Limited is a designer and manufacturer of high-technology electronic products that include complete satellite systems consisting of dish antenna, LNA, block down-converter; stereo receiver and satellite accessories; and the Micro Eye radar detector line.

### **Bell Canada International Inc.**

One Nicholas Street, 9th Floor  
Ottawa, ON K1N 9M1  
Telephone: (613) 563-1811  
Telex: 053-4849  
Fax: (613) 563-9679  
**KEY PERSONNEL:**  
Brian A. Tickle, *Chairman, Chief Executive Officer, President*  
Donald G. Wright, *Executive Vice President*  
Ron Carwardine, *Director, Marketing Operations*

Bell Canada International Inc. offers expert services to overseas clients — network and customer/support and management — in all areas of telecommunications. These services include consultation and training, installation, operations and maintenance, and management of the telecommunications environment. As a subsidiary of Bell Canada Enterprises, the company has access to the technical, managerial and scientific expertise of Bell Canada, Northern Telecom and Bell-Northern Research. It maintains branch offices in Reston, Virginia, United States; Kuala Lumpur, Malaysia; and Baghdad, Iraq; and has managed projects in more than 70 countries. One such project includes the operation, maintenance and management of the Saudi Arabia Telephone Expansion program since 1977.

### **BG Checo International Limited Products and Systems Division**

5845 Couture Boulevard  
Saint-Léonard, PQ H1P 1A8  
Telephone: (514) 329-3912  
Telex: 05-828680  
Fax: (514) 329-3911

**KEY PERSONNEL:**

D. Chen, *President*  
A. Frèrejean, *Vice President, Business Development*

BG Checo International is a manufacturer of SCADA systems, fault-location systems, sequence-of-events recorder, intelligent annunciators, transient-fault recorders, remote terminal units, utility power distribution, sub-station equipment, programmable controllers, motors and variable speed drivers.

### **BMS Communications Services Ltd.**

2176 Willingdon Avenue  
Burnaby, BC V5C 5Z9  
Telephone: (604) 293-1831  
Telex: 04-352848  
Fax: (604) 293-1237

**KEY PERSONNEL:**

Raymond Mol, *President and Chief Executive Officer*  
Robert G. McLaughlin, *Vice President*  
John D. Brown, *Marketing Manager, Micro-Transmission Division*

BMS Communications Services Ltd. (BMS) specializes in the provision of communications systems on a turnkey (E.F.&I.) basis, and the provision of design, installation, commissioning and project management services to telecommunications manufacturers and users.

BMS, as a non-biased integrator and system designer, can provide telecommunications systems whose component parts are sourced from various manufacturers for their superior performance. Systems can incorporate telephone switching, satellite, mobile,

cellular, VHF, UHF and microwave radio, digital or analog multiplex, supervisory, alarm or data products, metallic or fibre cable plant, AC and/or DC power plants, towers, roads, and buildings.

During the past eight years, BMS has provided services to most major North American telecommunications system operators and manufacturers. Internationally, BMS has provided services in Panama, Puerto Rico, India, Pakistan, Burma, Saudi Arabia, North Yemen and Egypt, and continues to provide system maintenance in some of these countries on a contract basis.

### **Boston Insulated Wire and Cable Company Ltd.**

*P.O. Box 70, Station B  
118 Shaw Street  
Hamilton, ON L8L 7V3  
Telephone: (416) 529-7151  
Telex: 061-8684*

*Fax: (416) 528-5953*

**KEY PERSONNEL:**

*E.G. Barss, President*

*R. Whitelock, Marketing Manager*

Boston Insulated Wire and Cable Company Ltd. (BIW) specializes in the design and specialty manufacturing of cable for harsh or unusual environmental conditions, primarily short-length cable requiring flexing. BIW has custom designed and supplied cables for applications in virtually every industry, including telecommunications, CATV, industrial, and oil and gas.

The company is a subsidiary of BIW Cable Systems of the United States, and holds BIW's territorial mandate for Australia, New Zealand, Japan, Korea and Taiwan. In addition to its corporate headquarters/manufacturing facility in Canada, BIW has a sister plant in the United Kingdom.

### **Brown Applied Technology Inc.**

*31 Progress Avenue, Unit 16  
Scarborough, ON M1P 4S6  
Telephone: (416) 298-0560*

*Fax: (416) 298-0806*

**KEY PERSONNEL:**

*Donald Eckhart, President*

*Tom Miller, West Coast Sales  
Manager*

Brown Applied Technology Inc. is a designer and manufacturer of switching power supplies from 70 to 3 500 watts and 2 to 1 000 volts; high performance, high density (>3W/cu. in.) multiple output supplies for computers and telecommunications with CSA, UL, TUV, FCC approvals (fast in-house approval); custom, semi-custom and standard products 25-200 kHz, using proprietary magnetic amplifiers and in-house magnetics; and SMPS with integrated UPS (battery back-up), active and passive power factor correction, and full range input for use worldwide. Application assistance is available.

### **Browning Communications Canada Inc.**

*6202 Kestrel Road  
Mississauga, ON L5T 1Z1  
Telephone: (416) 678-9087  
Telex: 06-968001*

*Fax: (416) 678-0128*

**KEY PERSONNEL:**

*Ron Wilson, President/Chief Executive  
Officer/Chairman*

*James Leeder, General Manager*

The Browning name goes back to the 1920s and the radio receivers of Dr. Glen H. Browning. A number of U.S. companies bore his name, including Browning Laboratories.

Browning Communications Canada Inc. is located in Mississauga, Ontario, Canada. Browning engineers, manufacturers and markets, for worldwide distribution, rural radio-telephone systems under the registered trade name "Eagle Series."

The Eagle Series provides conventional private telephone service to isolated, inaccessible, mountainous or

remote communities by using the VHF and UHF radio frequency bands as an extension to the telephone network. The Eagle Series can also be used as a stand-alone telephone source of communications within mining operations, temporary emergency sites and logging camps. In addition, Browning offers a mobile version of the Eagle Series that is used in automobile and boat applications.

The Eagle Series VHF product line is both FCC- and DOC-approved and is available in power outputs from 2 to 80 watts.

### **C/D Communication Devices Inc. (A Member of the Artain Group)**

*670 Progress Avenue  
Scarborough, ON M1H 3A4  
Telephone: (416) 439-6320  
Telex: 065-25428*

*Fax: (416) 439-7359*

**KEY PERSONNEL:**

*A. Ainlay, President*

*W. Welk, Vice President, Marketing*

C/D Communications Devices Inc. manufactures teledata components consisting of jacks, jack panels, coaxial components, attenuators, matrix selector switches, digital cross-connect jackfields, rocker and toggle switches, patch cords and fibre-optic components. Much of the company's telephone-jack equipment is custom designed and manufactured to customer requirements.

C/D Communication Devices Inc. is a subsidiary of Artain Holdings Inc. and is associated with Leecraft Industries Ltd. and Anro Electronic Industries Ltd. at the same address.

Leecraft Industries Ltd. manufactures indicator lights and miniature and quartz lampholders. Anro Electronic Industries Ltd. manufactures specialized inductors and windings and contract sub-assembly of electronic equipment.



## Calgary Controls Ltd.

7056H Farrell Road SE  
Calgary, AB T2H 0T2  
Telephone: (403) 253-6101  
KEY PERSONNEL:  
Walter Lindenbach, President

Calgary Controls Ltd. designs and manufactures state-of-the-art communications equipment, including specialized telephone products. Its product line includes voice frequency/DTMF communications, DTMF decoders, status alarm systems and voice facility data testing equipment. It markets substantially to users of two-way radios.

The company was founded in 1970 and is a supplier to all major Canadian telephone companies. The firm also supplies specialized equipment to railroad and utility companies, and has exported products to the United States.

## CANAC Telecom

151 Front Street West, Suite 514  
Toronto, ON M5J 2N1  
Telephone: (416) 860-2801  
Telex: 065-24456  
Fax: (416) 365-9227  
KEY PERSONNEL:  
Andrew Brasok, General Manager,  
International Marketing  
James Cullen, Vice President,  
Managing Director  
Don Bruce, General Manager, North  
American Market

CANAC Telecom is the systems integrator of Canadian National (CN) Communications engaged in worldwide telecommunications consulting and turnkey project management, with particular emphasis on telecommunications services to remote, rural areas and long-haul transmission systems.

Drawing on 140 years of operating experience of three affiliated companies, and the resources of other Canadian telecommunications firms, CANAC Telecom is active in the development and implementation of major investment projects in the telecommunications sector.

## Canada Wire and Cable Limited

250 Ferrand Drive  
Don Mills, ON M3C 3J4  
Telephone: (416) 424-5000  
Telex: 06-219556  
Fax: (416) 424-1008  
KEY PERSONNEL:  
P.A.W. Green, President  
R.C. Gould, Vice President, International  
Sales

Canada Wire and Cable Limited is a wholly owned subsidiary of the Noranda Group of companies which manufactures a broad selection of standard and custom products. The product range includes construction cables, control cables, magnet wires, medium and high voltage cables, cords, appliance wires, electronic wires and communications cables, including fibre optics.

Canada Wire will custom-engineer wire and cable products to specific customer requirements for virtually any application. Through its subsidiary, Canstar Communications, the company also offers the most advanced fibre-optics technology (see Canstar listing for more details). Datatrans™ Instrumentation Cables have been designed for process and system control applications up to 600 V while ensuring peak performance in the harshest environments.

Canada Wire and Cable has ongoing experience in exporting wire and cable products and providing turnkey installations in 60 countries. It maintains company-owned facilities in the Far and Middle East, Europe, and North and South America.

## Canadian Larsen Electronics Ltd.

149 West 6th Avenue  
Vancouver, BC V5Y 1K3  
Telephone: (604) 872-8517  
Fax: (604) 872-8655  
KEY PERSONNEL:  
Gavin Fale, President  
Betty Deaust, Vice President  
John Deaust, Marketing Manager

Canadian Larsen Electronics Ltd. is a manufacturer of two-way communication antennas ranging from 27 MHz

to 1.2 GHz. These antennas are for hand-held, mobile and base-station radios. Products have been exported to Australia, Spain and Indonesia.

## Canadian Marconi Company DataComm Products Division

P.O. Box 13330  
415 Legget Drive  
Kanata, ON K2K 2B2  
Telephone: (613) 592-6500  
Telex: 053-4805  
Fax: (613) 592-7427  
KEY PERSONNEL:  
J. Joseph Bedford, Vice President  
Bryan Locker, Director of Marketing

With over 15 years of experience in Telex switching, Canadian Marconi Company DataComm Products Division is a proven supplier to the worldwide telecommunications market. The company entered the field with the development of a Telex/TWX converter to handle switching protocol and code translation between TWX and Telex systems. This led to the CMA-745 international Telex gateway exchange, which evolved into the CMA-755 Telex exchange.

British Telecom plc selected the CMA-755 multiprocessor Telex/Low Speed Data Exchange for its Inland Telex Modernization Program. To date, more than 90 000 line terminations operate from 11 Canadian Marconi exchanges in 10 major cities in the United Kingdom.

Utilizing the same successful multiprocessor technology, the CMA-755PC Telex/Low Speed Data was then developed. By employing a standard personal computer, this exchange represents a cost-effective solution for smaller networks, from 64 to 5 000 lines, that require the full features of a much larger exchange.

DataComm Products Division has recently introduced the Transcriber Series of products. These include a bi-directional fax to telex conversion facility and a full range of facsimile switching equipment. These products allow service providers to offer store

and forward value added switching and networking functions to facsimile users.

Canadian Marconi Company (CMC) is a diversified supplier of electronics and communications equipment. The company was founded in 1903 by Guglielmo Marconi, who engineered and received the first trans-Atlantic wireless signal at Signal Hill, Newfoundland (on Canada's easternmost shore), in 1901. CMC operates independently of its principal shareholder, the General Electric Company, plc, of the United Kingdom, which holds 51.6 per cent of CMC's outstanding common shares.

The company's operations are divided into six autonomous divisions: Avionics, Components, DataComm Products, Defence Communications, Radar and Special Services divisions. The company's wholly owned U.S. subsidiary, CMC Electronics, Inc., complements CMC's activities in product development, sales and systems support.

### **Canadian Pacific Consulting Services Ltd.**

740 Notre Dame Street West  
Suite 760  
Montreal, PQ H3C 3X6  
Telephone: (514) 876-1900  
Telex: 055-60147

Fax: (514) 875-1023

KEY PERSONNEL:

G.T. Fisher, President, Chief Executive Officer

J.R. Taylor, Vice President

Canadian Pacific Consulting Services Ltd. (CPCS) is the consulting arm of the Canadian Pacific group of companies. CPCS provides project services in the telecommunications and transportation sectors, including feasibility studies, planning, engineering design and project management of general and special purpose telecommunications systems — microwave, satellite and fibre-optic transmission facilities, voice, message and data switching networks, SCADA, mobile radio and closed-circuit TV. The company also provides technical and management assistance in operations, maintenance, staffing and training for telecommunications organizations,

including PTTs, transportation (railways, urban transit, aviation, pipelines) and public utilities.

Since its creation, CPCS has worked in some 64 countries. In addition to its Montreal corporate headquarters, CPCS has offices across Canada, in the United States, Europe, Asia and Central America.

### **Canadian Satellite Communications Inc. (Cancom)**

50 Burnhamthorpe Road West  
10th Floor

Mississauga, ON L5B 3C2

Telephone: (416) 272-4960

Fax: (416) 272-3399

KEY PERSONNEL:

Pierre Morissette, President and Chief Executive Officer

Claude Lewis, Vice President, Market Development

John Underhill, Vice President, Network Operations

Tom Moorehead, Vice President, Satlink Business Services

Cancom operates four business units: Cable Market Services, Direct-To-Home Services (DTH), Satlink Business Services and Cancom Teleconference Network (CTN).

The Cable Market Services Group delivers eight channels of television programming on Telesat Canada's Anik satellite. Each signal is scrambled and controlled from a 24-hour Master Control Centre located in the Montreal area.

The DTH Services division markets Cancom's television services to the market not serviced by a cable television service.

The Satlink Business Services Division offers satellite-based services to the business community. Services include a shared use interactive data communications network using the latest in VSAT satellite technology. Satlink also offers broadcast data distribution and audio distribution by means of satellite using innovative technologies to reduce costs.

CTN is the leading satellite teleconferencing service provider in Canada. CTN has successfully completed over 500 business television productions and satellite networking events.

Cancom is Canada's leading satellite network services company and is publicly traded on the Toronto and Montreal stock exchanges. It is the leading user of satellite space segment in Canada with annual sales in FY 1989 expected to be \$40 million. Cancom is interested in international, satellite-based, communication ventures, in either a joint venture, equity investment or advisory role.

### **Canstar Communications Division of Canada Wire and Cable Limited**

3900 Victoria Park Avenue

North York, ON M2H 3H7

Telephone: (416) 756-4100

Telex: 065-25403

Fax: (416) 756-3990

KEY PERSONNEL:

Stan Smyth, President

Douglas Mitchell, Vice President, Business Development

John E.H. Elvidge, Vice President, Transmissions

Canstar Communications specializes in the design, engineering, and installation of complete turnkey fibre-optic communication systems for a broad range of telecommunication and data communication applications, including telephone, power utility and transportation. Canstar's products include multimode and single taps and star couplers that are marketed on a worldwide basis and manufactured at the North York, Ontario, and Westboro, Massachusetts, facilities. Canstar's latest product line is the proprietary 100 Mb/s fibre-optic local network marketed under the SuperNetwork trademark, Super 100. It provides multivendor interconnection in the computer intensive processing environment.

The company maintains an ongoing research and development program for optical coupler, optical line terminating equipment and local area networks at its North York facility and a similar program in support of its fibre-optic cables in Winnipeg, Manitoba.

Canstar Communications is a division of Canada Wire and Cable Ltd., wholly owned by Noranda Mines Inc. of Toronto.

## Canswitch Limited

P.O. Box 1307  
Almonte, ON KOA 1A0  
Telephone: (613) 256-3364  
Fax: (613) 828-2163

KEY PERSONNEL:  
John P. Blais, Principal  
Gordon W. Baxter, Vice President

Canswitch Limited has expertise in store-and-forward message switches, providing both customized turnkey systems as well as consulting services in the field.

Canswitch manufactures the CS4000 Message Switching System, suitable for both commercial applications and government uses such as AFTN (Aeronautical Fixed Telecommunication Network). The CS4000 is a versatile system optimized for small- and medium-scale installations. It can switch messages among as many as 100 communications lines and interface to a wide variety of communications networks and services. It can handle traditional low-speed circuits such as telex as well as being useful for advanced high speed applications such as CIDIN (Common ICAO Data Interchange Network). Canswitch will customize CS4000 systems to meet a customer's exact hardware and software requirements.

## CEGIR

2 Complexe Desjardins, Bureau 2301  
P.O. Box 160  
Montreal, PQ H5B 1B3  
Telephone: (514) 288-6942  
Telex: 055-60249

KEY PERSONNEL:  
Marcel Desjardins, President  
Gilles Coulombe, Vice President,  
Technical Assistance and Industrial  
Development

CEGIR specializes in the transfer of technology through consultation, technical assistance, project management and training. From its offices in Canada; Abidjan, Ivory Coast; Dakar, Senegal; Geneva, Switzerland; Manila, Philippines; and the United States the firm manages projects and provides expertise to clients in 25 countries.

CEGIR's expertise focuses on five major sectors: data processing, office automation and ergonomics; education and vocational training; technical assistance and industrial development; water resources and rural development; and communications. The company's goal is to help its clients become fully autonomous through local executives and professionals, who will in turn take over the future development of the projects.

Established in 1970, CEGIR's education and vocational training services include the planning and organization of training programs, educational technology, technical and vocational training and school construction and project management.

Other recent communications projects include the establishment of management services for the West African section of Panaftel (Pan-African Telecommunications Network), which included the recommendation of tariff structures for telephone services; a technical assistance study undertaken for l'Office National des Télécommunications (ONATEL) in the Republic of Burundi; design of a tarification structure of telecommunications services for the Ministry of Post and Telecommunications for the Republic of Rwanda; and the development and implementation of general and analytical accounting systems, budget planning and management control systems for the Department of Post and Telecommunications of Senegal.

## Central Dynamics Division of International Datacasting Corp.

147 Hymus Boulevard  
Pointe Claire, PQ H9R 1G1  
Telephone: (514) 697-0810  
Telex: 05-821506

Fax: (514) 697-0224  
KEY PERSONNEL:  
Roy McArthur, President  
John Boland, Vice President, Sales  
and Marketing  
Emil Lurion, Director, International  
Sales

Central Dynamics is a manufacturer of television and video production equipment used by broadcasters, common carriers, and other industrial and

commercial users of professional video, switching, distribution and processing equipment. The product line encompasses video production, video and audio routing, and master control switchers; distribution amplifiers; keying equipment; and digital coders and decoders. The company has operated as a division of International Datacasting Corp. since its merger with that firm in early 1988.

## COM DEV Ltd.

155 Sheldon Drive  
Cambridge, ON N1R 7H6  
Telephone: (519) 622-2300  
Telex: 06-959333  
Fax: (519) 622-1691  
KEY PERSONNEL:  
M.V. O'Donovan, President  
Neil Russell, Director, Defence  
Business Development  
Ken Allstaff, Director, Marketing

COM DEV is best known for its major achievements in microwave multiplexing and switching subsystems that are currently deployed on most communications satellites. Over 100 spacecraft, either in orbit or in pre-launch phase, incorporate COM DEV equipment. Remote sensing and space science satellites use COM DEV's highly specialized equipment and instruments. Satellite earth terminals use COM DEV's high power output components and subsystems.

COM DEV's Surface Acoustic Wave (SAW) components and subsystems, together with COM DEV's Signal Processing capability, are contributing to concepts that will significantly advance the next generation of communication satellites. COM DEV's pulse compression subsystems provide leading-edge performance to military and civil radars.

The company's products are based on in-house technology which includes quartz, alumina and teflon substrate processing, ferrite and dielectric materials, microwave integrated circuit fabrication and GaAs semi-conductor processing. These technologies ensure security of supply and control of key parameters.

## **Cometic Technology Inc. Delhi Antenna Products Division**

65 Waverly Street  
Delhi, ON N4B 1E8  
Telephone: (519) 582-0710  
Telex: 061-81174  
Fax: (519) 582-2792

### **KEY PERSONNEL:**

*R. Ramage, President/Chief Operating Officer*

Cometic Technology Inc., producer of Delhi Antenna Products, is a manufacturer of consumer, MATV and CATV TV/FM receiving antennas; antenna supporting structures, including tower, both bracketed and self-supporting; TV/FM antenna pre-amplifiers, distribution electronics and accessories for consumer and MATV; and satellite dishes (mesh construction).

## **Comm Services International Ltd.**

59 Jenning Drive  
Fredericton, NB E3A 4Y9  
Telephone: (506) 459-7772  
Fax: (506) 459-5562

### **KEY PERSONNEL:**

*Glenn Smith, President*

Comm Services International Ltd. can deliver a wide range of radio communication systems on a fully turnkey basis. The company was incorporated in 1987 and is associated with ComService A/S of Denmark, a highly successful turnkey systems supplier formed in 1982.

Systems have been delivered in Egypt, Libya, Tunisia, Kenya, Tanzania, Zimbabwe, Cameroon, the Ivory Coast, Burkina Faso, Kuwait, Saudi Arabia, Nigeria and Abu Dhabi (United Arab Emirates). The systems vary in size from a single repeater site to multi-user, trunked radio-telephone systems, to a worldwide embassy communication system for voice, telex and data.

Comm Services also provides training services, service contracts, and spare parts to all customers, to enhance and extend the lifetime of systems after commissioning.

## **Communications Gigahertz Inc.**

225 Nugget Avenue, Unit 1  
Agincourt, ON M1S 3L2  
Telephone: (416) 292-6640  
Fax: (416) 292-9730  
KEY PERSONNEL:  
*Ray Campbell, General Manager*

Communications Gigahertz Inc. is a manufacturer of CATV and broadcast distribution equipment, including modulators, processors and specialized head-end products. The company also produces encoding and decoding equipment featuring field-programmable tiering for CATV and broadcast subscription Pay-TV security.

## **Communications Technology (Canada) Ltd.**

51 Galaxy Boulevard  
Rexdale, ON M9W 5P1  
Telephone: (416) 675-1566  
Fax: (416) 675-2848  
KEY PERSONNEL:  
*L. Hogan, President*  
*W.A. Mitchener, Vice President, Sales*  
*A. Haslam, Marketing and Sales Manager*

Communications Technology (Canada) Ltd. (CTC) manufactures a variety of products and electronic equipment for telephone company outside plant and central office utilizations. Outside plant products designed mainly for cable installation, maintenance and repair include splice closures (aerial and buried), terminals, pedestals, encapsulation compounds, bonding and grounding hardware, splicing tools and work aids. CTC's instrumentation division produces a variety of cable analysis test sets for subscriber loop, cable fault and conductor fault finding, analyzing and identifying. A major new area of CTC product development is the introduction of data retrieval validation and analysis systems for record management of cable pairs in central offices.

Established in Canada in 1971 as a subsidiary of Communications Technology of Dallas, Texas, U.S.A., CTC has manufacturing facilities in Toronto, Ontario, Canada. The company has

had limited exposure to world markets. It is currently expanding its international activity to Europe, the Middle East, Australia and New Zealand.

## **Consultronics Ltd.**

160 Drumlin Circle  
Concord, ON L4K 3E5  
Telephone: (416) 738-3741  
Fax: (416) 738-3712  
KEY PERSONNEL:  
*Andre Rekal, President*  
*Robert Fitts, Marketing/Sales Manager*  
*James Allman, North America, Sales Manager*

Consultronics specializes in the design and manufacture of specialized quality-control instrumentation for the telecommunications industry, including an analog transmission monitor; audio analyzer systems; power line monitors; modem test systems; and transmission impairment measuring sets.

Consultronics has been in business for 15 years and has gained a reputation as a creative problem solver and quality producer. Its products have been exported to PTTs and telecommunications companies worldwide.

## **CVDS Inc.**

6900 Trans Canada Highway  
Pointe-Claire, PQ H9R 1C2  
Telephone: (514) 694-9320  
Telex: 05-823661  
Fax: (514) 694-0786  
KEY PERSONNEL:  
*Alex Moosz, President and Chief Executive Officer*  
*K. George Sossoyan, Vice President, Corporate Marketing*

CVDS Inc. is a custom design, development and manufacturing electronics company with a large, multi-disciplinary team of engineers/specialists, and a new high-volume production facility. Major fields of expertise (on the product, system and network level) include telecommunications, monitoring, and control systems; switching power supplies; and 286, 386 OEM single-board computers — for industrial and military applications.

## Daniels Electronics Ltd.

43 Erie Street  
Victoria, BC V8V 1P8  
Telephone: (604) 382-8268  
Fax: (604) 382-6139

KEY PERSONNEL:  
Terry G. Daniels, President  
Ron J. Daniels, Vice President,  
Director of Engineering

Daniels Electronics Ltd., a wholly owned Canadian company, has manufactured radio communications equipment in Victoria, British Columbia (BC), for over 20 years. The company manufactures four models of high-frequency single sideband radio-telephones and accessories for land and marine use. Three of these are frequency-synthesized with microprocessor control.

Other products include UHF/VHF low distortion, solar-powered mountain-top radio repeater systems. The "MT 2" repeater series performs reliably during mountain-top winter operations, maintaining low battery drain and requiring minimal maintenance. The capability of supporting cold standby back-up configuration is also accommodated by the MT 2 series. The compacted RF shelf system assembly is also cost effective; two transmitter receiver pairs may be installed into a single 19 in. (48 cm) rack assembly.

The company manufactures mountain-top radio modules for BC Hydro, West Coast Energy, BC Ministry of Parks, BC Ambulance Service, BC Telephone and the federal Department of Fisheries and Oceans.

## Datacap Ltd.

220 Laurier Avenue West, Suite 600  
Ottawa, ON K1P 5Z9  
Telephone: (613) 238-6363  
Telex: 053-4433  
Fax: (613) 238-6376  
KEY PERSONNEL:  
Ayla Weston, President

Datacap Ltd. is a consulting organization specializing in computer systems for telecommunications, spectrum management, remote sensing and logistics.

Consulting, training and project management services are provided to include all phases of system development

from needs definition to implementation. The company has also pioneered in the application of Expert Systems to its various areas of specialization.

Datacap has been in business since 1969 and is actively pursuing export markets.

## Datap Systems A Division of Sandwell Swan Wooster Inc.

202 - 1167 Kensington Crescent NW  
Calgary, AB T2N 1X7  
Telephone: (403) 283-3601  
Telex: 038-21572  
Fax: (403) 270-2373

KEY PERSONNEL:  
Vic Thomas, Vice President  
Garth Sandercock, Marketing  
Manager

Datap Systems focuses on advancing network management with IRIS 7. The IRIS 7 Remote Monitor and Control System centralizes all facility alarms into one control centre. Colour graphic video displays pinpoint failures in transmission, switch and digital cross-connect facilities, speeding the technician's response to service outage.

Incorporated in 1969, Datap supplies the IRIS 7 System as a turnkey installation or through software licence to both end-users and value-added resellers wishing to integrate IRIS 7 within their own network control systems. IRIS 7 Systems are operating in public and private telephone companies located around the world, including Canada, the United States, the Middle East, Africa and Asia.

## Dataradio Inc.

1819 Dorchester Boulevard West  
Suite 400  
Montreal, PQ H3H 2P5  
Telephone: (514) 932-6600  
Telex: 055-60435  
Fax: (514) 932-7638  
KEY PERSONNEL:  
Robert T. Rouleau, President  
William Andresen, Vice President,  
Marketing

Dataradio Inc. designs and manufactures radio-based data communication equipment that provides error corrected

point-to-point or point-to-multipoint transparent data communications in either synchronous or asynchronous environments. Included in its line of radio-based data transmission products is a series operating at 9 600 bps (asynchronous modem, synchronous modem, full duplex digital repeater and a serial parallel unit), and a 2 400 bps modem and station/store/forward single-channel repeater.

Dataradio has direct sales offices in the United States, and is active in the Latin American and Pacific Rim countries. Dataradio has technology transfer agreements with major radio firms in Mexico and Argentina, and markets through a distributor in the United Kingdom, where it is type-accepted by British Telecom.

Dataradio Inc. and its wholly owned U.S. subsidiary, Dataradio Corporation, are part of the Presud group of companies. The company was formed in 1980 to develop and market a thin route radio-based data system, first introduced in 1983.

## DBA Communication Systems Inc.

1201 East 4th Street  
North Vancouver, BC V7J 1G8  
Telephone: (604) 985-9521  
Fax: (604) 985-4128  
KEY PERSONNEL:  
David J. Bensted, President  
Maureen Hunter, Director of  
Marketing

DBA Communication Systems Inc. designs, manufactures and distributes telephone systems and peripheral products for business communication applications.

DBA's SmartTalk 208 is a 2-line, 8-station key telephone system employing a unique design concept that does not require any central control equipment.

SmartTalk 208 is distributed by a number of telephone companies in Canada and the United States. A 3-line version will be introduced in the first quarter of 1989. Both products

have been designed to meet all relevant Canadian, U.S. and British telephone equipment standards. The products are distributed in Asia, the Middle East and Africa by Daewoo Corporation of Seoul, Korea. Distribution in other areas is handled by DBA directly or through appointed agents or subsidiary organizations.

DBA was established in 1979 to manufacture and distribute products under licence for U.S.-based Tone Commander Systems, and soon began designing its own telephone products.

### **Dees Communications Engineering Ltd.**

6415 - 64th Street  
Delta, BC V4K 4E2  
Telephone: (604) 946-8433  
Telex: 04-357749  
Fax: (604) 946-0122  
KEY PERSONNEL:  
Don S. Simkins, Chairman  
Morgan Sturdy, President

Dees Communications Engineering Ltd. specializes in the engineering and manufacturing of telephone peripheral equipment, the design of communication equipment for OEMs, and developing solutions to specific operating problems in the telephone industry, for both traditional telephone companies and the emerging interconnect industry. The product range includes electronic ringers for key and PBX systems, line sensing relays, an automatic ground start unit for PBX power fail mode, ANI units for central office and subscriber locations, ringer isolators, common ringer units, power supplies, an 8-trunk power fail transfer unit, and a complete tester for telephone sets.

### **Develcon Electronics Ltd.**

856 - 51st Street East  
Saskatoon, SK S7K 5C7  
Telephone: (306) 933-3300  
Telex: 074-2780  
Fax: (306) 931-1370  
KEY PERSONNEL:  
Richard G. MacPherson, President  
and Chief Executive Officer  
Douglas Freestone, Vice President,  
International Sales  
Dale Janteen, Director of Marketing

Develcon Electronics Ltd. designs, manufactures and markets data communications equipment used in the transmission of information among terminals, computers and other data processing equipment. The company's principal products are data networking and switching systems to connect various data entry and processing equipment into central or geographically distributed homogeneous networks of communication devices. Also marketed are data transmission products, including short haul modems, low- and medium-speed analog modems, X.25 Packet Assembler/Disassemblers (PADS), and statistical multiplexers. The company's principal customers include major industrials, medical organizations, defence contractors, utilities, government, educational institutions and other substantial users of data processing equipment throughout Canada, the United States, Europe and the Pacific Rim.

From its origins in 1974, Develcon has grown into a multi-facility operation with subsidiaries in the United States and distributors in 17 countries worldwide.

### **DGB System Integrators Inc.**

2 Felix-Martin Place  
Montreal, PQ H2Z 1Z3  
Telephone: (514) 866-1141  
Telex: 055-60042  
Fax: (514) 866-0795  
KEY PERSONNEL:  
Pierre Demers, President  
Gaétan Danis, Director Marketing

DGB System Integrators Inc. provides systems engineering, consulting and turnkey delivery of microwave, satellite and mobile radio communica-

tions, electromagnetic-radio-spectrum and police-information management, and computer-aided dispatching mobile systems. DGB supplies standard computerized packages for spectrum management systems and computer-aided dispatch systems together with fixed and mobile radiocommunications (microwave, HF/VHF/UHF) for police-information management requirements.

DGB has provided consulting for, and turnkey delivery of, a spectrum management system for the Hong Kong post office. The firm participated with Elinca Communications in the construction and system integration of the PANAFTEL project.

DGB was founded in 1959. In 1969, it joined the SNC Group of Montreal as a wholly owned subsidiary and broadened its consulting services into telecommunications, audio/visual communications and broadcasting. When SNC restructured its subsidiaries in 1984, DGB became a department of SNC's integrated communications systems division. Its prime role in that group is the provision of systems integration in the fields of telecommunications, vessel-traffic management systems (port of Hong Kong and province of Quebec), spectrum management systems, air traffic control systems and other related communication systems.

### **DGH Communication Systems Ltd.**

3761 Victoria Park Avenue, Unit 5  
Scarborough, ON M1W 3S2  
Telephone: (416) 499-4746  
Fax: (416) 499-5729  
KEY PERSONNEL:  
Derek Henry, President  
Norman Duncan, International Sales Manager

DGH Communication Systems Ltd. is a turnkey supplier of commercial satellite and microwave systems and sub-carrier equipment for stereo sound, voice, data and video transmission applications.

DGH has supplied sub-carrier audio transmission equipment for cable, satellite and broadcast systems in the United Kingdom and the Netherlands, and has designed a complete commercial TVRO system for the ARABSAT satellite owned by Saudi Arabia. The

company was also responsible for design modifications and the supply of 25 TVRO receivers for Spar Aerospace Ltd.'s recent satellite earth station project with the People's Republic of China.

Incorporated in 1977 as DGH Television Systems Ltd., DGH's charter was the design, supply, installation and maintenance of television and communication systems for the broadcast, CATV and telecommunications markets. The company changed its name in 1985.

DGH also owns two subsidiaries: DBS Satellite Inc., a specialist in MATV, SMATV and door entry systems for hotels, apartments and condominiums as well as digital radio for business data communications; and Teleport Communication Systems Inc., a supplier of Teleport uplink and downlink facilities for business and commercial communications users.

## Dictograph Corporation

107 Glen Cameron Road  
Thornhill, ON L3T 1N8  
Telephone: (416) 881-6701

Fax: (416) 881-0075

KEY PERSONNEL:

Lee Walton, President  
Martin Gold, Marketing Director

Dictograph Corporation specializes in low-cost consumer and business automatic tone-pulse switchable telephone dialers, multi-line phones with multiple automatic dialing features built-in, and cordless dialers.

Among the company's products are the DIAL-IT-II, a small multi-function portable dialer featuring a 100 number memory, and the ADD-ON-DIALER, a console plug-in unit with similar features. This tone-pulse switchable design provides access to computers from rotary dial telephones and is compatible with all switching systems. The company also offers a low-cost multi-function, 100 direct-touch memory, two-line telephone system with more features than any other non-KSU phone in the world.

Dictograph began producing intercom systems in 1902 and expanded into consumer telecommunications products in 1979.

## Digital Products Ltd.

P.O. Box 3126, Station B  
Saint John, NB E2M 4X7  
Telephone: (506) 635-1055  
Fax: (506) 635-1057

KEY PERSONNEL:

Ray Crowdis, President

Digital Products Ltd. designs, manufactures and markets a wide range of high-quality, competitively priced, analog and digital electronic products for telephone companies. Products include OEM electrical and electronic telecommunication test equipment and control panels and consoles.

## Digital Video Systems Corp.

120 Middlefield Road  
Scarborough, ON M1S 4M6  
Telephone: (416) 299-6888  
Fax: (416) 299-7145

KEY PERSONNEL:

Vasant Pai, General Manager

Digital Video Systems is a manufacturer of transmission products via satellite — BMAC scrambling technology; uplinks; downlink descramblers; test signal generators; suitable for both C and Ku band, wide-screen capabilities, teletext, multiple digital audio, data channels, scrambled video and encrypted audio products.

## Douserv Inc.

Industrial Life Tower, Suite 1750  
2000 McGill College Avenue  
Montreal, PQ H3A 3H3  
Telephone: (514) 845-9201  
Telex: 055-61315

Fax: (514) 845-9918

KEY PERSONNEL:

Maurille G. Séguin, President

Douserv Inc., a member firm of Douserv Group Inc., is a group of consultants, engineers, project managers, technical assistants, and operations and maintenance support personnel,

offering feasibility and other studies, design, project management, construction supervision, technical assistance and training.

Telecommunications expertise ranges over voice, messages, data, picture transmission by satellite, microwave, coaxial cable and optical fibre; radio-communications for fixed and mobile services, radio paging and telephony systems; rural telephone networks and local area networks for integrated telecommunications services; and specialized telecommunications applications for air transportation, maritime vessel traffic, railways and energy pipelines. Training services include on-the-job, formal and computer-aided training.

## DTI Telecom Inc.

Suite 325, 2055 Peel Street  
Montreal, PQ H3A 1V4  
Telephone: (514) 845-3205  
Telex: 05-24241

Fax: (514) 845-4851

KEY PERSONNEL:

R.J. Ménard, President

J.G. Bruneau, Vice President,

International

S. Talhami, Vice President, Caribbean  
and Latin America

DTI provides consulting and engineering services through its multidisciplinary teams in the areas of telecommunications and telematics. Established in 1973, DTI uses a global and methodological approach to analysis in order to develop integrated solutions to problems encountered in electronic information management in private and public organizations.

The company offers a broad spectrum of services that have led to developments ranging from the installation of primary networks to the implementation of highly sophisticated systems employing leading-edge technologies. Integrating competence, flexibility, talent creativity and synergy, the DTI team can respond to client needs from the most simple to the highly complex.

## DY-4 Systems Inc.

21 Credit Union Way  
Nepean, ON K2H 9G1  
Telephone: (613) 596-9911  
Telex: 053-4111  
Fax: (613) 596-0574  
KEY PERSONNEL:  
Garry Dool, President  
Terry Black, Vice President,  
Marketing, Sales  
Kim Clohessy, Vice President,  
Technology

Since its inception in 1979, DY-4 has gained acceptance in a variety of market sectors, including telecommunications, that demand high-quality, reliable VMEbus multiprocessing system products.

DY-4 products are many: boards, chassis, system-level diagnostics, real-time operating systems and application software. All are supported by program management, integrated logistics support, configuration management, quality assurance and computer-integrated manufacturing.

In the telecommunications field, DY-4, under contract to Puslitbang KIM-LIPI of the Indonesian Institute of Science, jointly designed and manufactured VME computer and communications modules for an automatic message-accounting (AMA) system for the Indonesian telephone company, Perumtel. The AMA system is a complete turnkey, call-billing recording system. The system enhances existing telephone and telex exchange equipment by providing accurate call information on a per-subscriber basis. The information is subsequently processed by Perumtel into telephone bills.

Each system consists of central processing equipment that collects and records call data from up to 16 exchange terminals. The exchange terminals are located in the telephone exchanges and collect data from up to 14 000 subscriber lines. At the heart of the system are DY-4 DVME cards, chassis and a considerable amount of software running the Harmony real-time operating system to collect data from specially designed subscriber line interface cards and record it on hard disks and nine-track tape drives.

The initial AMA system covers 190 000 subscribers in five major Indonesian cities.

## EDA Instruments Inc.

4 Thorncliffe Park Drive  
Toronto, ON M4H 1H1  
Telephone: (416) 425-7800  
Telex: 06-23222  
Fax: (416) 425-8135  
KEY PERSONNEL:  
Michael Roman-Barber, President  
Geoffrey Bennett, Executive Vice President  
Bill LaHam, International Sales Manager

EDA Instruments manufactures data communications products that are primarily suited for the packet switching market: assemblers/disassemblers, switches and statistical multiplexers and instruments for geophysical, environmental earth physics and mining/milling applications.

## Electro Arts Ltd.

235 Nugget Avenue  
Scarborough, ON M1S 3L3  
Telephone: (416) 293-1147  
Telex: 065-26118  
Fax: (416) 293-8929  
KEY PERSONNEL:  
R.A. Zappacosta, President  
Justin Beaudet, Marketing Manager

Electro Arts Ltd. specializes in the design and manufacture of telephone central office equipment for data and voice applications. The primary product is DVACS, which includes hub cards, VF bridge cards, TDM cards, access cards and subsets (modems).

The company, which has been in business in Canada for 18 years, has custom manufactured systems for most major Canadian telephone companies and carriers. Electro Arts is currently expanding into the U.S. market.

## Electroline Television Equipment Inc.

8750 - 8 Avenue, Suite 2  
Montreal, PQ H1Z 2W4  
Telephone: (514) 374-6335  
Telex: 055-62171  
Fax: (514) 374-9370  
KEY PERSONNEL:  
Mitchell Olfman, President,  
Chief Executive Officer  
Henri Bertemes, Marketing Vice President

Electroline Television Equipment manufactures cable TV equipment: addressable systems, power dividers, directional couplers, filters, power inserters, amplifiers, rf-rf equalizers; LAN-wiring devices; security systems; hospital and hotel television; and pay TV systems. Bandwidth of most equipment is in the 5 to 600 MHz range.

## Elinca Communications Ltd.

2 Felix-Martin Place  
Montreal, PQ H2Z 1Z3  
Telephone: (514) 866-1000  
Telex: 055-60042  
Fax: (514) 866-0795  
KEY PERSONNEL:  
Pierre Demers, President and General Manager  
Gaëtan Danis, Vice President,  
Marketing

Elinca Communications Ltd. is a systems integrator and turnkey supplier of terrestrial and satellite communications equipment, air traffic control and coastal communications systems. As a consortium comprising a number of Canadian equipment manufacturers, Elinca can supply a vast array of telecommunications products: HF, VHF, UHF, cellular transmitters/receivers; antennas, transmission lines and accessories; microwave satellite earth stations, satellite subsystems; data transmission systems; weather, air, marine radars; radio relays; mobile telephones; and radio and TV broadcast transmitters, as well as studio-to-transmitter links of air retransmission.

The consortium has strong engineering and telephone network management expertise so that it can offer



a full complement of telecommunications services, including consulting engineering (terrestrial and space); traffic studies (fixed and mobile); specifications; implementation (electrical, electronic and civil) commissioning; maintenance; operations support; billing systems; and training.

Elinca was the prime contractor on a 2 800 km microwave network passing through the West African countries of Benin, Niger, Burkina Faso (formerly Upper Volta), Mali and Senegal. This system is part of the Pan-African telecommunications infrastructure. Elinca was charged with the design, supply, transportation, delivery, installation, testing and commissioning of the network, a 2 GHz and 6 GHz microwave system comprising 50 stations, terminals and repeaters. The project was completed in 1982.

Elinca was formed in 1973. Its membership now consists of Andrew Antenna Co. Ltd., a supplier of microwave and earth station antennas as well as waveguide and coaxial components; Raytheon Canada Ltd., a supplier of air-traffic control radars and systems; and SNC Enterprises Ltd., a consulting engineering and project management organization with expertise in the telecommunications, broadcast, energy, automation, buildings, industrial plants, transportation and resource engineering disciplines.

## **Epsco Microwave Technologies Inc.**

3135 Universal Drive  
Mississauga, ON L4X 2E7  
Telephone: (416) 625-4605  
Telex: 06-960406

Fax: (416) 625-4274

KEY PERSONNEL:

Paul Mercer, President/General Manager

Peter Balodis, Marketing/Sales Manager

Epsco Microwave Technologies Inc. is a subsidiary of Epsco Inc. of Westwood, Massachusetts. The company designs and manufactures microwave components and subsystems for Canadian and international markets.

Products include multi-octave and narrow band GaAs FET amplifiers to 28 GHz with low, medium and high power; units up to 40 GHz are under development. EMT also supplies custom Microwave Integrated Modules that incorporate components such as amplifiers, switches, filters, isolators, attenuators, limiters and mixers. All products are produced to a quality program level of AQAP-1 or MIL-Q-9858A for military markets.

The company's main products are superior noise figure C and Ku band LNAs, up/down converter systems and solid state power amplifiers. Examples are the 14 to 14.5 GHz 10 watt, 5.925 to 6.425 GHz 20 watt, and 10.825 to 11.425 GHz 20 watt amplifiers now in production.

Passive microwave products include waveguide and coaxial circulators, isolators and isoadaptors, as well as special loads, waveguide components and electroformed structures.

## **Etcom International Inc.**

Room 1236, 10044 - 108th Street  
Edmonton, AB T5J 3S7

Telephone: (403) 441-7660

Telex: 037-2994

Fax: (403) 423-2133

KEY PERSONNEL:

Ken Digweed, President

Larry Samoil, Vice President

Laith Zalzal, International Marketing Manager

Etcom provides consulting advice and technical support personnel to clients in the telecommunications industry in Canada, the United States and overseas. Through its association with the Edmonton Telephone Co., Etcom has expertise in systems design, technical implementation and training and support. The company offers proprietary software and hardware for specialized applications in PTTs.

Etcom also works in association with Northern Telecom to provide technical expertise and advice on installation and implementation of new switching systems. The company has developed a major business interest in the People's Republic of China where it is active in supplying and installing first-generation digital switching equipment.

## **EXFO Electro-Optical Engineering Inc.**

352 St. Sacrement Avenue  
Quebec City, PQ G1N 3Y2

Telephone: (418) 683-0211

Telex: 051-3786

Fax: (418) 683-2170

KEY PERSONNEL:

Germain Lamonde, President and Chief Executive Officer

EXFO Electro-Optical Engineering Inc. specializes in a reliable and innovative line of fibre-optic instrumentation for the telecommunication industry, covering applications in both field and laboratory testing. The line of higher specification instruments includes optical power/attenuation meters, light sources for optical fibres, variable optical alternators and optical telephone sets, as well as a line of accessories, optical calibrators and connector/fibre adaptors.

## **Exide Electronics Canada, Inc.**

5200 Dixie Road, Unit 20  
Mississauga, ON L4W 1E4

Telephone: (416) 625-9627

Telex: 06-961272

Fax: (416) 625-4759

KEY PERSONNEL:

Warren Johnson, Vice President, General Manager

John C. March, Director, Sales and Marketing

Don Cannon, Director, Business Development

Exide Electronics Canada, Inc. manufactures a range of static uninterruptible power systems (UPS) in the range 15 to 750 kVA, 50 and 60 Hz three phase, 1.5 to 30 kVA single phase and 50/60 to 415 Hz frequency converters. High-reliability solid-state modular design with built-in diagnostics and self-test features permit ease in maintenance and minimum downtime. Exide Electronics' systems provide back-up power for a broad cross-section of utility and security installations, as well as for telecommunications requirements.

Exide Electronics' systems are used by major Canadian telephone companies and the company is a prominent supplier for projects initiated by the Canadian International Development Agency and OEM turnkey suppliers. Current large contracts include the supply of Megawatt UPS for Romanian nuclear reactors and 21 systems to Spar Aerospace for earth satellite systems in the People's Republic of China, and ongoing supply of systems to Hughes Aircraft for integration into earth ground stations around the world. The company has also exported to the United States, Swaziland, Bermuda, the Caribbean and Central and South America.

Exide Electronics Canada, Inc. is a wholly owned subsidiary of U.S.-based Exide Electronics Corporation, and has been established in Canada for over 15 years. Exide Electronics Canada is involved in research and development and produces a range of UPS for computers. These systems range from 250 VA single phase to 750 kVA three phase in single units and the larger modules may be paralleled for redundancy or for higher power configurations up to megawatts.

### **Extel Communications (Canada) Corp. Division of NEI Canada Limited**

121 McPherson Street  
Markham, ON L3R 3L3  
Telephone: (416) 475-1693  
Telex: 06-966895  
Fax: (416) 475-1841

KEY PERSONNEL:  
Ken Stewart, General Manager  
N.G. Banning, Marketing Consultant

Extel Communications (Canada) Corp. is dedicated to the design, manufacture, sale, and service of products for message and image communications. The company offers dedicated communication terminals, record carrier services and facsimile as well as networking capabilities.

Extel has been in business in Canada since 1974 and has terminals in use in more than 110 countries. It sells to PTTs and international record carriers such as CNCP Telecommunications and Cable and Wireless.

### **Ferranti-Packard Electronics Ltd. An NEI Company**

6030 Ambler Drive  
Mississauga, ON L4W 2P1  
Telephone: (416) 624-3020  
Telex: 06-961457  
Fax: (416) 625-6197

KEY PERSONNEL:  
David R. Oliver, Vice President/  
General Manager  
W. Clarke Bradford, Market Specialist  
Geoff Jones, Manager, International Sales

Ferranti-Packard Electronics Ltd. designs and builds electronic light-reflecting displays branded DATA-RAMA. These status displays provide a unique real-time display for monitoring communications networks, power distribution systems, industrial processes or equipment status. They have excellent visibility in all light conditions, are highly reliable and very economical to operate. Extensive installation and field-service operations accompany these systems.

A subsidiary of NEI Company, Ferranti-Packard Electronics has installed DATARAMA displays in more than 30 countries for customers such as AT&T, Bell Canada, Alberta Government Telephones, LM Ericsson and Saudi Telecommunications.

### **Finline Communications Inc.**

440 Phillip Street  
Waterloo, ON N2L 5R9  
Telephone: (519) 746-1023  
Fax: (519) 746-1131

KEY PERSONNEL:  
Einar Fiskvatn, President, General Manager  
Ed Laevens, Vice President, Marketing

Finline is a designer and manufacturer of communication electronics including satellite receivers, agile modulators and a combined satellite receiver/modulator in one package. Products are designed for CATV and SMATV systems, but are used in other applications such as data.

### **Foundation Instruments Inc.**

24 Colonnade Road  
Nepean, ON K2E 7J6  
Telephone: (613) 226-4000  
Telex: 053-4153

Fax: (613) 226-4602  
KEY PERSONNEL:  
Russell Smith, President  
Jean-Paul Clermont, Marketing Manager

Foundation Instruments Inc. specializes in the research, design, development and manufacture of fibre-optic equipment for the communications industry. Products and systems include single-mode and multi-mode transmission systems for video, data and voice; an "intelligent" single-mode and multi-mode fusion splicer; an expandable 20-port optical transmission multiplexer plug-in configurable for digital data or analog interfaces; micro-portable fusion splicer; optical-fibre cable; and optical attenuation test equipment; plus all supporting hardware components required in a system. The company also offers custom system design and development, as well as tutorials and seminars.

### **Gandalf Technologies Inc.**

130 Colonnade Road South  
Nepean, ON K2E 7J5  
Telephone: (613) 723-6500  
Telex: 053-4728

Fax: (613) 226-1717  
KEY PERSONNEL:  
James Bailey, President,  
Chief Executive Officer  
C. Thomas Baumgartner, Vice President, Corporate Marketing

Gandalf Technologies designs, manufactures, markets and services a broad line of communication systems and software and hardware products that permit users to communicate between computers from multiple vendors, terminals and other devices, in networks ranging from local to wide area.

Principal products are intelligent network controllers and data switches, transmission devices such as modems and multiplexers, and sophisticated communications and network manage-

ment software. Gandalf sells these products separately and also configures them in a variety of combinations through its Starmaster system. The Starmaster system, introduced in 1987, is a hybrid network processor. It interconnects otherwise incompatible computer systems and proprietary networks to give large numbers of geographically dispersed users access to all resources attached to the Starmaster hybrid network.

Founded in Canada in 1970, Gandalf now has manufacturing facilities in Canada, the United States and the United Kingdom. The company operates through subsidiaries in Canada, the United States, the United Kingdom, Australia, the Netherlands and France.

The company's Canada-based Gandalf System Group (GSG) develops and markets information networks for application in the office, manufacturing and computerized dispatch fields. GSG has supplied and installed its Cabmate computerized dispatching systems for a number of taxi companies, including a 3 700-vehicle Chicago-based fleet that is the largest in North America. GSG's Redifacts unit's real-time data collection system is widely used in the North American apparel manufacturing industry. The new system, introduced in 1988, is tailored to the needs of other types of manufacturing, in particular, electronics.

In 1986, Gandalf Technologies launched an aggressive plan to reach \$500 million revenue in 1992 through a combination of internal growth and acquisitions. Progress toward that goal has been steady, and Gandalf is now one of Canada's 500 largest companies.

### **General Instrument of Canada Ltd. (Jerrold Division)**

87 Wingold Avenue  
Toronto, ON M6B 1P8  
Telephone: (416) 789-7831  
Fax: (416) 789-5522

KEY PERSONNEL:  
Dale Frew, Director, Sales and Marketing

General Instrument of Canada (Jerrold Division) is a manufacturer of broadband communications equipment

such as RF head-end systems, RF distribution systems and home security equipment for the cable broadcast industry.

### **Gest Network Xpertise Inc. (GNX)**

16 Esna Park Drive, Unit 105-106  
Markham, ON L3R 5X1  
Telephone: (416) 479-1514  
Telex: 06-986191

Fax: (416) 479-5340  
KEY PERSONNEL:  
L.J. Spraggett, President/Chief Executive Officer  
E. Klimoff, Director of Marketing  
D.J. Bradshaw, Director, International Operations

Gest Network Xpertise (GNX Inc.) specializes in the design, supply, installation, project management and maintenance of fibre-optic, twisted-pair and coaxial communication systems. The services provided include consulting in most areas of the telecommunications field, selective human-resource contracting and a major emphasis on the transfer of technology through training.

The GNX scope of expertise spans many integrated network applications including electronic security and video surveillance, intelligent building control systems and freeway traffic management.

The company is a wholly owned subsidiary of Atlas-Gest Inc. which has been in business for over 90 years. Worldwide, GNX is part of the Dumez Group of companies, and has representation in Trinidad and Tobago, and Phoenix, Arizona, as well as a branch office in the Philippines. GNX recently supplied services to customers in the United States, the Philippines, Trinidad and Hungary.

### **GFA Technologies Inc.**

951 Alness Street  
Downsview, ON M3J 2J1  
Telephone: (416) 736-6460  
Telex: 06-218632  
Fax: (416) 736-6023  
KEY PERSONNEL:  
Samuel Singer, President  
Tim Meints, General Manager  
Sandra Della Chiara, Sales Administrator

GFA Technologies Inc. designs, manufactures and markets satellite receivers, down-converters, and accessory products. GFA's MTVRO (Multiple Television Receive Only) products are marketed in North America and Europe under the GENSAT label. GFA Technologies Inc. acquired GENSAT Communications Corporation in 1985.

Designed to ensure easy system expansion while maintaining a high level of performance, GFA's MTVRO family can easily expand to allow multiple receivers within the same building or in a neighbouring location.

### **Glenayre Electronics Ltd.**

1570 Kootenay Street  
Vancouver, BC V5K 5B8  
Telephone: (604) 293-1611  
Telex: 04-354808  
Fax: (604) 293-4317  
KEY PERSONNEL:  
John J. Hurley, President  
R.K. "Russ" Allen, Director, International Sales

Glenayre Electronics Ltd. specializes in advanced mobile-radio communication systems. Products and systems include mobile-telephone control terminals and control heads, VHF/UHF base stations, low current drain specialized mountain-top repeaters, rural radio systems, paging and voice message retrieval systems, analog/digital paging transmitters, automated telephone-answering systems, VHF radio data modems/HF radio data terminals and DC/DC converters. The company offers a wide range of standard products, as well as complete systems engineering to customer requirements.

Glenayre has been a supplier of communication systems since 1969. The company's telephone systems include IMTS, AUTOTEL, combined IMTS/cellular and fixed rural models.

## Global Thermoelectric Power Systems Ltd.

902 - 5 Avenue  
Bassano, AB T0J 0B0  
Telephone: (403) 641-3512  
Telex: 03-824680  
Fax: (403) 641-3981

### KEY PERSONNEL:

Russel H. Davyduke, International Sales  
Robin Lawson, International Sales

Global Thermoelectric Power Systems manufactures highly reliable thermoelectric generators suited for power generation at remote unattended telecommunications repeaters, and for other uses requiring up to 1 kW of DC power. The company specializes in custom engineering, design, manufacture and installation of fully integrated power systems for unique applications in any climatic extreme.

Recent product developments include The Manpack thermoelectric generator that supplies 120 watts DC. The unit's total weight is 13.6 kg.

Global Thermoelectric has approximately 50 sales representatives worldwide. Over 5 000 remote generator systems are operating in over 40 countries on all seven continents. Innovative state-of-the-art thermoelectric devices are currently under development. The company has an ongoing commitment to continued research and development in the application of and enhancement to thermoelectric technology.

## GNB Batteries (Canada) Inc.

Export Sales Office  
4500 Dixie Road, Unit 9B  
Mississauga, ON L4W 1V7  
Telephone: (416) 624-1107  
Telex: 06-960377

Fax: (416) 624-1801

### KEY PERSONNEL:

Donald H. Shaw, President, General Manager

Brian P. Winkless, Export Manager

GNB Batteries (Canada) Inc. manufactures lead acid stationary batteries from 10 to 8 000 ampere hours for central office, PBX, microwave and UPS applications requiring DC back-up power. GNB also assists in the engineering and procurement of other components of power systems, rectifiers, DC distribution and inverters. The company offers a complete range of totally sealed Absolyte maintenance-free batteries in easy-to-assemble modules. GNB also offers on-site engineering and installation supervision of power plants (batteries, battery stands, racks and bus work).

GNB Batteries (Canada) Inc. (formerly Gould Manufacturing of Canada Ltd.) is a wholly owned subsidiary of GNB Batteries Inc. of the United States that is now a part of the Australian corporation, Pacific Dunlop (PTY), based in Melbourne. The company has been operating in Canada since 1952; its manufacturing facility is at Fort Erie, Ontario.

## GPT (Canada)

419 Notre Dame Avenue  
Winnipeg, MB R3B 1R3  
Telephone: (204) 942-7221  
Telex: 07-57588

Fax: (204) 943-6183

### KEY PERSONNEL:

Robert A. Ashman, President

Don Pincock, Marketing Manager

Murray Cumbars, International Sales Manager

GPT (Canada) manufactures telephone products and systems. Its principal export product is ANIPAK, an automatic telephone number identification system which generates and forwards to

a billing centre the identity of the calling telephone number during long distance calls. ANIPAK can be added to electromechanical exchanges such as step-by-step, crossbar and semi-electronic. Over 800 systems have been installed in Canada and around the world. The company also manufactures TELEPAK/ERS, an emergency microprocessor-controlled system; video teleconferencing equipment; smart cards; media lights; and satellite communications products.

The company provides a full range of engineering research and development capabilities in telecommunications. It will customize products to meet customer requirements and provide installation and training in support of its products.

The full name of the company is GEC Plessey Telecommunications (Canada) Ltd., a subsidiary of GEC Plessey Telecommunications plc.

## Harris Farinon Canada Inc.

657 Orly Avenue  
Dorval, PQ H9P 1G1  
Telephone: (514) 636-0974  
Telex: 05-821893  
Fax: (514) 636-9377

### KEY PERSONNEL:

Pierre Bernier, Vice President, Director General

Don MacLeod, Director, International Sales

Harris Farinon Canada Inc. is a producer of low/medium capacity analog and digital microwave radios, fibre-optic terminals, multiplex equipment and accessories. Radio systems are available for point-to-point or point-to-multipoint configurations. The company also offers complete turnkey systems and engineering services.

Farinon is a major microwave equipment supplier for the Canadian market, and export sales count for close to 45 per cent of total activity. Farinon equipment and systems are operating in over 120 countries. The

company's customer base covers industrial and commercial users, common carriers and some military organizations.

Since 1980, the company has been a member of the U.S.-based Harris Corporation, a worldwide manufacturer of electronic products and systems.

### **HN Engineering Inc.**

124 - 4664 Lougheed Highway  
Burnaby, BC V5C 5R7  
Telephone: (604) 294-3401  
Telex: 04-354623

Fax: (604) 299-6712

KEY PERSONNEL:

*P.A. Niblock, President*

*B.W. Granholm, Manager, Business Development*

HN Engineering Inc. (HNE) specializes in communications systems consulting. The company's broad range of services includes feasibility and cost studies for all forms of communications systems; design and specifications for outside plant and transmission equipment; telephone traffic studies and system planning for telephone companies; tariff development, rate hearings support and participation in toll charge settlement negotiations; design and specification for radio dispatch, SCADA and CATV systems; RF field strength and interference studies; system design for HF, VHF, UHF radio and high-capacity microwave; and MF, HF and VHF broadcast transmission plant design and testing.

HNE is an employee-owned firm. Through its wholly owned subsidiary, TECOM Systems Inc., the company has the capability for the implementation of system designs and has done extensive work in the developing world through the Canadian International Development Agency.

### **Honeywell Limited Sperry Aerospace Division**

Highway 17, P.O. Box 1300

Rockland, ON K0A 3A0

Telephone: (613) 446-6011

Telex: 053-4806

Fax: (613) 446-6011

KEY PERSONNEL:

*Ron J. Muir, General Manager*

*Harold R. Byrne, Marketing*

Honeywell Limited, Sperry Aerospace Division, designs and manufactures multiplexers, message generators, distortion analyzers and computer interface for the telex market; communication control and switching systems (air traffic and marine) and relevant computer-assisted training simulators; marine simulators; and Horizon Reference Systems for shipborne helicopter applications. In addition, the company offers research and development and complete turnkey project capabilities.

The Canadian operation also provides logistic support, modifications and repair and overhaul of all types of avionics and marine systems. The Sperry facilities are approved under the Canadian National Defence quality assurance. The company develops and produces products and systems for both military and commercial applications.

### **Hovey Industries Ltd.**

2378 Holly Lane

Ottawa, ON K1V 7P1

Telephone: (613) 731-1200

Telex: 053-4740

Fax: (613) 731-0851

KEY PERSONNEL:

*Robert V.T. Williams, President*

*Edie Everett, Director, Marketing and Sales*

Hovey Industries Ltd. makes equipment shelters for truck or trailer mounting, equipped with or without power-generating equipment, telecommunication equipment and radar equipment. The company also supplies turnkey systems, including small integrated satellite earth stations for wide-area telephone service in remote locations in mobile or fixed configurations.

In addition, the firm provides telecommunication system and equipment consulting; system integration; feasibility studies; project management; marketing; engineering, furnishing and installation services; and transmission, switching and prime power system engineering.

### **Humber College of Applied Arts and Technology**

205 Humber College Boulevard

Rexdale, ON M9W 5L7

Telephone: (416) 675-3111

Fax: (416) 675-1483

KEY PERSONNEL:

*Jack Buckley, Dean, School of Business*

*John Riccio, Chairperson, Business*

*Division*

Through its Business Division, Toronto's Humber College offers a unique Distance Learning Program in Telecommunications Management. The program, which provides comprehensive training in all key aspects of telecommunications management, is aimed specifically at people currently working in telecommunications who want to gain new skills or upgrade existing ones. The program consists of printed coursework, an album of audio lectures, assignments, case studies and prescribed tests. Telephone dialogue with tutors can also be arranged.

The Distance Learning Telecommunications Management Program, which is the first of its kind in Canada, was developed by joint industry, consultant and college co-operation, and is monitored by a highly experienced and strong industry advisory committee.

## **IDACOM Electronics Ltd.**

4211 - 95 Street  
Edmonton, AB T6E 5R6  
Telephone: (403) 462-4545  
Telex: 037-3315

### **KEY PERSONNEL:**

Walter Stein, *President*  
Horst Depner, *Vice President of Marketing*

IDACOM Electronics Ltd. specializes in the design and manufacture of sophisticated data communications testing equipment. Its product line includes a family of easy-to-use, protocol programmable testers with expandable interface capabilities. All testers offer standard or custom protocol emulation packages, allowing custom configuration by the user.

The testing technology was originally developed at Alberta Government Telephones, a regional Canadian telecommunications carrier. The development team set up IDACOM Electronics in 1981 to further develop it and to market data communications equipment. IDACOM's testers are now widely used by large North American telephone companies, and are gaining recognition internationally.

## **IDON Corporation**

P.O. Box 3728, Station C  
875 Carling Avenue  
Ottawa, ON K1Y 4J8  
Telephone: (613) 722-8101  
Telex: 053-4370

Fax: (613) 722-2991

### **KEY PERSONNEL:**

Herbert G. Bown, *President and Chief Executive Officer*  
W. Timothy Mackenzie, *Vice President*  
C. Douglas O'Brien, *Vice President*  
Hector C. Clarke, *Vice President*  
James Feeley, *Vice President*

IDON Corporation offers research and development and consulting in electronic telecommunications systems and services. It also provides consultation and software design in such international videotex protocols as DATAVISION, PRESTEL, CAPTAIN, CEPT and NAPLPS.

Four current projects are the development of an electronic map and chart coding standard (MACDIF); the devel-

opment of a network-based videodisc/NAPLPS/graphics training system; the development and testing of an information coding system for a Blissymbol Telephone (BlissTel); and the specification and design of ALEX, Bell Canada's new videotex service for which IDON acts as prime consultant.

IDON has assisted the Government of India in establishing its teletext laboratory.

## **Image Video Ltd.**

705 Progress Avenue, Unit 46  
Scarborough, ON M1H 2X1  
Telephone: (416) 438-3940  
Telex: 065-25392

Fax: (416) 438-8465

### **KEY PERSONNEL:**

A.A. Vanags, *President*  
Brian Mitchell, *Marketing Manager*

Image Video has been manufacturing broadcast equipment since 1974. The company's standard routing switchers range from small 10 x 1 configurations to modular and expandable units with multiple levels. Its broad-band high-density switchers include the 9600, which contains up to 40 x 40 video and dual audio in 18-rack units and is field expandable to 320 x 320; the 9400, which neatly packages 20 x 20 RGB (Y) or component signals into 9-rack units; and the 9501, which provides 20 x 30 video and dual audio switching in 9-rack units. The latest additions are single rack-unit 20 x 10 video and 20 x 10 dual audio switchers.

The product line includes digital audio editing systems, including an automated audio recording system providing unattended recording of audio material and subsequent re-recording and playback. The line of master-control switchers ranges from a 10-point stereo system to a fully automated 30-input system. All systems are available in either PAL or NTSC and can be easily customized. System accessories include audio and video distribution amplifiers, control panels, machine assignment and automation systems.

## **Infomart**

164 Merton Street  
Toronto, ON M5S 3A8  
Telephone: (416) 489-6640  
Telex: 06-22111  
Fax: (416) 489-5778

Infomart markets videotex system software and consulting services. The company provides complete project management services for videotex systems, including videotex system software installation and application software development; configuration, selection and installation management of host computer equipment; selection and installation of public terminals; design and installation of networks; and training of client management personnel in the operation of videotex systems. Infomart's primary products are ITSS videotex system software; "Grassroots," the agribusiness information service; "Teleguide," the public access travel and tourism service; the VANILLA decoder, a NAPLPS software decoder for the IBM PC; and Private File Service, an advanced database management and on-line retrieval service.

Infomart is a division of Southam Inc., a large Canadian publishing company. Founded in 1975, Infomart is a leading supplier of videotex products and services, as well as the operator of an on-line file service.

## **Institut international de la communication**

3155 Hochelaga Street  
Montreal, PQ H1W 1J4  
Telephone: (514) 526-0414  
Telex: 05-561763  
Fax: (514) 526-9192  
**KEY PERSONNEL:**  
Jean Paul L'Allier, *President*

Institut international de la communication (IIC) was founded in 1975 as a centre for training in communication and new technologies. Its research and development department develops methods, courses and software; its international co-operation department is dedicated to international project management, institutional agreements and student development; and its

training department specializes in training in communication techniques and new technologies as well as in communication in foreign languages and in educating trainers.

IIC holds specialized training sessions for foreign trainees throughout the world and in Canada in collaboration with local institutions. Training sessions can be organized on any theme and targeted to the needs of a specific group.

In consulting and international project management, IIC manages a program for the Canadian International Development Agency in French-speaking African countries. IIC is also active in Gabon and regularly brings educational and technical support to foreign institutions such as the School of Journalism at the University of Dakar in Senegal and the University of Yaounde in Cameroon.

### **Intelcan Technosystems Inc.**

130 Albert Street, Suite 1600  
Ottawa, ON K1P 5G4  
Telephone: (613) 234-2491  
Telex: 053-3833

Fax: (613) 234-6201

**KEY PERSONNEL:**

*Philip Whittall, President*

*Ron Weissberger, Executive Vice President*

*Mark Whittall, Manager, Business Development*

Intelcan Technosystems Inc. supplies turnkey telecommunications systems including microwave and multiplexing systems; VHF/HF radio relay systems; single- and multi-channel (TDMA) rural telephone systems; cable transmission systems; monitoring, supervisory control and data communications for hydroelectric, railroad and air traffic control facilities; and industrial telecommunications for developing countries.

The company also provides a full complement of training systems support and maintenance services for telecommunications and solar-energy systems.

Intelcan is a manufacturer of photovoltaic solar-energy systems for a wide range of applications including

telecommunications, water pumping, rural electrification, navigation beams and rural development.

Intelcan has supplied telecommunications systems in about 40 countries. Its recent successes include microwave links in Senegal, Mali, Burkina Faso, Niger and Benin to connect local switching centres with the main Panaftel network.

Other major achievements include an 800 km microwave system linking the West African countries of Guinea, Sierra Leone and Liberia. Intelcan also built the central switching centre and HF radio back-up system, a network of ground-to-air VHF communications systems, and has recently been awarded a contract to convert the original diesel-power generation to solar-energy systems. The company has completed a similar 700 km microwave system linking 11 centres in Ghana, Togo and Benin. Among other international projects, Intelcan has furnished Morocco with a rural telephone network covering 40 remote communities.

Intelcan commenced operations in 1973. It performs feasibility analyses, rate and revenue determination, system planning, field surveys, site selection, civil engineering and propagation testing; systems engineering and design; procurement, assembly and integration of equipment; civil works construction; installation, systems line up and test; and training and maintenance.

### **International Aeradio (North America) Ltd. (IAL)**

23 East Wilmot Street  
Richmond Hill, ON L4B 1A3  
Telephone: (416) 731-1300

Telex: 06-964712

Fax: (416) 881-5498

**KEY PERSONNEL:**

*Ronald E. Gooding, Vice President, Operations*

International Aeradio (North America) Ltd. (IAL), a subsidiary of IAL London and owned by British Telecom, specializes in the supply of turnkey communications systems. Equipment and systems include microwave point-to-point radio; multiplex; VHF-UHF mobile radio systems; data

communications equipment; telephone exchange equipment; telex switching equipment; power-supply subsystems; towers; antennas; computer-aided dispatch systems for transportation (road and rail), public safety, police, fire and ambulance; communications systems for transportation; electric power transmission; oil pipeline control; irrigation control schemes; and so on.

The company has been operating in Canada since 1967 and has supplied turnkey communications systems to Africa, the Caribbean, South America, Europe, Greenland, the Far East and the United States. IAL is currently working on a \$34 million turnkey project in Indonesia.

### **Intersolar Group Canada**

415 Brian Court  
Pickering, ON L1W 3H5  
Telephone: (416) 420-1964  
Fax: (416) 420-6897

**KEY PERSONNEL:**

*Donald Adkinson, General Manager*

Intersolar Group Canada supplies electrical power-generating systems which use solar energy to remote areas. Reliable, extremely low-maintenance power systems which consume no fuel and operate automatically in nearly any area of the world are available.

Intersolar Group Canada is a branch office of Solapak Limited of the United Kingdom. Since 1974, Solapak Limited has supplied hundreds of systems throughout the world for all types of applications, but primarily in telecommunications. Intersolar Group Canada has been established to service the Canadian market and its office is located in Pickering, Ontario. The company has recently completed a major project in Africa supplying 10 sites for the Panaftel Network with systems averaging more than five kilowatts peak each.

## Jatom Systems Inc.

500 - 150 Kent Street  
Ottawa, ON K1P 5P4  
Telephone: (613) 236-6917  
Fax: (613) 236-6988

### KEY PERSONNEL:

T.A. Skinner, President  
B.C. Stewart, Manager, Sales/Marketing  
E.H. Morton, Manager, New Business Development

Jatom Systems Inc. designs, develops and manufactures specialized telecommunications equipment for law enforcement agencies to monitor and record calling information that may be used as supporting material in criminal investigations. Audio recording capability is also available. This equipment is used by the telecommunications industry to monitor and identify fraudulent access to long-haul carrier trunks through a regional Bell operating company switch. Products include single-line and multi-line dialled number recorders, loop extenders, dial-up slaves and database management software for large systems involving multiple DNRs.

In addition, the company offers system engineering services in the definition, design, specification, acquisition and commissioning of military, security and telecommunications systems. These services are available through its JSI Systems Engineering Division. The company dedicates the majority of its in-house resources to hardware and software development engineering.

## Kirk Satellite Communications

404 - 300 March Road  
Kanata, ON K2K 2E2  
Telephone: (613) 592-3454

### KEY PERSONNEL:

Barrie Kirk, President

Kirk Satellite Communications provides consulting services to users and suppliers of private satellite networks. Typically, client studies address the communications requirements of potential users, and the technical, marketing, economic, regulatory and policy

issues involved in designing, engineering and implementing a satellite communications network.

Consulting services for carriers and equipment manufacturers provide them with key information to assist in decision making for business development. These services include the analysis of the Canadian and/or U.S. markets for satellite services and products.

In addition, the company offers a complete earth station licence-preparation service.

## Lab-Volt Ltd.

4555 Métropolitain Boulevard East  
Suite 102  
Montreal, PQ H1R 1Z4  
Telephone: (514) 376-2120  
Telex: 05-25415

Fax: (514) 376-4272

### KEY PERSONNEL:

Guy Goupil, President  
Jean-Louis Leblanc, Vice President

Lab-Volt Ltd. provides technical training systems that combine courseware and hardware in modular, mutually compatible, up-to-date, comprehensive and practical training programs.

The company offers training systems in a number of technical fields, including electricity and electronics, digital and microprocessor, electric power and telecommunications. Lab-Volt's telecommunications training system encompasses practical electricity and electronics fundamentals; fundamentals for AF communications; fundamentals for RF communications; digital electronics; analog and digital telecommunications; and advanced systems-level analog and digital communications. The company is also developing microwave telecommunications, radar and antenna systems training systems.

Lab-Volt has supplied technical training systems for over 50 years. The company has sales offices in Australia, Brazil, Colombia and England.

## Lapp-Hancock Associates Limited

280 Albert Street, Suite 904  
Ottawa, ON K1P 5G8  
Telephone: (613) 238-2483  
Fax: (613) 238-1734

### KEY PERSONNEL:

Ken Hancock, President

Lapp-Hancock Associates Limited specializes in telecommunications and broadcasting consulting services, with emphasis on space communications and mobile data systems.

The company carries out policy, feasibility and marketing studies, together with systems engineering and research and development.

## Larcan Communications Equipment Inc.

6520 Northam Drive  
Mississauga, ON L4V 1H9  
Telephone: (416) 678-9970  
Telex: 06-968055

Fax: (416) 678-9977

### KEY PERSONNEL:

P.A. Dickie, President  
P.C. Turner, Vice President and General Manager  
R.E. Bishop, Sales Manager

Larcan was formed in 1982 to take over the broadcast equipment business from the General Electric Company (GE) in Canada, including GE's Canadian transmitter designs, documentation, parts and other assets. Coupled with the GE background, Larcan has more than 35 years' experience in designing and manufacturing broadcast transmitters.

Larcan's line of VHF television transmitters includes 100 per cent solid-state models ranging from 10 watts to 44 kilowatts. The transmitters are multi-channel, sound compatible for use with the NTSC system, and may be used for broadcasting stereo audio with better than 44 dB channel separation, as well as simultaneously transmitting the new separate audio program (SAP) and professional channel services. A new series of VHF television transmitters in power levels



of 3, 5, 10, 20 and 40 kilowatts will be available for CCIR system B, PAL colour, in 1989. Larcen also designs and manufactures the ULTRAPOWER series of VHF television slot antennas, as well as combiners, notch diplexers, traps and filters for VHF television transmission systems.

### **LeBlanc International (A Division of the LeBlanc Group of Companies)**

*P.O. Box 880  
514 Chartwell Road  
Oakville, ON L6J 5C5  
Telephone: (416) 844-1242  
Telex: 06-982225  
Fax: (416) 844-8837*

**KEY PERSONNEL:**  
*R.D. Brothers, Manager, International Sales  
D.A. Hornell, Manager, Middle East Sales  
L.L. Samuel, Government Relations*

LeBlanc International (a Division of LeBlanc & Royle Telcom Inc., established in 1962) is the international marketing arm for the LeBlanc Group of Companies, offering turnkey M/W, VHF, UHF and marine communications systems, as well as AM, FM and TV broadcast transmitter stations.

With manufacturing facilities in Canada, the United States, Australia and Singapore, the LeBlanc Group specializes in a full range of guyed masts from 0.25 m to 3.7 m face width and heights up to 700 m, as well as self-support towers up to 245 m. Other manufactured items are prefabricated buildings/shelters, VHF TV and FM transmitters; and UHF/VHF antennas and electro-chemical grounding (earthing) rods.

The LeBlanc Group provides total engineering, manufacturing and construction services, or any combination of individual services related to the construction and maintenance of communication/broadcast installations. This service includes testing and orientation of all types of antenna systems.

### **Leitch Video International Inc.**

*10 Dyas Road  
Don Mills, ON M3B 1V5  
Telephone: (416) 445-9640  
Telex: 069 86241  
Fax: (416) 445-0595*

**KEY PERSONNEL:**  
*Robert Lehtonen, President  
David I. Strachan, Export Sales Manager*

Leitch Video International manufactures television broadcast and production equipment, including synchronizing pulse generators; video processing and distribution equipment; video test equipment; audio distribution equipment; audio and video switching equipment; master clock systems; analog and digital clocks; and vertical interval test equipment.

### **Les Produits de Télécommunications Telnox Ltée**

*55 Montpellier Boulevard  
Saint-Laurent, PQ H4N 2G3  
Telephone: (514) 748-7811  
Fax: (514) 744-2797*

**KEY PERSONNEL:**  
*Jacques Coutellier, President  
Raymond Cadieux, General Director*

Les Produits de Télécommunications Telnox Ltée is a manufacturer of the Telnox Telephone. The Telnox L-O is a modular system designed to fit into any broadcasting setup. It can accommodate up to 10 lines and 8 consoles with the same equipment cabinet and has the range to carry on a conference of up to 10 lines simultaneously. One person can be given priority during an on-air conference with this practical feature. Other features include auto-hold, vocal, program-on-hold, auto-on air, skip, sound effects, hands-free, automatic dialling, last number redial, and safety features. Each of the consoles in the Telnox L-O system can be programmed with codes and used in the control room, for access to all features; in the studio, for access to on-air and telephone fea-

tures; and for telephone answering, where only telephone features are required.

Distributors are Allied Broadcast Canada and M.S.A. (Canada); Allied Broadcast U.S.A. (United States); S.G.T. (Spain); R.M.E. (Australia); and MASER (New Zealand).

### **Lindsay Specialty Products Ltd.**

*50 Mary Street West  
Lindsay, ON K9V 4S7  
Telephone: (705) 324-2196  
Telex: 06962-860  
Fax: (705) 324-5474*

**KEY PERSONNEL:**  
*John C. Anderson, President  
David T. Atman, Director of Marketing*

Lindsay Specialty Products Ltd. manufactures antennas for broadcast, cable television and communications, and a complete line of cable TV hardware, including trunk bridge stations, line extenders to 550 MHz, mini-trunk and trunk bridge combinations with power doubling, line passives to 700 MHz and subscriber taps to 500 MHz, and a complete range of coaxial connectors and subscriber drop material.

The company was established as a manufacturer of antennas for the domestic market, and soon moved into commercial grade antennas, and then into cable television hardware.

### **LNS Systems Inc.**

*7 Bovis Avenue  
Pointe-Claire, PQ H9R 4W3  
Telephone: (514) 695-8130  
Telex: 05-821529  
Fax: (514) 695-8135*

**KEY PERSONNEL:**  
*C. Fred Welton, President  
George Sinyannsi, Executive Vice President  
Neil Bronson, Marketing*

LNS Systems Inc. (LNS), an equipment manufacturer and a systems integrator specializing in communications

and air traffic control systems, has recently designed and marketed a radio spectrum monitoring system specifically for PTT applications. The company's range of products includes mobile air traffic control tower systems, fixed air traffic control tower systems, mobile runway lighting systems, communications systems, 909E communications switch systems and radio spectrum monitoring systems.

LNS has been in business since 1971 designing specialized systems to meet particular operational requirements. LNS has over 60 systems installations in over 20 countries in the Middle East, South America, Southeast Asia, the United States and Canada.

### **Louis Technology Services Ltd.**

1843 Kilborn Avenue  
Ottawa, ON K1H 6N3  
Telephone: (613) 731-7465  
KEY PERSONNEL:  
Hugo Louis, President

Louis Technology Services is a telecommunication system consulting firm specializing in feasibility studies; system surveys; project management; system integration; installation; supervision; specification and request for proposal preparation, bid evaluation and contractor negotiation; general representation and agents for technology transfer, sourcing of equipment and systems; and marketing, including sales and proposal preparation. Services offered pertain to telecommunication transmission, switching and power systems, including small satellite earth stations as well as electronic equipment and components thereof.

### **M.S.C. Electronics Ltd.**

147 West Beaver Creek Road  
Richmond Hill, ON L4B 1C6  
Telephone: (416) 731-9500  
Telex: 06-964822  
Fax: (416) 731-5195

#### KEY PERSONNEL:

N. David La Frenais, President  
David Codling, Vice President,  
Marketing-Video Division  
Tony Sharpe, Vice President,  
Marketing-Transmission Division

M.S.C. Electronics Ltd. markets electronic equipment to radio and television broadcast stations, CATV operators and telephone companies. The company also provides engineering services, equipment repair facilities, turnkey installation and checkout services.

### **McCurdy Radio Industries Limited**

108 Carnforth Road  
Toronto, ON M4A 2L4  
Telephone: (416) 751-6262  
Telex: 06-963533  
Fax: (416) 751-6455

#### KEY PERSONNEL:

Paul Hudson, President  
Omar Fattah, Marketing Manager

McCurdy Radio Industries Limited manufactures and distributes professional audio and video products for use in broadcast facilities or other facilities requiring intercommunications, and switching, distribution and monitoring of audio and video signals. The product line includes the CS9400+ Digital Intercom System, the CS9500 Intercom System, audio distribution systems and amplifiers, and a variety of custom products including on-air radio and television automation systems.

The product line also includes audio test sets for monitoring of the average and peaks of the audio signal and for line matching and level adjustment; digital delay systems used to delay an audio signal in increments of 1 ms and can be used to synchronize it with a video signal; and distribution amplifier systems and amplifier/speaker

combinations which are used to distribute mono or stereo audio signals to many locations within a facility. In-house engineering expertise allows the development of designs and equipment for the most demanding custom applications.

Customers include Canadian Broadcasting Corporation (CBC), American Broadcasting Corporation (ABC), Columbia Broadcasting System (CBS), National Broadcasting Corporation (NBC), Cable News Network (CNN), London Broadcasting Corporation (LBC), Radiotelevisione Italiana (RAI), Hong Kong TVB, TV New Zealand, TV Bulgaria, Venevision (Venezuela), Caribbean Broadcasting Corporation and many other facilities worldwide.

### **McCurdy Telecommunication Products Limited**

60 Naby Court  
Scarborough, ON M1B 2K9  
Telephone: (416) 291-6449  
Fax: (416) 291-2724  
KEY PERSONNEL:  
George McCurdy, President  
Len Hall, General Manager

McCurdy Telecommunication Products Limited specializes in the design and manufacture of program equipment for use in transmission of broadcast quality audio from the studio to the transmitter or across the country by means of common carrier networks. The company has a broad base of experience in providing solutions for connecting voice grade signals from the switched telephone network into the studio equipment to enable broadcasters to use the signals on the air.

McCurdy's principal export market is the United States. Its products include a conference system that can handle up to four incoming calls for on-air programs; a microprocessor-controlled, full duplex hybrid system designed for situations where one telephone line has to be interfaced to studio broadcast equipment without the subjective annoyance of a switching hybrid;

amplitude and phase equalizing equipment for common carriers; and spectrum translator transmitters and receivers for broadcasters and common carriers to provide subjective "5 kHz" quality from "3 kHz" voice lines.

## Mechron Energy Ltd.

2437 Kaladar Avenue  
Ottawa, ON K1V 8B9  
Telephone: (613) 733-3855  
Telex: 053-4271

Fax: (613) 733-8197

KEY PERSONNEL:

John Airey, President

Ed O'Brien, Vice President, Sales

Mechron Energy Ltd. specializes in the production, installation and maintenance of custom-engineered power systems. These systems usually operate unattended, in harsh climate conditions and with minimal maintenance. The product line includes diesel prime power systems, hybrid systems, standby diesel gensets, uninterruptible power systems, and DC power products and systems. Mechtron also provides service, parts and training to customer requirements.

In addition to its turnkey capability, the company works in multi-disciplines of electrical, electronic, mechanical and thermal designs. Systems can be factory-packaged and tested for one-piece shipment in its shelter. Microcomputer facilities can be provided for remote monitoring, diagnosis and control of the power plant.

## Memotec Data Inc.

600 McCaffrey Street  
Montreal, PQ H4T 1N1  
Telephone: (514) 738-4781  
Telex: 05-824228

Fax: (514) 738-4436

KEY PERSONNEL:

William M. McKenzie, President

Robert Nehme, Marketing Manager

Memotec Data Inc. is an international provider of networking and systems integration solutions, and through its subsidiary, Teleglobe Canada Inc., Canada's sole provider of overseas telecommunications services.

The Data Communications Division has been involved in the communications market for more than 15 years. It designs, manufactures and markets a complete line of products, including X.25 PADS and switches, data compression/multiplexers, diagnostic modems, cluster controllers for the Burroughs environment, performance measurement systems and network management software. These products allow communications between computers and terminals, word processors, personal computers, printers and other devices over public and/or private data communications networks.

Memotec maintains sales and support offices in Canada and the United States, and many of its products reach international markets through a distributor network in more than 35 countries in Western Europe, the United Kingdom and the Pacific Rim.

## Microtel Limited

1106 - 155 Queen Street  
Ottawa, ON K1P 6L1  
Telephone: (613) 238-7365  
Telex: 053-3799

Fax: (613) 238-1647

KEY PERSONNEL:

Robert Alexander, President

George Franklin, Senior Vice

President, Government Systems Group

Microtel Limited manufactures telecommunications systems and equipment, including satellite communications systems (SPACETEL); digital and analog switching systems; multiplex equipment; network management systems (System 51); and digital access and cross-connect system (Daxcon). Microtel's services encompass design, manufacturing, delivery, installation, commissioning, training and operations as well as maintenance support for its entire product line. Products and services are well suited to both urban and rural applications.

Microtel is a wholly owned subsidiary of British Columbia Telephone Company, formed in 1979 out of the merger of GTE Automatic Electric (Canada) Ltd. and GTE Lenkurt Electric (Canada) Ltd.

Microtel Pacific Research (MPR) Ltd., the research and development arm of British Columbia Telephone's group of companies, employs over 300 scientists, engineers and support staff.

Subsidiaries are Pachena Industries Ltd., which specializes in design, engineering and manufacturing of quality electronics products; SMT Northwest, which offers both turnkey electronic subassemblies and full custom manufacturing services; Lentrionics division, which offers hybrid circuit capabilities on a commercial basis; Manutronics division, whose capabilities include back-plane wiring, metal fabrication, PCB fabrication and thick-film circuit manufacturing; and Microtel Learning Services, which provides telecommunications training and educational services.

## Microtel Limited Learning Services

1795 Willingdon Avenue  
Burnaby, BC V5C 5J2  
Telephone: (604) 293-3653  
Telex: 04-354820

Fax: (604) 298-9517

KEY PERSONNEL:

Dave C. Chapman, Product Line Director

Donald R. Miller, Custom Product Manager

Microtel Learning Services (LS) has been involved in telecommunications technology training for over 30 years. LS offers over 300 training programs, ranging from telecommunications technology to personal productivity and management skills development, conducted either at customer location or at one of the company's education centres in North America. Computer-based training is offered on a variety of systems, including Hazeltine's TICCIT, the WICAT system and IBM PCs. In addition, LS has design and development teams, which develop state-of-the-art training programs, and also offers a computer-assisted bilingual (English/French) technical documentation service.

Learning Services is a wholly owned division of Microtel Limited, a major Canadian telecommunications manufacturer. The division evolved

from Teletraining, an organization serving the training needs of Microtel and GTE, when LS began to market its training programs worldwide in 1984. International clients include ARAMCO Saudi Arabia, Indonesia Perumtel, Kenya Postal Telecommunication, British Telecom and GTE International (Latin America, Far East, Australia, Hong Kong, Puerto Rico and Manila).

## Microtronix Systems Ltd.

120 Bessemer Road  
London, ON N6E 1R2  
Telephone: (519) 681-3430  
Telex: 064-5642  
Fax: (519) 681-4706  
KEY PERSONNEL:  
Eric E. Auzins, President  
Karen B. Auzins, Marketing Manager

Microtronix Systems Ltd., established in 1970, designs and manufactures telephone testing equipment, specializing in acoustical testing to international standards, and dial and ringer testing. Its Telephone Test Set fully integrates all important tests in one system, and displays various loudness ratings, fully measures DTMF and rotary diallers, measures the fundamental frequencies and amplitudes of an electronic ringer and provides automation control features that eliminate operator intervention. The modular design allows custom expansion to accommodate special interfaces.

In spring 1987, the company acquired Cablesare Inc.'s Communications Division, whose product line consists of X.25 packet assembler/disassemblers (PADs), a data concentrator and a front-end processor. The company plans to upgrade and enhance this line, including development of a digital interface compatible with ISDN transmission standards.

## Miller Communications

300 Legget Drive  
Kanata, ON K2K 1Y5  
Telephone: (613) 592-3020  
Fax: (613) 592-3378  
KEY PERSONNEL:  
Larry O'Brien, President  
Brian Mazur, Director, Business Development

The Miller Communications Division of Calian Technology Ltd. specializes in the development of advanced communications systems for the aerospace and defence communities. The division offers a broad spectrum of capabilities, ranging from communications consulting, analysis and computer simulation, through to the development of high-sophistication hardware and software systems.

Miller Communications' major export product is the Automated Satellite Carrier Monitoring System (ASCMS) that monitors the RF parameters of satellite downlinks and alerts the system operator to anomalous conditions. Users of this system include Telesat Canada, CANAC/Microtel (for the Canada/U.S. NORAD North Warning System), GE/RCA Americom, American Satellite Company, Western Union, and satellite operating agencies in Mexico, Israel and the People's Republic of China.

The company also manufactures a Mobile Communications Channel Simulator that implements a realistic model of a fading channel such as a satellite-to-mobile link. Users of this system include INMARSAT and Communications Canada. Miller Communications has also supplied mobile communications simulation software to both of these clients.

Miller Communications manufactures a variety of other spectrum-surveillance products and computer-controlled instruments, currently in service with the Canadian government, and air-to-ground telemetry equipment and related airborne data acquisition systems, currently used for reconnaissance missions by the Canadian government. Extensive consulting has also been supplied to the Canadian government, and to international agencies such as INTELSAT, INMARSAT and ESA.

## Mitec Electronics Ltd.

104 Gun Avenue  
Pointe-Claire, PQ H9R 3X3  
Telephone: (514) 694-6666  
Fax: (514) 694-3814  
KEY PERSONNEL:  
Myer Bentob, President  
Manuel Monzon, Sales Manager

Mitec Electronics Ltd. has been involved in the manufacture and supply of quality microwave component technology to the telecommunications and defence industries since 1972.

Mitec specializes in the design and manufacture of microwave components and subsystems for telecommunications and military applications to MIL-I-45208A, AQAP-4 and EIA standards with frequency range and test capabilities of 1 to 60 GHz. Mitec's microwave subsystems and networks are for the following applications: uplink and downlink assemblies for satellite earth stations, Tx and Rx multiplexing for communications equipment, and transmit and receive front-end for radar equipment.

In addition, Mitec designs and manufactures all the components that make up both the microwave networks and subsystems. These are diplexers, antenna transmission systems, filters, couplers, attenuators, terminations, adaptors, ferrite components and flexible waveguides. Production also includes a unique thin film/soft substrate with the capability to produce very fine (one mil) lines and gaps with close tolerances (2 microns) and metalized composites and dielectric substrate materials for antennas, radome, and planar circuit applications.

Mitec has manufacturing facilities in Canada and the United States, maintains regional sales offices and warehouses in North America and England, and has fully trained microwave representatives around the world.

## Mitel Corporation

350 Legget Drive  
P.O. Box 13089  
Kanata, ON K2K 1X3  
Telephone: (613) 592-2122  
Telex: 053-4596  
Fax: (613) 592-4784

### KEY PERSONNEL:

John Jarvis, President, Chief Executive Officer  
Tom Travers, Director, Public/Investor Relations

Mitel Corporation is Canada's second largest manufacturer of telecommunications equipment. Its core line of Private Automatic Branch eXchanges (PABXs) is supported by the manufacture of semiconductor devices, specialized telephone sets, and key telephone systems to provide a comprehensive range of communications services. All new products are designed to interface with integrated services digital networks (ISDN).

Mitel began operations in 1973, and now has revenues of over \$400 million (Cdn) and more than 4 000 employees worldwide. The company is headquartered in Kanata, Ontario, with U.S. operations headquartered in Boca Raton, Florida, and European operations based in the United Kingdom, Italy, Germany and Scandinavia. Despite widely differing global standards, Mitel has sold more than 100 000 PBX systems around the world. In 1986, British Telecommunications plc, a \$23 billion (Cdn) telecommunications company based in the United Kingdom, acquired 51 per cent of Mitel.

## Mobile Data International Inc.

Riverside Industrial Park  
11411 Number 5 Road  
Richmond, BC V7A 4Z3  
Telephone: (604) 277-1511  
Telex: 04-355865  
Fax: (604) 277-2178

### KEY PERSONNEL:

Barclay Isherwood, President  
Joe Rupe, Vice President, Sales

Mobile Data International (MDI) Inc. designs, manufactures and markets wireless data communication systems.

Products include a variety of vehicular and portable communications terminals for two-way transmission of high integrity data at high speed over radio frequency. Wireless data communication systems for police departments, taxi companies, public utilities, couriers, automobile associations, ambulance and fire brigades are supplied to customers in the United States, Western Europe and Asia. MDI also supplies transmission products to network operators who wish to offer shared wireless data communications service to diverse user groups.

Since its formation in 1978, MDI has experienced rapid growth in sales and product diversification, and has major systems installations in Europe, Asia-Pacific and throughout North America. MDI is a subsidiary of Motorola.

## Motorola Canada Ltd. Communications Division

3125 Steeles Avenue East  
North York, ON M2H 2H6  
Telephone: (416) 499-1441  
Telex: 065-25191  
Fax: (416) 499-1441, ext. 3698

### KEY PERSONNEL:

M. Bernard, President  
D. Jones, Vice President and Manager of Export Sales  
Lloyd Kubis, Vice President and Director, External Affairs

The Communications Division of Motorola Canada Ltd. designs and manufactures land mobile radio communications equipment and systems. Products range from traditional two-way mobile and hand-held portable radios to state-of-the-art synthesized multi-frequency equipment capable of operating over widely separated frequencies.

Typical products offered by Motorola Canada include vehicular mobile radio, hand-held portable radio, base stations and repeaters, VHF/UHF multi-channel point-to-point radio, communications control centres, vehicular and hand-held wireless data systems, communications digital switches, digital voice encryp-

tion radio and telephones, microwave radio relay up to 23 GHz, railroad communications products and radio alarm systems.

Products are designed for all land mobile frequency bands from HF to 960 MHz, and microwave radio relay equipment is available from 1.7 GHz up to 23 GHz. The company will also custom design a radio communications system to fulfil any user's operational requirements. A high-performance VHF marine radio having up to 128 channels was recently introduced. Customers can select a choice of marine and land mobile channels with digital voice encryption.

Motorola Canada has designed and supplied large systems to major public safety services, railroads and other communications users in Canada and has also supplied extensive systems in Australia, India, the Caribbean, many African countries and in the Middle East. Motorola Canada's products are available through a worldwide network of Motorola representatives and agents in over 50 countries, who also provide ongoing support and maintenance.

## Motorola Information Systems

9445 Airport Road  
Brampton, ON L6S 4J3  
Telephone: (416) 793-5700  
Telex: 06-97565

Fax: (416) 793-8330

### KEY PERSONNEL:

E. Strain, President  
R. Burrows, Director, Business Development

Motorola Information Systems designs and manufactures data communications products to international standards. Its product portfolio includes high-speed modems with data rates ranging from 9 600 bps to 19 200 bps; low- to medium-sized (4 to 64 channels) synchronous and asynchronous statistical multiplexers supporting up to 16 protocols including SDLC; a variety of line drivers (limited distance modems); and X.25 products.

Motorola Information Systems is part of Motorola Information Systems Group, which in turn is one of six

groups within Motorola Inc. The company's charter in Canada is to be a single source supplier, offering total solutions in data communications and office automation.

Products are marketed worldwide through sister organizations in the U.S.-based Motorola Information Systems Group (ISG). Motorola has supplied equipment for customers in more than 40 countries. Much of its export business comes from European and Japanese markets. The company won the prestigious Canada Export Award in 1983.

### **MUX LAB Inc.**

165 Graveline Street  
Ville Saint-Laurent, PQ H4T 1R3  
Telephone: (514) 735-2741  
Fax: (514) 735-8057

**KEY PERSONNEL:**

Gilles-André Bouchard, *President*  
Sylvain Abitol, *Vice President, International Marketing*  
Brian Cosgrove, *Vice President, Marketing - North America*

MUX LAB Inc. is a data communications company that designs and manufactures terminal emulation boards, premise wiring equipment and modems. The company's cable management products, which have captured 25 per cent of the American small multiplexer market, include a line of coax eliminators and multiplexers for the following environments: IBM 3270 and Systems 3X, Wang, Arcnet, Ethernet and ASCII.

### **Nardeux America Inc.**

31 Sherbrooke Street East  
Room 100  
Montreal, PQ H2P 3V8  
Telephone: (514) 982-0766  
Telex: 7601138  
Fax: (514) 982-0852

**KEY PERSONNEL:**

Mme. Claude Nardeux, *President*  
Eric Hartmann, *General Manager*

Nardeux Canada Ltée was established as a subsidiary of NARDEUX SA of France. Nardeux America Inc.,

the marketing arm of the company, is responsible for all marketing throughout North America. Nardeux Canada began manufacturing in mid-1986 and has established a structure for product development, design engineering, manufacturing and test of medium complexity electronic equipment.

The company has two extensive product lines acquired from the parent company. These lines are being complemented with products adapted by Nardeux Canada for the North American market. The lines include radio communications, including high-class commercial/paramilitary HF-SSB equipment and ground-based aviation communication VHF-AM equipment; and radiation protection products, including a full line of products from full body contamination monitors to laundry monitors to small survey instruments and dosimetry components.

Nardeux Canada currently provides contract manufacturing services and engineering services.

### **Nautel (Nautical Electronic Labs Ltd.)**

Hackett's Cove, R.R. #1  
Tantallon  
Halifax County, NS B0J 3J0  
Telephone: (902) 823-2233  
Telex: 019-22552  
Fax: (902) 823-3183

**KEY PERSONNEL:**

David J. Grace, *President*  
J.R. Pinks, *Vice President*

Nautel (Nautical Electronic Laboratories Limited) is a manufacturer of energy-efficient solid-state radio transmitters operating at power levels up to 50 kW. The transmitters are used for a variety of applications including AM broadcasting in the 525 to 1 715 kHz band of power levels from 40 W to 50 kW (200 000 W PEP), aeronautical and marine nondirectional beacons in the 415 to 535 kHz band at power levels from 1 to 5 kW (8 000 W PEP), and related equipment for use with the above transmitters, including remote

control, remote maintenance and monitoring and automatic antenna tuners.

The company was established in 1969 and has production facilities in Canada and a wholly owned subsidiary in the United States. It has supplied transmitters and related equipment to customers in more than 100 countries around the world.

### **Newbridge Networks Corporation**

P.O. Box 13600  
600 March Road  
Kanata, ON K2K 2E6  
Telephone: (613) 591-3600  
Telex: 053-3653

Fax: (613) 591-3680

**KEY PERSONNEL:**

Terry Matthews, *Chairman and President*

Mike Pascoe, *Vice President, Sales*

Newbridge Networks Corporation is involved in the design, manufacture and marketing of a series of universal voice and data multiplexer products for the T1 and CEPT digital trunk market. The company's product line, called MainStreet, includes the 1070, 1080, 1082 and 1032 Data Controllers and the Digital Trunk product line; the 3600 MainStreet Bandwidth Manager, 3624/3630 MainStreet Intelligent T1, CEPT Channel Bank and the 2600 MainStreet Data Termination Units.

### **Nexus Engineering Corp.**

7000 Lougheed Highway  
Burnaby, BC V5A 4K4  
Telephone: (604) 420-5322  
Telex: 230961000  
Fax: (604) 420-5941

**KEY PERSONNEL:**

Peter van der Gracht, *President*  
Dr. J. Basil Peters, *Chairman and Chief Executive Officer*  
Nigel Bailey, *Vice President, Corporate Development*

Nexus Engineering Corp. specializes in the design and manufacture of RF television signal processing equipment;

low and medium power transmitters and translators; and two-way voice, data and video satellite systems. Nexus' award-winning Series 5 headend product line provides the most cost-effective solution for cable systems servicing as few as 75 subscribers. Nexus also designs and manufactures high-frequency power products and high-quality video and graphic display systems. These systems can create colourful text, graphic screens and complex graphics with animation.

Nexus currently exports its products to over 60 countries around the world and actively markets its headend products in Europe, Asia and North and South America. In addition to the United States, Nexus' priority markets include the Pacific Rim, especially Australia, New Zealand and the People's Republic of China.

Affiliated companies include Channel One Video Corp., Channel One Video (East), Infosat Telecommunications Ltd., Statpower Technologies and Nexus Display Systems.

### **NGL Consulting Ltd. (Nordicity)**

*Suite 1105, 350 Sparks Street  
Ottawa, ON K1R 7S8  
Telephone: (613) 236-5850  
Fax: (613) 236-9241  
KEY PERSONNEL:  
Peter Lyman, Senior Partner  
Thomas Grandy, Partner  
Lorne Horwood, Partner*

NGL Consulting Ltd. (Nordicity) has conducted numerous studies in the identification and market assessment of new telecommunications services applications and products for private sector and government clients.

The firm has made a study for the Canadian Department of Communications to determine the feasibility of establishing a Canadian Communications, Informatics and Space Research and Development Institute. The study involved international comparisons with the United States, the United Kingdom, West Germany and France.

In association with Kalba Bowen of Boston and the Canadian Broadcasting Corporation, NGL undertook a comprehensive study of current and future

television technology and its impact on Canada; NGL conducted an international assessment of the status of development of television technologies, including enhanced television and high definition television. The study also determined the future requirements for these technologies and projected their potential products and services markets to the year 2000, and analyzed the industrial, economic, societal, cultural and institutional impacts of these new TV technologies on Canada.

### **Norpak Corporation**

*10 Hearst Way  
Kanata, ON K2L 2P4  
Telephone: (615) 592-4164  
Telex: 053-4174  
Fax: (615) 592-6560  
KEY PERSONNEL:  
J.F. Carruthers, President*

Norpak Corporation is a manufacturer of videotex and teletext systems, and a leader in teletext technology. Utilizing low-cost VLSI terminal technology, the company designs and manufactures videotex and teletext products and systems which implement the EIA North American Basic Teletext Specification (NABTS) and ANSI North American Presentation Level Protocol Syntax (NAPLPS) standards. Norpak's product range includes a full range of videotex and teletext database creation, delivery and terminal systems.

The company also provides custom engineering development services, with supporting technical training and consulting services specializing in licensing semiconductors and terminal technology worldwide. Licensees include Rockwell Semiconductor, National Semiconductor, Samsung Semiconductor, Intel Products, Samsung Electronics, C.I.TOH, RCA and Northern Telecom.

Norpak has been actively involved in the evolution of North American teletext and videotex technology. Norpak most recently developed the Bell Canada ALEX videotex terminal licensed to Northern Telecom. The Samsung Electronics teletext decoders and televisions incorporating teletext are also licensed from Norpak.

### **Norsat International Inc.**

*302 - 12886 - 78 Avenue  
Surrey, BC V3W 8E7  
Telephone: (604) 597-6200  
Telex: 04-508306  
Fax: (604) 597-6214  
KEY PERSONNEL:  
Greg Peet, President  
Wayne Meadows, Vice President  
Ian Power, Executive Vice President*

Norsat International Inc. designs and manufactures satellite communications equipment and integrated packaged systems for TVRO, SMATV, CATV and data, operating in either C or Ku band. The company's product line includes satellite receivers, low noise amplifiers, low noise block down converters, and accessory products. In 1987, Norsat released "MicroSat," a board that converts an IBM PC into a satellite receiver. The company also offers one-way systems for digital audio and data transmission applications.

Norsat offers custom design and manufacture of satellite systems to user requirements. Norsat is a pioneer in the development of TVRO satellite communications equipment, and offers complete TVRO systems.

### **Northern Telecom Limited**

*3 Robert Speck Parkway  
Mississauga, ON L4Z 3C8  
Telephone: (416) 897-9000  
Telex: 06-960348  
Fax: (416) 275-1143  
KEY PERSONNEL:  
David G. Vice, President  
Charles M.H. Shiu, Vice President,  
Market Development*

Northern Telecom is the world's largest supplier of fully digital telecommunications systems with over 40 million lines of its Meridian SL-1/SL-100 business communications systems and DMS central exchange switching systems in service or on order in more than 60 countries.

Northern Telecom manufactures a wide range of telecommunications equipment for telephone companies, private corporations, educational

institutions, government and military agencies, hospitals, offices and residences. Its products include switching and transmission systems, fibre optics and communications cable, subscriber switching systems, telephone apparatus, outside plant and other equipment for public and private communications networks.

### **International experience**

Northern Telecom Limited spans the world with operating companies and sales offices. The three main operating companies are Northern Telecom Inc., the U.S. subsidiary; Northern Telecom Canada Ltd., which is responsible for Canadian, Caribbean and Latin American operations; and Northern Telecom World Trade, based in Mississauga, Ontario. Northern Telecom World Trade provides the focus for Northern Telecom's global activities. It comprises Northern Telecom Europe, NT Meridian SA (France), Netas (Turkey), Northern Telecom GmbH (West Germany), and Northern Telecom Pacific Limited, Tong Guang Nortel Limited (People's Republic of China), Northern Telecom Japan Inc., Northern Telecom (Asia) Limited, and AWA - Nortel Pty. These companies and sales offices are located in major centres around the world in order to be close to their clients. This promotes the understanding of local requirements and allows a high level of service.

The cornerstone of Northern Telecom's approach to international marketing is flexibility. It employs a combination of marketing methods: direct sales in some 60 countries; wholly owned subsidiaries in key markets with manufacturing or service facilities for both domestic sale and export; technology licensing and transfer for local application and production; joint ventures involving equity participation; and alliances with other companies in the telecommunications and data processing industries.

Northern Telecom is the second largest designer and manufacturer of telecommunications equipment in this market. Its products are in operation in the Middle East, the Far East, Central and South America and virtually all West European countries.

One of its most noteworthy joint venture examples is in Turkey. Two decades ago, the Turkish Post, Telegraph

and Telephone Administration chose the corporation as the supplier to revitalize its switching network. This led to the creation of a joint manufacturing venture called Netas. Netas has helped the Turkish PT&T add world-class fully digital telecommunications systems and components to its growing network. Thousands of jobs have been created in the joint venture, and many thousands more throughout the country because of improved telecommunications service. Turkish interests are majority owners of the company.

In Japan, Northern Telecom became the first foreign telecommunications firm to meet the rigorous central office switching standards of the Nippon Telephone and Telegraph Corporation (NTT). It has been awarded a significant supply agreement to provide NTT with digital switching systems for the Japanese public telephone network, which is now successfully implemented. Northern Telecom's selection by NTT was based on many competitive factors, especially its suitability and adaptability to support Japan's goal of a nation-wide integrated services digital network (ISDN).

Marketing success is also being achieved by Northern Telecom in China, Korea, Singapore and other Pacific countries. In the Americas, Northern Telecom is the largest telecommunications equipment supplier in Canada and the Caribbean, and second in the United States, the world's largest market.

The corporation's international success in some 90 nations is based on leading-edge technology and commitment to service. That includes adapting technology to meet specific local safety and technical requirements, delivering the product on schedule and providing ongoing support and customer service. Those elements will continue to play key roles in the company's future.

### **Company background**

Northern Telecom Limited is 52.5 per cent owned by BCE Inc., a management holding corporation whose other holdings include major providers of telecommunications services, international telecommunications consulting services, natural gas trans-

portation, natural resource operations, printing, packaging, publishing, real estate and other activities.

The corporation employs nearly 50 000 people throughout the world and operates 24 manufacturing plants in Canada, 13 in the United States, one in the Republic of Ireland, and two in Malaysia. Research and development is conducted by Bell-Northern Research, a subsidiary that operates facilities in nine locations, including three in Canada, five in the United States and one in the United Kingdom.

## **NovAtel Communications Ltd.**

1020 - 64th Avenue N.E.  
Calgary, AB T2E 7V8  
Telephone: (403) 295-4500  
Telex: 03-821264

Fax: (403) 295-0230

### **KEY PERSONNEL:**

*Del Lippert, President, Chief Executive Officer*

*Dave McDowell, Vice President, Marketing*

*Ashok Panchmatia, Director, International Sales*

NovAtel Communications Ltd. designs and manufactures a complete line of cellular mobile radiotelephones and systems including 400 MHz and 450 MHz systems, and 800 MHz systems that comply with the IEEE-153-C protocol and total access communications systems (TACS), protocol 900 MHz. These products are available in mobile, transportable or fixed configurations.

On the systems side of cellular radio, NovAtel's expertise includes design, integration and software development (call processing, database, maintenance and mobile protocol) for the switching and control portions and the manufacture of base station cell site RF equipment. Its cellular systems can operate either independently at 400 MHz, 450 MHz, 800 MHz and 900 MHz or simultaneously in a combination of frequency ranges. For turnkey projects, NovAtel services range from RF design and computer modelling of RF propagation to traffic management studies, final installation, test and maintenance.



NovAtel serves the U.S. market through its subsidiary, NovAtel Carcom Inc., which offers sales and market support. It also has an office in Bowerhill, England, and has received several major orders from LM Ericsson of Sweden.

In 1986, NovAtel recorded its first international system sale to the People's Republic of China. The simultaneous 450/800 MHz system provides cellular mobile radiotelephone service in the city of Chongqing. International systems are also scheduled to be in operation in Costa Rica, Mauritius and Zhi Hua, China, in the last quarter of 1988.

NovAtel was formed by Alberta Government Telephones and NOVA, an Alberta Corporation, in 1983. Headquartered in Calgary, NovAtel Communications Ltd. employs more than 830 people in the marketing, research, development, manufacturing and sales of cellular telephone systems and cellular telephones worldwide.

### **Omicron Telesystems Inc.**

*Suite 750, 6600 Trans Canada  
Highway  
Montreal, PQ H9R 4S2  
Telephone: (514) 694-3457  
Telex: 05-821762  
Fax: (514) 697-0186  
KEY PERSONNEL:  
Chandra R. Ahooja, President*

Omicron Telesystems Inc., a high-tech company skilled in computers and communications technology, builds wide-area information systems for a variety of applications. Omicron offers technical expertise, complete customized information systems, and data/telecommunication management and control equipment. Technical expertise ranges from strategic planning, feasibility studies, project management, implementation, training and support. Products include complete customized systems and equipment for centralized network management and control, alarm reporting, remote test access, data acquisition and analysis.

Experienced in dealing with large organizations such as government, common carriers and airlines, Omicron has successfully completed several

major projects. Omicron's clients include Air Canada, the Gemini Group, Energy Mines and Resources Canada, Newfoundland Light and Power, Hydro Quebec, Illinois Bell Telephone, New Brunswick Bell, Westinghouse, United Kingdom Post Office and the Ministry of Communications (Kuwait).

### **Omzig Corporation**

*239 Champlain Street  
Hull, PQ J8X 3R7  
Telephone: (613) 776-3600  
Telex: 053-3310  
Fax: (613) 776-3768  
KEY PERSONNEL:  
Glen R.H. Gray, President  
Gordon C. Buchan, Director of  
Marketing*

Since its incorporation in 1983, Omzig has designed, developed, manufactured and marketed the Alexander-Plus family of communications products (both software and hardware), oriented toward the integration of business telecommunications and personal computers. Alexander-Plus Data II is a data and voice communication software; Alexander-Plus Telex I replaces the dedicated telex terminal with a personal computer; Alexander-Plus Telex II replaces the telex terminal with a personal computer and facilitates data and voice communications over the telephone lines.

Omzig Corporation has supplied companies in West Germany, France, Cyprus and New Zealand as well as the United States.

### **Ontel Communications Inc.**

*95 Barber Greene Road, Suite 112  
Don Mills, ON M3C 3E9  
Telephone: (416) 446-5435  
Telex: 06-966802  
Fax: (416) 446-5433  
KEY PERSONNEL:  
David L. George, President  
G.H. Linton, Manager, Marketing and  
Contracts*

Ontel Communications Inc. offers consulting engineering and project management services in the study,

design and implementation of communications facilities from VF through to microwave and satellite systems. Services encompass electronic and civil/structural engineering and related project management activities for HF radio, fixed and mobile VHF/UHF radio, cellular radio, microwave radio, tropospheric scatter radio, satellite earth stations, and communications systems related to airports and public safety/emergency organizations. Similar services are available for studio and transmission facilities for television and radio broadcasting.

Services include pre-design and feasibility studies; evaluation of existing electronic and structural facilities; detailed design of new and upgraded systems and structures; definition of budgets and project schedules; preparation of tender documentation and analysis of bids; contract administration; preparation of engineering briefs and licensing documentation; definition of maintenance plans; and personnel sourcing and training.

Ontel is jointly owned by Imagineering Limited and Morrison Hershfield Limited, two Canadian consulting engineering firms in communications and civil/structural engineering.

### **Oracle Communications Inc.**

*306 - 3700 Gilmore Way  
Burnaby, BC V5G 4M1  
Telephone: (604) 437-7000  
Fax: (604) 430-0144  
KEY PERSONNEL:  
Gerald W. Bachmayer, Director  
J. Douglas Spaeth, Director  
David King, Director*

Oracle Communications Inc. specializes in computer automated information systems for urban and intercity transportation, as well as other applications. The Oracle product line features high-quality computerized-voice information systems, which translate large and small databases into human quality speech; automated telephone, which holds completely computerized

conversation with callers using digital speech and DTMF tone commands; computerized radio, which generates and transmits broadcast-quality voice; video information network, which combines TV quality images, high-resolution graphics, touch screen menus and management; and trip-planning software, which takes complicated scheduling and operations software and automatically provides public information about routes, schedules and fares by telephone or video terminal.

## Oracle Telecomputing Inc.

25 Industrial Avenue  
Carleton Place, ON K7C 3V7  
Telephone: (613) 257-4425  
Fax: (613) 257-7764  
KEY PERSONNEL:  
Jim Harvey, President

Oracle Telecomputing was formed in 1980 to pursue opportunities in telecomputing. The company provides services ranging from feasibility studies and system requirement specifications through to custom turnkey system development, installation, training and support.

Areas of expertise and products include telecommunications (switching, transmission, voice, data, analog, digital); meteorology (data collection, processing, distribution, work stations); air traffic control (radar processing, display, data analysis, simulators); air traffic services (flight plans, NOTAMs collection, switching, processing and distribution); air defence control (radar processing, decryption, intercept optimization, display, simulators); and satellite data distribution (point-to-point, multi-point).

Oracle Telecomputing's client list includes Telecom Canada, Transport Canada, the Canadian Department of National Defence, Environment Canada, the U.S. Air Force and the Malaysian Meteorology Service.

## Parabolics Communications Inc.

5510 Canotek Road, Unit 30  
Ottawa, ON K1J 8X5  
Telephone: (613) 749-4290  
Telex: 053-4287  
Fax: (613) 749-2857  
KEY PERSONNEL:  
Donald Lahey, President

Parabolics Communications Inc. was formed in 1983 to explore the technology of satellite communications and develop a manufacturing process for producing low-cost, high-performance parabolic antennas, mounts and feeds for satellite earth stations.

Five years of development have produced a range of high-quality antennas for both TVRO and VSAT applications, designed to optimize communications in both the C and Ku bands. Antennas are produced with a one-piece aluminum construction, giving them high surface accuracy and maximum performance. Range tests rate Parabolics' antennas at an efficiency of 80 per cent as compared to the industry standard of 55 per cent.

Parabolics can also design satellite communications systems to meet clients' requirements.

Parabolics Communications Inc. is a Canadian-owned corporation with offices in Ottawa, Ontario. Manufacturing facilities are located in Ottawa and Plantagenet, Ontario.

## Phillips Cables Ltd.

King Street West  
Brockville, ON K6V 5W4  
Telephone: (613) 345-5666  
Telex: 06-636512  
Fax: (613) 345-1365  
KEY PERSONNEL:  
C.F. Jardim, President  
Tom Bohm, International Sales Manager

Phillips Cables Limited is a major Canadian manufacturer of electrical and communications cables. The company designs, engineers, manufactures and markets through three divisions:

Power Products, Construction Products and Communication Products. Phillips' products include high-voltage power supply cables, underground distribution cables, building wire, armoured cables, portable power cables, down well pump cables, marine and shipboard cables, central office and network telephone cables, mineral insulated thermo couple cables and composite fibre-optic/power cables for the power grid.

Phillips Cables, founded in 1889, was the first wire and cable plant in Canada. The company has six plants in Canada, and regional sales offices across Canada. Phillips Cables' products are sold in Canada, the United States and offshore through electrical distributors as well as directly to utilities and original equipment manufacturers.

## Pirelli Cables Inc.

13340-76th Avenue  
Surrey, BC V3W 2W1  
Telephone: (604) 591-3311  
Telex: 04-55746  
Fax: (604) 591-2292  
KEY PERSONNEL:  
Stan Johnson, Vice President and General Manager, Commercial Cable Division

Pirelli Cables Inc. ranks as one of Canada's leading cable manufacturers, offering a full line of optical fibre and copper communications cables for telecommunications and data applications, as well as power cable and building wire. Pirelli products are designed to operate at the highest transmission speeds, with the longest repeater spacing for long-haul telecommunication systems. The company has customized its products for specific applications, including direct burial, aerial, conduit and plenum installations.

The company was established in 1953 as the Canadian affiliate of Pirelli Società Generale of Switzerland. Pirelli has four manufacturing facilities in Canada, including its Communications Division which produces state-of-the-art fibre-optic cable.

## Plan Tel Inc.

5660 Monkland Avenue  
Montreal, PQ H4A 1E4  
Telephone: (514) 487-6060  
Fax: (514) 487-5291

### KEY PERSONNEL:

D. Darylkiw, Chairman  
R.H. Z'Graggen, President  
J.M. Long, Vice President, Sales and Marketing

Plan Tel provides consulting services in all aspects of the telephone field to the telecommunications industry, private enterprises, governments and other consultants, working on national and international projects involving overall management consulting, financial and technical planning, engineering, operations and maintenance.

Nationally, the company has contracts with various telephone carriers, government departments and agencies, and large corporations. The company acquired its first international contract in 1976 in Saudi Arabia. Since then it has completed contracts involving systems design, operations, project management and management consulting in Antigua, Haiti, Jamaica, Peru, Panama, and the United States. Working with the Canadian International Development Agency (CIDA), Plan Tel has been involved in numerous projects in Africa, the Middle East, Southeast Asia and South America.

Plan Tel was established and incorporated in 1970. It operates with a head office in Montreal, consulting headquarters in Toronto, and branch offices in London, Ottawa, Quebec, Kitchener and Vancouver.

## Positron Industries Inc.

5101 Buchan Street  
Montreal, PQ H4P 2R9  
Telephone: (514) 345-2200  
Telex: 05-825739  
Fax: (514) 731-8662

### KEY PERSONNEL:

Reginald Weiser, President  
Kenneth R. Brown, Vice President, Sales  
Marjolaine Bouchard, Sales and Marketing Manager

Positron Industries Inc. designs, develops and manufactures state-of-the-art telecommunications systems,

including trading turrets; answering positions; telephone and radio communication consoles; alarm reporting, remote control and telemetry systems; 911 emergency call enhancement systems; and power station wireline communications protection systems. The company also has full custom design capability.

Positron provides full design, development, production, testing and quality control services. Since its founding in 1970, the company has developed over 200 products, and is winner of two Institute of Electrical and Electronics Engineers product awards.

Positron currently invests 15 per cent of revenues in product development, employing over 60 engineers and technicians. The company is privately owned, with no intention of going public. The company forecasts \$50 million in sales by 1990, \$100 million by 1992.

## Protocoles Standards de Communication Inc.

1753 Bank Street  
Ottawa, ON K1V 7Z4  
Telephone: (613) 731-7697  
Fax: (613) 731-4748

### KEY PERSONNEL:

Patrick Shea, President  
Grahame Aitken, Vice-President

Protocoles Standards de Communication Inc. (PSC) provides consulting services, software/service development and training in the field of information management, computer communications and the related international standards. The primary emphasis is on studies and research related to the implementation of international standards for computer communications such as X.25 and OSI, and advanced communication architectures and protocols such as SNA and DECNET. PSC also offers introductory and advanced level training in all aspects of OSI and other computer communication standards.

PSC participates actively in various groups responsible for national and international data processing and tele-

communication directions and related standards (principally CCITT and ISO committees). The company has branch offices in Toronto, Ontario; Washington, DC; and Edinburgh, Scotland.

## Pylon Electronic Development Company Ltd.

147 Colonnade Road  
Nepean, ON K2E 7L9  
Telephone: (613) 226-7920  
Telex: 053-4961

Fax: (613) 226-8195

### KEY PERSONNEL:

John E. Pinnell, Chairman  
Herbert Laks, President  
Stanley E. Pinnell, Vice President

Pylon telephone and telecommunications products include power converters and inverters for central office plants, uninterruptible power plants, rectifiers, ringing generators, PABX supplies and some data equipment. The Instrument Division manufactures time code generators, digital read-out equipment, EMI hardened displays and nuclear test or calibration equipment. The company also produces cables, harnesses and custom test apparatus.

Pylon Electronic Development Company Ltd. is a supplier to most Canadian utilities and many government agencies. Pylon products are exported through large OEMs and directly through 13 representatives in 10 countries.

## Quality Communication Products (1979) Ltd.

P.O. Box 1328  
239 Mountain Street  
Morden, MB R0G 1J0  
Telephone: (204) 822-4431  
Telex: 07-55205

Fax: (204) 822-6348

### KEY PERSONNEL:

S.L. Wilson, President

Quality Communication Products manufactures telephone loading coils and cable build-out networks, precision

toroid coils, close tolerance wirewound resistors and mylar film capacitors, voice frequency networks, and wiring harnesses.

The company was established in 1964 and has exported its products to Iran, Costa Rica, Puerto Rico and New Zealand.

### **R.A.C.E. Technologies Inc.** **(A Member of the Spilsbury Group)**

1495 Franklin Street  
Vancouver, BC V5L 5B6  
Telephone: (604) 254-6411  
Telex: 04-55482  
Fax: (604) 254-2080  
KEY PERSONNEL:

*H.J. Krutzen, President and Director*

R.A.C.E. Technologies Inc., a member of the Spilsbury Group, manufactures and markets an automated high-frequency single-sideband radio interconnect terminal providing low-density voice and data communications. The system can be configured as an inter-organization system, providing point-to-point communication, or it can be interconnected to the PSTN for fully automatic telephone calling. The R.A.C.E. terminal has a built-in PABX that can handle up to 16 telephone sets.

R.A.C.E. Technologies Inc. has also designed an HF modem for high-speed data and facsimile transmission. The modem can be plugged into an IBM-compatible PC or it can be used as a stand-alone unit combined with a standard SSB radio and a facsimile machine.

### **Reliance Comm/Tec Canada** **Division of Reliance Electric Limited**

122 Edward Street  
St. Thomas, ON N5P 1Z2  
Telephone: (519) 631-0780  
Telex: 064-73521  
Fax: (519) 631-0359

KEY PERSONNEL:  
*David Sinclair, General Manager*  
*Dan Erskine, Sales/Marketing Manager*

Reliance Comm/Tec Canada is the Canadian manufacturer of Lorain power equipment for the telecommunications industry, including battery chargers, rectifiers, power supplies and DC distribution systems, UPS/inverter systems, single-phase up to 10 kVA and power conversion equipment.

Reliance also manufactures Reliable/Utility products, including outside plant, subscriber premise, and central office protection and termination equipment. The company distributes transmission, testing and terminal equipment manufactured by R-Tec Systems.

The company is a division of Reliance Electric Company and has sales offices in Montreal, Quebec; Burnaby, British Columbia; Calgary, Alberta; and Toronto, Ontario.

### **RF TEL Communications Ltd.**

164 Aimé Vincent Street  
Vaudreuil, PQ J7V 5V5  
Telephone: (514) 455-8238  
Telex: 05-25134  
Fax: (514) 424-9262

KEY PERSONNEL:  
*George Hollinger, President*  
*Mario Mazzonna, Operations Manager*

RF TEL Communications manufactures VHF and UHF rural radio-telephone systems. The systems are designed to provide reliable telephone service in areas where installation of a hard-wired telephone system is not economically attractive. The RT 8150 VHF and RT 8450 UHF series rural radio is

primarily targeted at telephone companies. Typical installations include logging camps, mines, summer homes; isolated farms, beach and ski resorts; island settlements and offshore drilling rigs; and temporary installations.

Current marketing activities include sales to Africa, the Dominican Republic, Honduras and the Bahamas. In addition, priority markets include South America, Western Europe and South and Southeast Asia.

### **RFM Microplex Systems Ltd.**

265 East 1st Avenue  
Vancouver, BC V5T 1A7  
Telephone: (604) 875-1461  
Fax: (604) 875-9029

KEY PERSONNEL:  
*Fred Fierling, President*  
*Steve Balaban, Sales Manager*

RFM Microplex Systems Ltd. is a privately owned Vancouver-based Canadian developer, manufacturer and distributor of data communication equipment. Incorporated in October 1978, the main focus of its product line has been data switching, specifically modem eliminators and line sharing devices for synchronous multi-drop communications.

Microplex serves the needs of telephone and interconnect companies, the OEM market and the industrial business community. Some products, notably the modem eliminators and modem/port sharing devices, are being sold internationally through OEMs and distributors.

Current designs make use of leading-edge technologies such as custom gate arrays, multilayer circuit boards, and programmable logic and surface mount components. The company maintains compatibility with current and future standards through a comprehensive program of new product development.

## **RMS Industrial Controls Inc.**

1100 Lansdowne Street  
Coquitlam, BC V3B 5E2  
Telephone: (604) 464-2315  
Telex: 04-353612  
Fax: (604) 464-6649  
KEY PERSONNEL:  
Harry Dunstan, President  
Greg Stanwood, Sales Manager

RMS Industrial Controls Inc.'s primary business is radio data communications. It supplies products such as radio remote-control systems, RF data modems, RF network controllers, UHF mobile radios and custom-engineered RF communication networks for a variety of applications.

A recent product innovation is a radio data modem designed with a UHF digital synthesized radio and a microprocessor-controlled 1200/9600 bps modem. Other features, such as forward error correction, gateway control and multi-access control schemes, can also be included as options. This product is ideally suited for applications such as fixed point-to-point data communication.

RMS began operations in 1976. The company originally supplied radio remote-control systems and RF communications for industrial applications and offshore oil exploration, and rapidly developed a broad family of electronic and RF modules. The company sells to both end-users and OEMs, and has a network of international agents.

RMS has supplied equipment to customers in the People's Republic of China, Singapore, Europe, Africa and the United States.

## **Rockwell International of Canada Ltd. Collins Canada Division**

150 Bartley Drive  
Toronto, ON M4A 1C7  
Telephone: (416) 757-1101  
Telex: 06-963573  
Fax: (416) 757-1101  
KEY PERSONNEL:  
E. Rathgeber, General Manager  
R.E. Zanette, Marketing Manager

Collins Canada Division of Rockwell International is engaged in the manufacture of radio telecommunications products,

systems designs and support activities. Principal products consist of HF receivers and transmitters; a general-purpose VLF/LF/MF/HF receiver; a miniature HF single-channel synthesized receiver; a lightweight HF manpack transceiver; and standard and custom self-contained transportable HF communication shelters. Rockwell is a world leader in tactical and strategic radio products and systems.

## **Rockwell Telecommunications of Canada**

45 Sinclair Avenue  
Georgetown, ON L7G 4X4  
Telephone: (416) 877-0191  
Telex: 06-97777  
Fax: (416) 877-3675  
KEY PERSONNEL:  
Lou Mitrovitch, Vice President  
Bob Parslow, Director, Marketing and Sales

Rockwell Telecommunications is a designer and manufacturer of communication and transmission equipment primarily for special-services applications. Its offerings include voice frequency interchange and subscriber conditioning equipment; loop conditioning microprocessor-controlled interface products for radio pager systems; pulse-code modulation multiplexing (PCM) equipment; and an audio conferencing system. The firm is currently developing a digital fault locator system for monitoring PCM repeaters, and it plans to expand its activities into fibre-optics transmission equipment production.

The company was originally established in 1965 as the Canadian distribution arm of Wescom. The Canadian operation began designing and producing its own products in 1979 and was purchased by Rockwell in 1980.

## **Ross Video Ltd.**

P.O. Box 220  
500 John Street  
Iroquois, ON KOE 1K0  
Telephone: (613) 652-4886  
Fax: (613) 652-4425  
KEY PERSONNEL:  
John Ross, President  
Jim Millard, Marketing Co-ordinator  
Louise Laframboise, Sales Co-ordinator

Ross Video is a manufacturer of video production switchers for use by the TV broadcast and production industry. World markets include the United States, Australia, New Zealand, Hong Kong, Italy, Saudi Arabia, Japan, South Africa, Singapore and the United Kingdom.

## **Ryerson International Development Centre (Ryerson Polytechnical Institute)**

350 Victoria Street  
Toronto, ON M5B 2K3  
Telephone: (416) 979-5026  
Telex: 065-28056  
Fax: (416) 979-5155  
KEY PERSONNEL:  
Dr. P. Rawkins, Director, RIDC  
Prof. S. Mikhail, Associate Director, RIDC

Ryerson Polytechnical Institute is a leader in the provision of professionally relevant education. In 1980, the Institute established the Ryerson International Development Centre (RIDC) with the goal of furthering the advancement of the developing world in technological and educational spheres. To date, the Centre has focused on upgrading or developing educational institutions and programs, training systems and technical facilities, with many projects involving the establishment of direct links with educational and other public sector institutions in developing countries.

RIDC's principal activities are education planning, both at Ryerson and overseas; institutional development; consultation on development of educational institutions; feasibility studies; specialized training; applied research; technical consultancies; and information services.

RIDC offers expert assistance and consultation relative to the educational, training and applied research needs of developing countries. International projects include a telecommunications training feasibility study in Jordan; broadcast production training in the Asia-Pacific region, Commonwealth Africa, Jamaica, Malaysia and Bahamas; studies on the use of telecommunications systems for distance education in Canada and internationally; and a report on policy and financing issues for the development of telex communication systems in LCDs.

### **SAB NIFE Corporation**

125 Nantucket Boulevard  
Scarborough, ON M1P 2N8  
Telephone: (416) 757-5151  
Telex: 06-963757  
Fax: (416) 752-4514

KEY PERSONNEL:  
Alf Goransson, President  
Gary Pollock, Export Manager

SAB NIFE Corporation is a Canadian manufacturer of telecommunications, DC power plants and UPS systems.

Other products include switch-mode rectifiers up to 10 kW, and DC distribution equipment for central office applications, for which the company has been a major supplier to the Canadian and U.S. telephone companies since 1944.

The company is a subsidiary of SAB NIFE AB based in Sweden with sister companies around the world. Most of its foreign sales are handled by the sister companies; however, SAB NIFE Corporation has exported directly to Chile and will respond to any international inquiry.

### **Sachs Canada Inc.**

745 Avoca Avenue  
Dorval, PQ H9P 1G4  
Telephone: (514) 636-6560  
Fax: (514) 636-0794

KEY PERSONNEL:  
Jack Sachs, President

Sachs Canada manufactures an array of products designed for construction and subscriber installation usages.

Most of the product line is protected by patents and the grounding hardware features UL-listed and CSA-approved designs. All metal products are hot-dipped galvanized to ensure maximum corrosion resistance.

Included in the product line are cable support straps, lashing wire clamps, strand hanger brackets, span clamps, drop clamps, fastening clips, ram horn drop hooks, pigtail hooks, drive rings, service mast straps, grounding connectors, wall plates, cable identification tags, and universal installation tool and miscellaneous accessories.

### **SaskTel International**

2121 Saskatchewan Drive, 3rd Floor  
Regina, SK S4P 3Y2  
Telephone: (306) 777-4504  
Telex: 071-2636

Fax: (306) 359-7475  
KEY PERSONNEL:  
W.A. Bruce, President  
D.J. Dufour, Director, Marketing

SaskTel International is the international consulting arm of Saskatchewan Telecommunications (SaskTel), a provincial telecommunications carrier. The parent company is a world leader in the development and application of fibre-optic technology, operating a 4 616 km fibre-optic system. SaskTel also has many years of experience with a variety of other transmission systems, including microwave radio, voice frequency, analog and digital carrier, coaxial cable and satellite.

The company offers consulting assistance in five major areas: technological expertise; planning and supervision of project construction, operation and maintenance; staff training; technical documentation; and software applications for corporate administration.

SaskTel International has been active in Canada, the United States, Tanzania, Cuba, the United Kingdom and the People's Republic of China. Major projects include network design of a fibre-optic system connecting major coastal cities from the east to west coast of the United States; a Canadian International Development Agency (CIDA) funded telecommunications project for the Tanzania Railway

Company; construction of a fibre-optic and satellite private network in the eastern United States; sales and support of a mechanized facilities management system (MARTENS) to Canadian and U.S. telecommunications utilities; construction of a microwave radio system for the People's Republic of China; engineering, design and installation supervision of a cable TV network in the United Kingdom; consulting, including network optimization studies, for the government of Ontario and associated agencies; and electronic and electromechanical switch commissioning.

### **SED Systems Inc.**

18 Innovation Boulevard  
P.O. Box 1464  
Saskatoon, SK S7K 3P7  
Telephone: (306) 931-3425  
Telex: 074-2495

Fax: (306) 933-1486  
KEY PERSONNEL:  
Howard Tennant, Chairman  
George Dragone, Managing Director,  
Chief Executive Officer  
Kent McKertie, Director of Marketing

SED Systems Inc. specializes in the design and manufacture of two-way voice and data satellite telecommunications systems and satellite TV receivers for Ku and C band. The company provides systems and software design for communications, aerospace, defence and space sciences, and produces and supplies microwave componentry. It also supplies satellite earth stations, control centres, and test equipment; rocket payloads, space science instruments for upper atmospheric research; meteorological systems; and radar displays.

Created in 1965 as the Space Engineering Division of the University of Saskatchewan, SED initially designed and built rocket instrumentation for the National Research Council of Canada. With incorporation in 1972, it began developing a line of commercial products based on aerospace technology and undertook a number of international projects. Among these is the design and development of a ground control station for the Brazilian telecommunications satellites. SED is also a major supplier of satellite earth stations to Telesat Canada.

## Sheridan College

1430 Trafalgar Road  
Oakville, ON L6H 2L1  
Telephone: (416) 849-2848  
Fax: (416) 845-9925

**KEY PERSONNEL:**

John Abrahams, School of Computer Studies

Sheridan College offers an in-depth post-graduate course in telecommunications management. The one-year program covers all aspects of telecommunications studies, ranging from management to technical concerns. It is the only full-time telecommunications management course currently offered by an academic institution in Canada. Sheridan College has an exceptionally well-equipped telecommunications lab that is heavily used by students on this course.

The Telecom Management program is managed by an advisory board of senior telecommunications and MIS managers drawn from well-known Canadian companies. The majority of course instructors are active as telecommunications consultants, both in Canada and internationally. The course attracts students having a university degree or college diploma from across Canada and from overseas. Graduates find employment as telecommunications analysts or go into network operations.

## Sigmacom Systems Inc.

111 Industrial Drive, Unit 5  
Whitby, ON L1N 5Z9  
Telephone: (416) 666-1991  
Fax: (416) 666-3141

**KEY PERSONNEL:**

Michael S. Taylor, President

As a satellite systems integrator, Sigmacom Systems Inc. provides services in maintenance and operations management, as well as equipment installation and engineering design. Present systems offered include CATV, TV/radio rebroadcast, satellite audio/video/data networking, and satellite earth stations.

Founded in the pioneering days of Canada's satellite communications industry, Sigmacom is a major supplier of satellite products to the Canadian Broadcasting Corporation and Telesat

Canada and has designed and installed satellite networks for broadcast groups and private businesses.

The company's most significant international project to date is the first phase updating of communications for the U.S. Armed Forces Dew Line, which involved the installation of satellite earth receiving stations at some 30 Arctic locations from Alaska to Greenland.

## Silcom Communications Inc.

38 Antares Drive, Suite 400  
Nepean, ON K2E 7V2  
Telephone: (613) 723-2226  
Fax: (613) 723-9189

**KEY PERSONNEL:**

Peter Williams, President  
John Rivenell, Chairman

Silcom Communications Inc. manufactures the Silcom SP100 tone alert and the Silcom 200 digital numeric pagers. Each is a state-of-the-art radio-paging receiver. Silcom was formed in 1987 to continue the commercial development of pager technology originally developed by Siltronics Ltd.

The company is the only Canadian manufacturer of radio-paging receivers and is active in various export markets through distributors. Silcom is interested in exploring joint venture potential with members of the telecommunications industry in other countries and is particularly interested in the potential for pager networks in developing countries.

## Sinclair Radio Laboratories Ltd.

85 Mary Street  
Aurora, ON L4G 3G9  
Telephone: (416) 727-0165  
Telex: 06-218782

Fax: (416) 773-1843

**KEY PERSONNEL:**

R.W. Weir, President  
J.M. Colthart, Executive Vice President  
G.K. Morgan, Export Sales Manager

Sinclair Radio Laboratories specializes in the design, development and manufacture of support equipment

primarily for UHF and VHF two-way radio and radiotelephone systems. The company's product line includes antennas for all frequencies; low intermod antennas specifically for multicoupling; filters and filter systems particularly for multicoupling with low intermod, bandpass, low and high pass band stop; active receiver multicouplers; auto-tuned filters and antenna couplers; transmitter combiners; isolators; circulators; diplexers/duplexers; Comshel communications shelters; and clamps and mounting hardware. Sinclair also offers consulting services on all antenna and filter systems, and measurement services for intermod products, filter characteristics, antenna patterns and impedances.

## SkyWave Electronics Ltd.

300 March Road, Suite 304  
Kanata, ON K2K 2E2  
Telephone: (613) 592-0908  
Telex: 053-4370

Fax: (613) 592-2104

**KEY PERSONNEL:**

Bob Lyons, President  
Peter Rossiter, Vice President,  
Engineering

SkyWave Electronics Ltd. is a Canadian-owned communications product company with expertise in radio and satellite systems, digital signal processing and RF design. SkyWave develops and manufactures low-speed transmission products of high commercial quality. Manufacture of the company's first product, a 2400 bps vocoder, commenced in February 1986. A digital squelch unit (intended for high noise environments) entered production shortly thereafter.

SkyWave's current products include a rate selectable 2400/4800 bps vocoder with telephony interface and echo canceller; an amplitude companded single-sideband (ACSSB) satellite channel unit (70 MHz IF); and an HF position exchange communications system for ship-based helicopters.

The company also sells lightweight, highly transportable single-channel Ku, C and L band satellite terminals that

use ACSSB or LPC voice-processing and forward error correction for data. Equipment is sold directly from Kanata and through regional representatives.

## **Solutec Ltd. (H.A.)**

4360 d'Iberville Street  
Montreal, PQ H2H 2L8  
Telephone: (514) 524-6893  
Telex: 055-62139  
Fax: (514) 598-7808  
KEY PERSONNEL:  
Gilles Fortin, Vice President,  
Marketing

Solutec manufactures video broadcast/CATV equipment and provides systems planning, turnkey installations and preventive maintenance services.

The company's main product, the SOL 6800, is an automated broadcasting system featuring video/audio integrated and programmable switchers. New products include the SOL 20/20, an audio level meter colour-keyed in video, and the SOL ADA 2 x 7, an audio distribution amplifier.

Solutec is active in the U.S. market and in South America, Europe and Australia.

## **Spar Aerospace Limited Satellite and Communications Group**

21025 Trans Canada Highway  
Sainte-Anne-de-Bellevue, PQ H9X 3R2  
Telephone: (514) 457-2150  
Telex: 05-822792  
Fax: (514) 457-2724  
KEY PERSONNEL:  
Larry Clarke, Chairman, Chief  
Executive Officer  
John MacNaughton, Senior Vice  
President  
W. Fitzgerald, Vice President, Satellite  
and Communications Group

Spar Aerospace Limited is engaged in the design, development, manufacture and servicing of systems and products for space, defence, communications, aviation and teleoperator markets. The company is the principal supplier in Canada, and a major international

manufacturer of satellites and satellite subsystems for communications and surveillance applications. It also supplies ground terminals for domestic and international communications systems.

### **Space electronics**

Spar and its predecessor companies have over 27 years' experience, and have contributed to the design and manufacture of over 60 satellites and subsystems. In addition to building highly successful scientific satellites for Canada's space research program, the company has assumed increasingly greater participation in a number of domestic and international telecommunication satellite programs.

A complete turnkey system, which included a pair of spin-stabilized satellites and a related ground control system (TT&C), was built for EMBRATEL, the Brazilian government-owned telecommunications company, under a \$125 million (U.S.) order signed in 1982. The project, known as Sistemas Brasileiro de Telecomunicações por Satélite (SBTS) was completed in 1985 with the successful launch of the second spacecraft, and constitutes the first domestic communications satellite system in Latin America.

Spar has a number of ongoing space technology contracts, including the development, integration and testing of the solar array for the European Space Agency's Olympus satellite, and is waiting approval of the construction phase for Canada's mobile communications satellite and synthetic aperture radar satellite, RADARSAT.

Canada has been deeply involved in the U.S. Space Shuttle program with the supply of the Remote Manipulator Systems (RMS) used to deploy and retrieve payloads. The RMS is a highly sophisticated computer-controlled 15-m long mechanical arm. The prototype, Canadarm, and an initial supply of three flight systems were designed and developed by Spar under an agreement between the National Research Council of Canada and the U.S. National Aeronautics and Space Administration.

Recent successful involvement in supplying the communication receivers and channel amplifiers for INTELSAT VI and antennas for INMARSAT, coupled with the new technologies being developed and implemented on the Telesat Anik E program at both C and Ku band, have kept Spar on the leading edge.

### **Earth Stations**

Spar has worked on more than 240 projects worldwide for satellite earth stations, subsystems and components. During 1986-88, Spar supplied INTELSAT standard A stations and upgrades to Liberia, Zambia, Mozambique and Bangladesh. In 1984, the company signed contracts valued at more than \$28 million to provide satellite earth stations and technology transfer to the People's Republic of China. Another major export sale was a shared \$3.5 million contract with Ericsson Telephone Corporation Far East of Thailand, to supply the Royal Thai Navy and the Telecommunication Authority of Thailand with satellite earth station equipment. Spar has the capability to build any class of INTELSAT Earth Station and has installed Class A and Class B stations in 18 countries. The company has been the sole earth station supplier to Canada's international telecommunications carrier, Teleglobe Canada. Teleglobe upgraded its system with Time Division Multiple Access/Digital Speech Interpolation (TDMA/DSI) equipment in 1985. Spar developed the TDMA system operating at the INTELSAT standard of 120 Mbps specifically for Teleglobe.

A line of low-cost single channel per carrier (SCPC) earth stations has been developed for telephony and data applications. The stations can be equipped with up to 12 circuits and are well suited for remote locations and private networks.

Spar is developing a family of low-cost earth stations especially suited for rural telecommunications in developing countries. Most existing very-small earth stations are designed to carry digital data, and a substantial increase in cost and complexity is incurred if voice is added. The Spar Low Cost Earth Terminal (LCET) is designed to carry both voice and data, resulting in significant cost savings. Spar's U.S. subsidiary, Comtel, designs and makes light- and medium-route (3 to 15 Mbps and 15 to 60 Mbps) TDMA systems, satellite network control centres and bulk encryption equipment. The company has supplied a 60 Mbps system to Indonesia,



valued at \$3 million, and has now received a follow-on contract valued at over \$7 million (U.S.). Spar also supplied an experimental 15 Mbps system for the Telecom Research Centre in India. Its U.S. customers include NASA, Western Union and Dow Jones and Co. Inc.

#### **Company background**

The Special Products and Applied Research (SPAR) Division was separated from deHavilland Aircraft of Canada and established as an independent enterprise in 1968. Spar employs more than 2 000 people and has absorbed a number of firms to supplement its internal resources. Key acquisitions with respect to the space and communications activities include Astro Research Corporation of California (renamed Astro Aerospace Corporation in 1984), the assets of the Government and Commercial System Division of RCA Limited, and certain assets of the space electronics manufacturing unit of Northern Telecom Ltd.

#### **Spectrocan Engineering Inc.**

*P.O. Box 6088, Station A  
2045 Stanley Street  
Montreal PQ H3C 3Z8  
Telephone: (514) 499-3300  
Telex: 055-60735  
Fax: (514) 499-3223  
KEY PERSONNEL:  
Neal A. Patterson, Manager,  
Engineering*

Spectrocan Engineering Inc. was formed in 1982 to undertake radio-frequency spectrum management projects overseas based on Canada's world-leading spectrum management technology. The very rapid growth of national and international communications systems has resulted in a need for more efficient and effective spectrum management facilities. Spectrocan can meet these needs for government agencies responsible for utilization and management of radio frequencies.

Spectrocan offers computer-based radio-frequency licensing, record keeping and accounting systems, spectrum engineering services, training and

organizational development services, radio-frequency monitoring stations (fixed and mobile), spectrum engineering laboratory facilities, and operations and maintenance assistance, either as a turnkey project or a specific technology package.

Spectrocan is associated with Monenco Ltd., a diverse consulting and engineering group of companies with over 75 years' experience in overseas projects.

#### **Spilsbury Communications Ltd.**

*1495 Franklin Street  
Vancouver, BC V5L 5B6  
Telephone: (604) 254-6411  
Telex: 04-55482  
Fax: (604) 254-2080  
KEY PERSONNEL:  
Don W. Carle, President  
Berge Tuyssuzian, Manager,  
International Marketing*

Spilsbury Communications Ltd. specializes in the design and manufacture of commercial HF, VHF and UHF radio communication products for voice and data application; digital voice recorders, announcers and loggers for public safety, airlines and various telephone answering applications; full duplex mobile telephones for IMTS, AMTS, SMART and AUTOTEL; and non-directional radio-beacon systems.

Spilsbury has been actively designing and manufacturing radio communications equipment since 1941 and has been involved in servicing the international market for over three decades. Spilsbury has system design capability in radio systems and digital voice-recording systems. Communications equipment has been provided to major government and industrial accounts in the United States, the Middle East, Africa, Sri Lanka, Indonesia and the People's Republic of China.

#### **SR Telecom Inc.**

*8150 Trans Canada Highway  
Saint-Laurent, PQ H4S 1M5  
Telephone: (514) 335-1210  
Telex: 05-824919  
Fax: (514) 334-7783  
KEY PERSONNEL:  
D.M. Beaupré, President, Chief  
Executive Officer  
H.J. Zavitz, Vice President,  
Government and Public Relations  
John Beck, Director of Sales*

SR Telecom Inc. is the pioneer and world-leading manufacturer of subscriber radio systems. Using advanced point-to-multipoint TDMA microwave technology operating in the 1.5, 1.8 and 2.4 GHz bands, the systems deliver urban-quality telephone service to rural and suburban areas.

Subscriber radio has been adopted by telephone companies worldwide to provide a fully transparent connection between the two-wire terminals on an exchange distribution frame and a remote standard telephone set. The equipment is used to provide telephone and data service to rural or urban areas; and SCADA and telephone service for utilities, resource industries, offshore oil platforms and private networks. SR technology will extend existing telephone networks cost effectively, efficiently and without fear of obsolescence into sparsely populated areas where no service or utilities exist, with a measured MTBF of over 14 years.

SR systems are now in operation in over 40 countries, servicing the needs of more than 80 administrations and telephone companies.

#### **Szeto Telecom Inc.**

*5499 Vanden Abeele Street  
Saint-Laurent, PQ H4S 1S1  
Telephone: (514) 331-9152  
KEY PERSONNEL:  
Charles Szeto, President*

Szeto Telecom is a manufacturer of the MADVS — Multiple Access Digitized Voice System — a second-generation voice storage and retrieval product. The system digitizes live recordings for storage on Winchester disks for later

retrieval. MADVS may be integrated with a wide variety of computer and telephone systems to provide high-quality voice response and voice storage and retrieval. It is specifically designed to address the needs in the voice response market, such as remote data entries, teleprocessings, Bell telephone 976 DIAL-IT Services, 911 emergency call loggings, voice mail, and other telephone dialled access information services such as public information or catalogue sales.

### **Tee-Com Electronics Inc.**

775 Main Street East  
Milton, ON L9T 3Z3  
Telephone: (416) 878-8181  
Fax: (416) 878-2472  
KEY PERSONNEL:  
Al Bahnman, President  
Evan Sherris, Vice President

Tee-Com Electronics manufactures consumer satellite electronic equipment and earth stations. Products include a three-model line of satellite receivers and aluminum-mesh dish antennas.

The company was founded in 1983, and production and marketing began in April 1985. The purchases of Banvil Ltd. (Canada's largest TVRO equipment distributor), Cale Communications Inc., Northridge Manufacturing Inc. and Clearview Distributors Ltd. occurred in mid-1986.

### **TELECOMsyst Services Inc.**

555 Dorchester Boulevard West  
Suite 826  
Montreal, PQ H2Z 1B1  
Telephone: (514) 861-0983  
Fax: (514) 878-3989  
KEY PERSONNEL:  
Maurice Malka, President

TELECOMsyst Services Inc., established in 1980, provides telecommunications management and technical consulting services. Through its three divisions – Equipment/Service Selection

Division, Technological Planning Division (office automation) and Microwave Radio and Satellite Planning Division – the company offers a comprehensive range of services in the selection, design, implementation and turnkey supply of telecommunications systems.

Two major recent projects were a feasibility study for Teleglobe Canada to determine the need for, cost-effectiveness of and benefits of upgrading its four-location Centrex service to an integrated digital PBX; and the design of Canadian Marconi Company's North American voice and data network, which included integrated voice/data PBX equipment selection, project management, system integration and consultation on office automation issues.

TELECOMsyst also offers executive, management and technical seminars, in-house training services and products/services competitive analyses. The company is the publisher of the *Catalog of Digital PBX Systems*, an exhaustive review of the most common telephone systems on the market.

### **Teleconsult Ltd.**

509 – 402 West Pender Street  
Vancouver, BC V6B 1T6  
Telephone: (604) 684-1144  
Telex: 04-507503  
Fax: (604) 687-7289  
KEY PERSONNEL:  
N.M. Lopianowski, Chairman  
A.C. Gardiner, President  
E.L. Janssens, General Manager

Teleconsult Limited, incorporated in 1972, offers consulting services for needs analysis, marketing, feasibility and advisory studies; system engineering and design; cost estimating, specifications, tender processing and evaluation; construction supervision, project management, and acceptance testing; and instructional services, maintenance philosophies and planning. The company specializes in satellite communications; long- and short-haul transmission systems (microwave, UHF, VHF, coaxial and fibre for voice, data and video); telephony (network design, switching, cable distribution); multiplex (FDM and TDM); broadcasting (AM, FM, television, CATV); supervisory

and control systems; cable carrier; telegraphy; vehicular mobile systems; and data transmission systems.

Projects include a market study for Indonesia Telecommunications, a TDMA country-wide rural telephone system for Thailand, full design and project management of a domestic satellite system for the SADCC countries of Africa, the design of a microwave system for Pakistan Telegraph and Telephone, and conceptual design of a railway communications system for Bangladesh.

### **Teledac Inc.**

661 Pine Street  
Saint-Lambert, PQ J4P 2P4  
Telephone: (514) 671-7762  
KEY PERSONNEL:  
Martin Chouinard, Marketing

Teledac manufactures image-display equipment for cable TV broadcasters. The firm's products are used to generate graphics for TV advertising and on-screen announcements by the cable TV companies and by other institutions using cable as an in-house communication medium. Teledac exports to the United States and to South America.

### **Teleglobe International Inc.**

680 Sherbrooke Street West  
Montreal, PQ H3A 2S4  
Telephone: (514) 289-8010  
Telex: 05-25780  
Fax: (514) 289-7410  
KEY PERSONNEL:  
Atherton G. Wallace, President, Chief Executive Officer

Teleglobe International Inc., through affiliation with Canada's overseas telecommunications carrier, Teleglobe Canada Inc., offers a range of specialized telecommunications-related products and services, including turnkey operations, application software packages and broadcast transmission services.

In 1988, the company constructed a 10 m satellite transmission station in Spain for TV transmissions to South and Central America; it also designed and installed a 9 m earth station in South Korea for TV transmission of the 1988 Summer Olympics. Teleglobe International Inc. also successfully concluded a number of consulting assignments in the United States and Canada for various clients, including a submarine cable consortium and telecommunications carrier.

In addition, the company is actively marketing a range of specialized application software packages and operational training courses, primarily aimed at large communications carriers using the Northern Telecom DMS-300 digital switch. Other specialized software packages that the company intends to market in the immediate future include a Teleglobe-developed Network Inventory System to monitor circuit implementation and facility usage.

For overseas projects, Teleglobe International Inc. provides a variety of project management services and has access to a number of experts to manage or operate major telecommunications systems on a contract basis.

## Telesat Canada

1601 Telesat Court  
Gloucester, ON K1B 5P4  
Telephone: (613) 748-0123  
Telex: 053-4184  
Fax: (613) 748-8712

### KEY PERSONNEL:

Eldon Thompson, *President*  
Harry Kowalik, *Vice President, Space Systems*  
Louk Jurgens, *International Business Development*

Telesat Canada has more than 19 years of experience in the design, implementation and operation of its own domestic satellite communications system.

Established in 1969, Telesat operates the world's first domestic geostationary satellite-communications system. It is a private company jointly owned by the Government of Canada and Canadian telecommunications common carriers. Since launching its

first Anik satellite in 1972, Telesat's satellite facilities have formed an integral part of the Canadian telecommunications infrastructure.

With nine successful launches, representing four generations of satellites, Telesat is one of the world's most experienced, respected and innovative satellite telecommunications companies.

Technical advisory and support services offered by Telesat include program management; feasibility studies; procurement support; development of station-keeping, flight dynamics and satellite-control software; and launch, mission and satellite control support and training.

International consulting experience includes:

- Ku band transfer orbit services for Hughes Aircraft in support of three Aussat launches;
- Ku band transfer orbit services for Ford Aerospace Corporation in the launch of two Japanese SUPERBIRD satellites;
- implementation support for the American Satellite Company;
- provision of flight dynamics software to Satellite Business Systems in the United States;
- provision of flight dynamics software to British Aerospace Public Limited Company for the launch of the Skynet 4 military communications satellites;
- satellite station-keeping strategy, transfer and geostationary management study for the European Space Agency;
- interference/co-ordination studies and satellite operations training for Germany's Deutsche Bundespost;
- feasibility studies and request for proposal preparation for space and earth segments for Radio Luxembourg;
- engineering/implementation support, negotiation and co-ordination support, and transportable telemetry, command and ranging station for the Société Européenne des Satellites;
- proposal evaluation, contract negotiations, engineering support, launch mission and campaign support for Australia's Aussat;

- strategic in-orbit satellite study and technical and management training for Indonesia's Perumtel;
- systems definition study for Korea's Ketri;
- product effectiveness training and satellite operations training for Brazil's Embratel; and
- space-station cost model study for the National Research Council of Canada.

## TelSys Consultants Group

215 Maple Grove Drive  
Oakville, ON L6J 4V4  
Telephone: (416) 844-2880  
Fax: (416) 845-9925

### KEY PERSONNEL:

John Abrahams, *President*

TelSys Consultants Group provides consulting services in all aspects of telecommunications for businesses, institutions and government departments. Recent activities have included the selection and implementation of PBX systems ranging from 200 to 4 000 lines, of voice mail and of telecommunications inventory management systems.

Partners in TelSys have completed significant assignments in Western Europe, Great Britain, the Middle East and Ecuador.

An associated business, Informatics Education, provides an extensive range of courses and training materials in telecommunications and personal computer applications.

## TIE/communications Canada Inc.

7550 Birchmount Road  
Markham, ON L3R 6C6  
Telephone: (416) 475-5577  
Telex: 06-966502  
Fax: (416) 475-5575

### KEY PERSONNEL:

J. Thomas Elliott, *President, Chief Executive Officer*  
Jim Holland, *Vice President, Sales and Marketing*

TIE/communications Canada Inc. is a major supplier of cost-effective electronic key systems for small- to medium-

sized requirements. Internationally, TIE/Canada markets, through distributors, the Mercury™ and M1000™ digital PABXs which offer 32 to 2 000 lines. Both switches can integrate both voice and data and have an extensive standard feature list. The telephone instruments range from a fully featured executive display phone to a two-wise single-line set. The systems are designed by the Canadian company in Markham, Ontario, and built in a modern 4 900 m<sup>2</sup> (53 000 sq. ft.) manufacturing facility in Sherbrooke, Quebec, employing 300 people.

The company adapts and manufactures key systems for the international market that are distributed through other TIE subsidiaries worldwide. It also manufactures products in Sherbrooke for sale by its U.S. parent company for that marketplace.

TIE/communications Canada is a wholly owned subsidiary of TIE/telecommunications Canada Ltd. The U.S.-based TIE/communications, Inc. owns a controlling interest in TIE/telecommunications Canada Ltd.

## TIL Systems Limited

20 Bay Street, 14th Floor  
Toronto, ON M5J 2N8  
Telephone: (416) 869-1157  
Fax: (416) 869-1768  
KEY PERSONNEL:  
Tony Lash, President  
Winston Kinch, Senior Vice President,  
Marketing and Sales  
Colin Boyd, Director of Marketing

TIL Systems provides full-service communications solutions to an international client base. These X.25-based solutions encompass terminal products, network devices, application software and user support services.

TIL's hardware products are the XPERT Terminal, capable of transmitting and receiving information from up to four separate sources at the same time; the XPERT PC Card, a PC board product that brings the X.25 function-

ality of the XPERT Terminal to IBM PSII and compatible PCs; the XPERT PDX (private data exchange) intelligent X.25 data communications processor; and the XPERT NIM (network interface machine), a data communications controller allowing up to 16 XPERT terminals or PC cards to share one X.25 access.

TIL's software products are Quick-Post, a corporate mailing system which provides auto delivery, information distribution and electronic mail and Network Control Monitor (NCM), a personal computer-based network management package.

## TIW Systems Ltd.

4935 Kent Street  
Niagara Falls, ON L2H 1J6  
Telephone: (416) 356-2413  
Telex: 061-5201  
Fax: (613) 392-4586  
KEY PERSONNEL:  
L.E. Becker, President  
Ed S. English, General Manager  
Rob Wellins, Director, Marketing

TIW Systems Ltd. is a multi-disciplinary systems engineering and project management company with primary emphasis on the design, manufacture and implementation of satellite communications equipment and facilities. In addition to its large steerable antenna systems for telecommunications, radio astronomy and other scientific activities, the company has developed a full line of engineering and antenna system components, such as microwave feeds, servo-control systems and tracking receivers. TIW also manufactures a line of AGC, fixed-gain and variable-gain RF amplifiers and a multipoint TDMA system designed for use in thin- to medium-density routes such as offmain trunk or private network systems.

Since its founding in 1976, TIW has gained extensive international business and project management experience. The company has antenna systems installed in the United States, Australia, Spain, Norway, Sweden, Finland, Indonesia, Iceland, Cyprus, Ghana, Lebanon, Panama, Italy, the United Kingdom, Brazil, the Netherlands and Oman.

## Trillium Telephone Systems Inc.

P.O. Box 13030  
603 March Road  
Kanata, ON K2K 1X3  
Telephone: (613) 592-2550  
Telex: 053-4952  
Fax: (613) 592-2555  
KEY PERSONNEL:  
Graham Neathway, Vice President,  
General Manager  
Don McLeod, Director, New Business  
Development

Trillium is a designer and manufacturer of fully featured low-cost small electronic telephone systems (up to 64 telephones and 20 exchange lines) for residential and small-business use. Products include telephones for use with PBX and Centrex telephone switches and a range of key systems: 1-exchange line, 9-phone; 2-line, 8-phone; 3-line, 8-phone; 6-line, 16-phone; 10-line, 32-phone; and 20-line, 64-phone systems.

Trillium was formed in 1983 as a wholly owned subsidiary of Mitel Corporation. The company acquired the assets and technology of its parent's SX-2 telephone switching system and proceeded to expand the product line. Trillium has exported products to Scandinavian countries, Hong Kong and the Caribbean.

## Triple Crown Electronics Inc.

4560 Fieldgate Drive  
Mississauga, ON L4W 3W6  
Telephone: (416) 629-1111  
Telex: 06960456  
Fax: (416) 629-1115  
KEY PERSONNEL:  
Charles Evans, President  
Brian Ward, Director, Marketing

Triple Crown Electronics is a manufacturer of cable television electronics, including head-end signal processors, TV modulators and satellite receivers for North American and

European television systems; indoor and outdoor broadband RF distribution amplifiers; CATV stand-by and non-stand-by power supplies; low-power rebroadcast transmitters; FM-band audio and data modulators, demodulators and processors; and hotel pay-per-view systems.

### **Trylon Manufacturing Company Limited**

*P.O. Box 186  
21 Howard Avenue  
Elmira, ON N3B 2Z6  
Telephone: (519) 669-5421  
Fax: (519) 669-8912*

**KEY PERSONNEL:**  
*William Fuller, President  
Rod W. Fuller, Vice President  
Bert Martin, Sales Manager*

Trylon Manufacturing is a manufacturer of all types of communications structures including AM, FM, cablevision, microwave, cellular and turnkey operation for site, civil works foundation/grounding and installation. The company is also the manufacturer of the Trylon ABC self-support tower for ham antenna, 2-way radio, TV rebroadcast lighting, instruments or signs; and the Trylon SAF-T-CABLE and SAF-T-RAIL ladder-climbers safety devices.

### **TSB International Inc.**

*5399 Eglinton Avenue West  
Suite 115  
Etobicoke, ON M9C 5K6  
Telephone: (416) 622-7010  
Fax: (416) 622-3540*

**KEY PERSONNEL:**  
*Dave Morris, Vice President, United States  
Kim Miles, Vice President, International*

TSB's PBX network management products and services include data acquisition systems that collect and process the call detail, alarm and traffic information produced by PBXs; processing applications that use the information to produce telecommunications cost allocation and management reports; and a network management

service that produces telecommunications cost allocation and network management reports directly for PBX end-users.

TSB's products are used by major telecommunications companies around the world. Customers include PBX manufacturers such as Northern Telecom and IBM Rolm, North American regional Bell operating companies such as Ameritech and US West, and overseas, telephone companies such as British Telecom, Telecom Australia and Televerket, the Swedish Telecommunications Authority. In Canada, the company's products and services are used by more than 200 of the country's largest corporations.

### **TSI Telecommunication Services International**

*Suite 1105, 4330 Kingsway  
Burnaby, BC V5H 4J6  
Telephone: (604) 439-5900  
Telex: 04-356681*

*Fax: (604) 433-8735  
KEY PERSONNEL:  
S.J. Hatchett, Managing Director  
A.J. Graber, Director of Marketing  
W.R. Donaldson, Business Development Manager*

TSI Telecommunication Services International is the international marketing arm of the BC Tel Group of Companies. Drawing on the full support of the provincial telecommunications carrier, British Columbia Telephone Co. (BC Tel), TSI offers services for the planning, design, procurement, construction, operation and management of public and private networks and fully integrated telecommunications systems. TSI will provide turnkey network design or will supply any service to complement client capabilities.

Since it was established in 1983, TSI has worked successfully in Southeast Asia, Latin America, and the People's Republic of China. TSI is also active in consortium and joint-venture arrangements with Canadian and foreign companies.

### **Ubitech Systems Ltd.**

*300 March Road, Suite 300  
Kanata, ON K2K 2E2  
Telephone: (613) 591-0500  
Telex: 053-3140*

*Fax: (613) 592-2405  
KEY PERSONNEL:  
Ramesh Misra, President  
Joe Brulé, Marketing Manager*

Ubitech Systems Inc. specializes in the research, development and sales of message switching products.

Ubitech manufactures the UBICOM 16 Telex modem, UBICOM 64+ Telex/data modem, and UBIX.25 packet modem, all of which use a common application package to link a computer system, be that a PC or mainframe, with the telex and telephone networks of the world. The company offers hardware and software for linking its products with popular mini and mainframe computers.

UBIFAX, a fax modem and UBIGatex, a 16-port message switch, are being developed as further enhancements to Ubitech's product range.

All Ubitech modems meet CCITT standards and are certified in the Pacific Rim, South America and Asia. The company has pending certification in several European countries.

### **Ultimateast Data Communications Ltd.**

*57 Old Pennywell Road  
P.O. Box 5933  
St. John's, NF A1C 5X4  
Telephone: (709) 576-4747  
Fax: (709) 576-2125*

**KEY PERSONNEL:**  
*Derrick Rowe, President  
Rod White, Vice President*

Ultimateast Data Communications Limited is a St. John's-based research and development company established in 1985 to explore technology development opportunities in the communications field, in particular, marine communications.

In 1986, the company was involved in the launch of the Sea Link HF voice communication station in Tors Cove. This station is used by international airlines and shipping companies as an inexpensive alternative to satellite transmission in making long-distance voice communication with land-based facilities.

In addition, the company provides data communications consulting services, including computer software development, computer system design and training courses.

### **Voice & Data Systems Inc.**

*1425 Dorchester West, 4th Floor  
Montreal, PQ H3G 1T7  
Telephone: (514) 393-9311  
Fax: (514) 393-1981  
KEY PERSONNEL:  
Stephen Dorsey, President  
Jim Earley, Marketing*

Voice & Data Systems supplies equipment for computerized voice messaging and telephone answering services. The company developed a voice frequency computer interface, which is combined with its proprietary telephone answering and messaging equipment, for applications such as voice messaging, central dictating and speech activated annotation of texts.

The company recently introduced a Voice Response system built upon the Intel 386 technology. The system features advanced development tools, a modular architecture and is IBM compatible.

### **Wescom Communications Research International**

*503 - 402 West Pender Street  
Vancouver, BC V6B 1T6  
Telephone: (604) 669-7175  
Telex: 04-508338  
Fax: (604) 669-7083  
KEY PERSONNEL:  
Peter J. Booth, President  
Steven Globeman, Senior Consultant*

Wescom Communications Research International specializes in economic, technical and policy research for the

telecommunications and computer industry. Specialized services are provided in macro- and micro-economic analysis, project feasibility studies, financial and tariff analysis, institutional appraisal, policy reviews and advisory services. Planning and projects evaluation activities are also conducted for government and industry clients.

The company operates globally and has experience in North America, Western Europe, Southeast Asia and the Pacific region. Clients include the Asia Development Bank, World Bank, the Canadian International Development Agency (CIDA), government PTTs, service providers, manufacturers and system operators. Sector studies have recently been made for the Philippines, Malaysia, Pakistan and Western Samoa. Related sample projects have focused on rural services, satellite facilities, terrestrial systems, fibre optics and value-added services. Industrial strategy and training assessments and services have also been provided in Malaysia and Singapore. The company is currently providing advisory services and consulting to the Government of Canada on research and development co-operative programs for information technology.

Wescom maintains associations with several leading engineering and consulting firms throughout Canada, the United States and the United Kingdom in support of its international activities.

### **Westinghouse Canada Information & Defense Technologies Division**

*P.O. Box 5009  
Burlington, ON L7R 4B3  
Telephone: (416) 528-8811  
Telex: 061-8409  
Fax: (416) 333-6034  
KEY PERSONNEL:  
David G. Whiteside, Vice President,  
General Manager, Information Display  
Terminals Division  
Ronald D. Lamb, Sales Manager,  
Data Communications Products  
Larry J. Kretz, Marketing Manager,  
Data Communications Products*

Westinghouse Canada is a supplier of data communications equipment used in airline passenger reservation

systems. This equipment is manufactured at the company's operations in Burlington, Ontario, with subsidiary operations in Dublin, Ireland. Information display terminals designed by Westinghouse Canada are widely used by travel agencies and by over 160 airlines around the world.

Communications controllers developed by Westinghouse Canada allow communications between different makes of equipment and represent a major technological advance that has gained rapid international acceptance. Westinghouse controllers are now used in communications centres around the world, enabling over 300 airlines in 170 countries to communicate with each other regarding passenger reservations and other flight information.

### **Westronic Inc.**

*4525 Manilla Road S.E.  
Calgary, AB T2G 4B6  
Telephone: (403) 243-3335  
Telex: 03-824894  
Fax: (403) 243-1815  
KEY PERSONNEL:  
Lyle Wharton, President and Chief  
Executive Officer  
Terry Graham, Vice President,  
Marketing and Sales  
Sandra Kanegawa, Manager,  
Marketing Services*

Westronic Inc. manufactures supervisory control and data acquisition (SCADA) products for electric utilities, oil and gas systems and telecommunication networks. The company has 20 years' experience in these and related fields.

Designed to meet the most stringent performance requirements, Westronic's WESDAC remote terminal units (RTU) have been successfully installed throughout the world in virtually every type of environment.

Westronic's customers range from large multi-national suppliers of SCADA, electrical and telecommunications network management systems to end-users engaged in the design or expansion of their own systems. Westronic's success is built on the quality of the WESDAC products, on intimate knowledge of each specific industry's requirements, and on the provision of the necessary technical services to meet those specialized needs.

Westronic's WESDAC series of remote terminal units provide the system designer with a sound building block for any monitoring, control and telemetry application. All alarm and status binary, analog, serial and multi-protocol input and output combinations can be handled with ease by Westronic's WESDAC RTUs.

WESDAC RTUs are in service throughout the United States and Canada as well as Australia, Malaysia, Jamaica, Saudi Arabia, Hong Kong, South America, Taiwan, Iceland and the United Kingdom.

### **William G. Hutchison & Company**

*2255 Sheppard Avenue East  
Suite W407  
North York, ON M2J 1Y3  
Telephone: (416) 498-5344  
Telex: 06-966710  
Fax: (416) 498-6647*

**KEY PERSONNEL:**  
*William Hutchison, President  
Neil Baird, Senior Consultant*

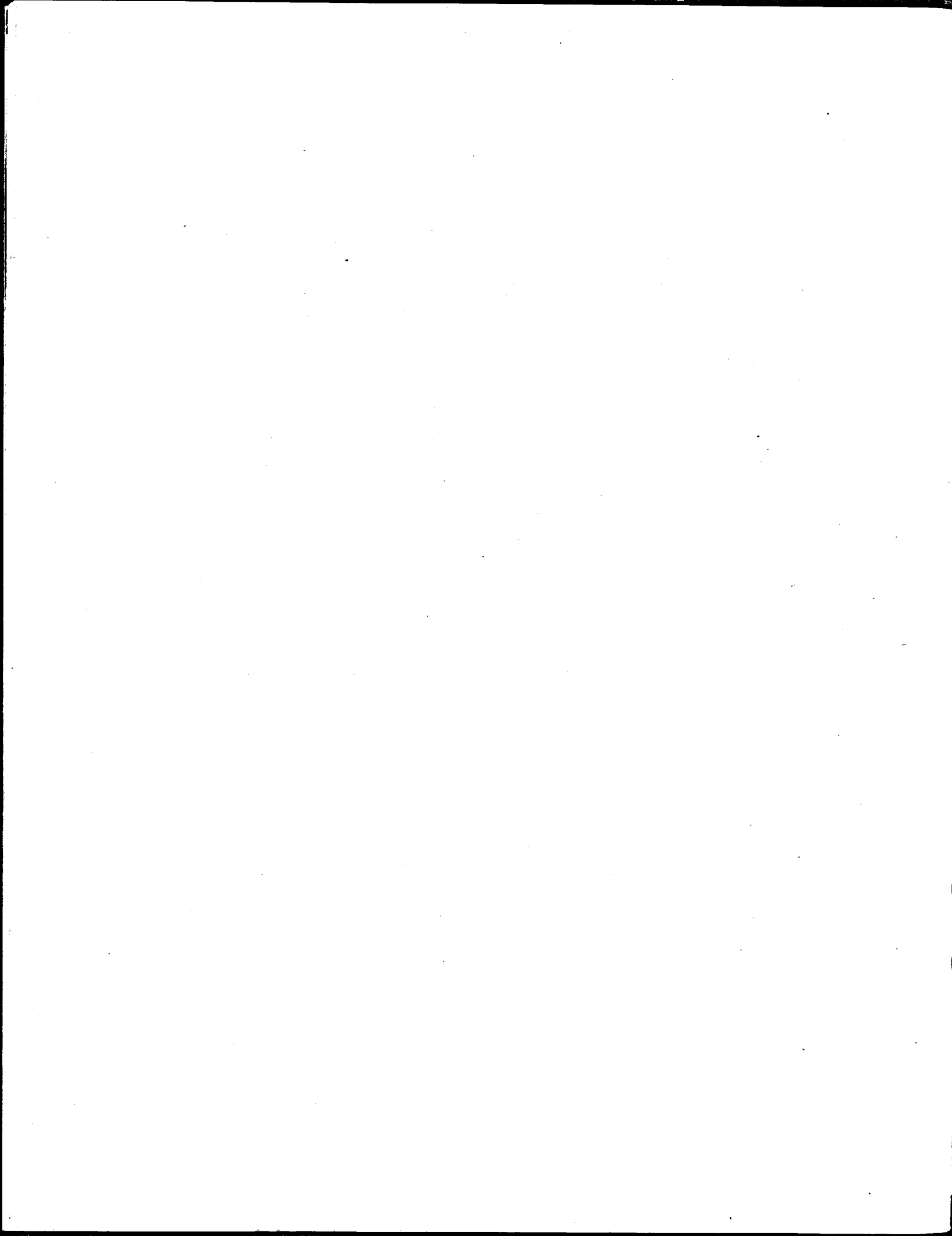
William G. Hutchison & Company is an independent management and engineering consulting firm that specializes in information technologies. Services include strategic planning for governments and industry including market assessments, business plans, industrial strategies, acquisitions and detailed operational plans. As well, the company does policy studies for governments, formulating plans or strategies related to communication and information technologies.

### **Willowglen Systems Ltd.**

*8 Manning Close S.E.  
Calgary, AB T2E 7N5  
Telephone: (403) 253-3051  
Telex: 03-825630  
Fax: (403) 253-2411*

**KEY PERSONNEL:**  
*Fergus Byrne, President  
J. Malcolm Milne, Vice President  
Dorothy Earle, International  
Marketing*

Willowglen Systems Ltd. designs, manufactures and installs Supervisory Control and Data Acquisition (SCADA) systems which are applied in the areas of communications, telephone plant (switching and multiplex); oil and gas, production and pipelines (transmission and distribution); electrical generation, transmission and distribution; water treatment, portable plants, sewage treatment plants, transmission and distribution; transportation, transit system monitoring; and building management.





# Product Reference List



## **Antennas**

### **Batteries**

GNB Batteries (Canada) Inc.,  
Export Sales Office  
Intersolar Group Canada  
LNS Systems Inc.  
Sinclair Radio Laboratories Ltd.

### **Broadcast Antennas**

4-12 Electronics Corp.  
Andrew Antenna Company Limited  
GPT (Canada)  
Larcam Communications Equipment Inc.  
Leitch Video International Inc.  
Les Produits de Télécommunications  
Telnox Ltée  
Lindsay Specialty Products Ltd.  
LNS Systems Inc.  
Norpak Corporation  
Sinclair Radio Laboratories Ltd.

### **Cable**

Andrew Antenna Company Limited  
Boston Insulated Wire and Cable  
Company Ltd.  
Canada Wire and Cable Limited  
Canstar Communications, Division of  
Canada Wire and Cable Limited  
GPT (Canada)  
Honeywell Limited  
Sperry Aerospace Division  
LNS Systems Inc.  
Northern Telecom Limited  
Phillips Cables Ltd.  
Pirelli Cables Inc.

### **Communication Antennas**

4-12 Electronics Corp.  
Andrew Antenna Company Limited  
Browning Communications Canada Inc.  
Canadian Larsen Electronics Ltd.  
Canadian Marconi Company  
DataComm Products Division  
COM DEV Ltd.  
Cometic Technology Inc.  
Delhi Antenna Products Division  
Communications Technology (Canada)  
Ltd.  
Daniels Electronics Ltd.  
Glenayre Electronics Ltd.  
GPT (Canada)  
LeBlanc International  
Les Produits de Télécommunications  
Telnox Ltée  
Lindsay Specialty Products Ltd.

LNS Systems Inc.  
Microtel Limited  
Motorola Canada Ltd.  
Communications Division  
Norpak Corporation  
Sinclair Radio Laboratories Ltd.  
Spar Aerospace Limited  
Satellite and Communications Group  
Spilsbury Communications Ltd.

### **Microwave Antennas**

Andrew Antenna Company Limited  
COM DEV Ltd.  
DBA Communication Systems Inc.  
Les Produits de Télécommunications  
Telnox Ltée  
Lindsay Specialty Products Ltd.  
LNS Systems Inc.  
Microtel Limited  
Mitec Electronics Ltd.  
Northern Telecom Limited  
TIW Systems Ltd.

### **Satellite Antennas**

4-12 Electronics Corp.  
Andrew Antenna Company Limited  
COM DEV Ltd.  
Digital Video Systems Corp.  
GFA Technologies Inc.  
Microtel Limited  
Parabolics Communications Inc.  
Spar Aerospace Limited  
Satellite and Communications Group  
Tee-Com Electronics Inc.  
TIW Systems Ltd.

## **Communications (Voice and Integrated Communications Systems)**

### **Data**

#### **(see also Data Communications)**

Amdahl Communications Inc.  
Atlas Telecom International Ltd.  
Audor Communications Inc.  
Browning Communications Canada Inc.  
Canadian Marconi Company  
DataComm Products Division  
CVDS Inc.  
Daniels Electronics Ltd.  
Dataradio Inc.  
DY-4 Systems Inc.  
EDA Instruments Inc.  
Electro Arts Ltd.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Gandalf Technologies Inc.  
Les Produits de Télécommunications  
Telnox Ltée

Microtel Limited  
Miller Communications  
Mitel Corporation  
Mobile Data International Inc.  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
Norsat International Inc.  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
SkyWave Electronics Ltd.  
Spar Aerospace Limited  
Satellite and Communications Group  
Spilsbury Communications Ltd.  
TIL Systems Limited  
Ubitech Systems Ltd.

### **Fibre-Optic Systems, Components**

Canada Wire and Cable Limited  
Canstar Communications, Division of  
Canada Wire and Cable Limited  
CVDS Inc.  
Foundation Instruments Inc.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
GPT (Canada)  
Harris Farinon Canada Inc.  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada

### **Key Systems**

CVDS Inc.  
Dees Communications Engineering Ltd.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
GPT (Canada)  
LNS Systems Inc.  
Mitel Corporation  
Northern Telecom Limited  
Positron Industries Inc.  
Spilsbury Communications Ltd.  
TIE/communications Canada Inc.

### **Message, Electronic Mail**

Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Gandalf Technologies Inc.  
Norsat International Inc.  
Northern Telecom Limited  
Oracle Communications Inc.  
Silcom Communications Inc.  
Spilsbury Communications Ltd.  
Szeto Telecom Inc.  
TIL Systems Limited  
Ubitech Systems Ltd.

### **Microwave Systems, Components**

COM DEV Ltd.  
CVDS Inc.  
Epsco Microwave Technologies Inc.  
Harris Farinon Canada Inc.  
Microtel Limited  
Mitec Electronics Ltd.  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
TIW Systems Ltd.

### **Modems**

CVDS Inc.  
Daniels Electronics Ltd.  
Dataradio Inc.  
Electro Arts Ltd.  
Foundation Instruments Inc.  
Gandalf Technologies Inc.  
Glenayre Electronics Ltd.  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
SED Systems Inc.  
Spilsbury Communications Ltd.  
Ubitech Systems Ltd.

### **Multiplex**

AEG Bayly Inc.  
Amdahl Communications Inc.  
Canadian Marconi Company  
DataComm Products Division  
COM DEV Ltd.  
CVDS Inc.  
EDA Instruments Inc.  
Foundation Instruments Inc.  
Gandalf Technologies Inc.  
Honeywell Limited  
Sperry Aerospace Division  
Memotec Data Inc.  
Microtel Limited  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
Northern Telecom Limited  
Rockwell Telecommunications of Canada

### **PABX**

Microtel Limited  
Mitel Corporation  
Northern Telecom Limited  
R.A.C.E. Technologies Inc.  
(A Member of the Spilsbury Group)  
Rockwell Telecommunications of Canada  
Spilsbury Communications Ltd.  
TIE/communications Canada Inc.

### **Power Line Carrier Systems**

CVDS Inc.  
Honeywell Limited  
Sperry Aerospace Division  
LNS Systems Inc.  
Microtel Limited

### **Subscriber Apparatus**

DBA Communication Systems Inc.  
Dees Communication Engineering Ltd.  
Foundation Instruments Inc.  
Mitel Corporation  
Newbridge Networks Corporation  
Northern Telecom Limited  
RF TEL Communications Ltd.  
Rockwell Telecommunications of Canada  
SkyWave Electronics Ltd.  
Tee-Com Electronics Inc.

### **Switching**

Amdahl Communications Inc.  
Audur Communications Inc.  
Canadian Marconi Company  
DataComm Products Division  
COM DEV Ltd.  
CVDS Inc.  
EDA Instruments Inc.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
GPT (Canada)  
Honeywell Limited  
Sperry Aerospace Division  
Image Video Ltd.  
LNS Systems Inc.  
Memotec Data Inc.  
Microtel Limited  
Mitec Electronics Ltd.  
Mitel Corporation  
Northern Telecom Limited  
Rockwell Telecommunications of Canada

### **Data Communications Systems Equipment**

#### **Data Transmission**

4-12 Electronics Corp.  
Amdahl Communications Inc.  
Atlas Telecom International Ltd.  
Audur Communications Inc.  
Canstar Communications  
Division of Canada Wire  
and Cable Limited  
Consultronics Ltd.  
CVDS Inc.  
Daniels Electronics Ltd.  
Dataradio Inc.  
Develcon Electronics Ltd.  
DY-4 Systems Inc.  
EDA Instruments Inc.

Electroline Television Equipment Inc.  
Foundation Instruments Inc.  
Gandalf Technologies Inc.  
Memotec Data Inc.  
Microtronix Systems Ltd.  
Miller Communications  
Mitel Corporation  
Mobile Data International Inc.  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
Nexus Engineering Corp.  
Northern Telecom Limited  
RFM Microplex Systems Ltd.  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
SkyWave Electronics Ltd.  
Spilsbury Communications Ltd.  
TIL Systems Limited  
Ubitech Systems Ltd.  
Westinghouse Canada, Information &  
Defense Technologies Division  
Westronic Inc.

#### **Integrated Services Digital Networks (ISDN)**

Amdahl Communications Inc.  
Develcon Electronics Ltd.  
EDA Instruments Inc.  
Honeywell Limited  
Sperry Aerospace Division  
Microtel Limited  
Mitel Corporation  
Motorola Information Systems  
Northern Telecom Limited  
TIL Systems Limited

#### **Local Area Networks**

Amdahl Communications Inc.  
Canstar Communications  
Division of Canada Wire  
and Cable Limited  
Develcon Electronics Ltd.  
EDA Instruments Inc.  
Gandalf Technologies Inc.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
Honeywell Limited  
Sperry Aerospace Division  
Lindsay Specialty Products Ltd.  
Memotec Data Inc.  
Microtel Limited  
Motorola Information Systems  
Northern Telecom Limited  
Ubitech Systems Ltd.  
Westinghouse Canada, Information &  
Defense Technologies Division

### **Modems**

Audor Communications Inc.  
Daniels Electronics Ltd.  
Dataradio Inc.  
Develcon Electronics Ltd.  
Foundation Instruments Inc.  
Gandalf Technologies Inc.  
Jatom Systems Inc.  
Memotec Data Inc.  
Mitel Corporation  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
NovAtel Communications Ltd.  
R.A.C.E. Technologies Inc.  
(A Member of the Spilsbury Group)  
RFM Microplex Systems Ltd.  
RMS Industrial Controls Inc.  
SED Systems Inc.  
Spilsbury Communications Ltd.  
Ubitech Systems Ltd.

### **Multiplex**

AEG Bayly Inc.  
Amdahl Communications Inc.  
Audor Communications Inc.  
Canadian Marconi Company  
DataComm Products Division  
COM DEV Ltd.  
Consultronics Ltd.  
Develcon Electronics Ltd.  
EDA Instruments Inc.  
Foundation Instruments Inc.  
Gandalf Technologies Inc.  
Honeywell Limited  
Sperry Aerospace Division  
Memotec Data Inc.  
Microtel Limited  
Motorola Information Systems  
MUX LAB Inc.  
Newbridge Networks Corporation  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
Westinghouse Canada, Information &  
Defense Technologies Division

### **Packet Switching**

Amdahl Communications Inc.  
CVDS Inc.  
Develcon Electronics Ltd.  
EDA Instruments Inc.  
Memotec Data Inc.  
Microtronix Systems Ltd.  
Motorola Information Systems  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
TIL Systems Limited  
Ubitech Systems Ltd.  
Westinghouse Canada, Information &  
Defense Technologies Division

### **Power Supplies**

Brown Applied Technology Inc.  
CVDS Inc.  
Daniels Electronics Ltd.  
Develcon Electronics Ltd.  
Exide Electronics Canada, Inc.  
Honeywell Limited  
Sperry Aerospace Division  
Intersolar Group Canada  
LNS Systems Inc.  
Nexus Engineering Corp.  
Northern Telecom Limited  
Pylon Electronic Development  
Company Ltd.  
Reliance Comm/Tec Canada  
Division of Reliance Electric Limited  
RMS Industrial Controls Inc.  
SAB NIFE Corporation

### **Stand-By Power Systems**

Brown Applied Technology Inc.  
CVDS Inc.  
Develcon Electronics Ltd.  
Exide Electronics Canada, Inc.  
Global Thermoelectric Power Systems  
Ltd.  
GNB Batteries (Canada) Inc.  
Export Sales Office  
Mechron Energy Ltd.  
Northern Telecom Limited  
Pylon Electronic Development  
Company Ltd.  
Reliance Comm/Tec Canada  
Division of Reliance Electric Limited  
RMS Industrial Controls Inc.  
SAB NIFE Corporation

### **Switching**

Amdahl Communications Inc.  
Audor Communications Inc.  
Canadian Marconi Company  
DataComm Products Division  
COM DEV Ltd.  
CVDS Inc.  
Develcon Electronics Ltd.  
EDA Instruments Inc.  
Electroline Television Equipment Inc.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Gandalf Technologies Inc.  
GPT (Canada)  
Honeywell Limited  
Sperry Aerospace Division  
Image Video Ltd.  
Memotec Data Inc.  
Microtel Limited

Mitel Corporation  
Motorola Information Systems  
Newbridge Networks Corporation  
Northern Telecom Limited  
RFM Microplex Systems Ltd.  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
TIL Systems Limited

### **Radio Communications**

#### **Aeronautical Radio-Communications Equipment**

Audor Communications Inc.  
LNS Systems Inc.  
Miller Communications  
Nardeux America Inc.  
Nautel  
(Nautical Electronic Labs Ltd.)  
RMS Industrial Controls Inc.  
Rockwell International of Canada Ltd.  
Collins Canada Division  
SED Systems Inc.  
Sinclair Radio Laboratories Ltd.  
SkyWave Electronics Ltd.

#### **Cellular Radio-Communications Equipment**

4-12 Electronics Corp.  
Canadian Larsen Electronics Ltd.  
Motorola Canada Ltd  
Communications Division  
Northern Telecom Limited  
NovAtel Communications Ltd.  
RMS Industrial Controls Inc.  
Sinclair Radio Laboratories Ltd.

#### **Fixed Radio-Communications Equipment**

Browning Communications Canada Inc.  
Canadian Larsen Electronics Ltd.  
Daniels Electronics Ltd.  
Dataradio Inc.  
Glenayre Electronics Ltd.  
Harris Farinon Canada Inc.  
LNS Systems Inc.  
Miller Communications  
Motorola Canada Ltd.  
Communications Division  
Nardeux America Inc.  
R.A.C.E. Technologies Inc.  
(A Member of the Spilsbury Group)  
RMS Industrial Controls Inc.  
Rockwell International of Canada Ltd.  
Collins Canada Division  
SED Systems Inc.  
Sinclair Radio Laboratories Ltd.  
Spilsbury Communications Ltd.  
SR Telecom Inc.

**Marine Radio-Communications  
Equipment**

Audor Communications Inc.  
Browning Communications Canada Inc.  
CVDS Inc.  
Daniels Electronics Ltd.  
Lindsay Specialty Products Ltd.  
Miller Communications  
Motorola Canada Ltd.  
Communications Division  
Nardeux America Inc.  
Nautel  
(Nautical Electronic Labs Ltd.)  
RMS Industrial Controls Inc.  
Rockwell International of Canada Ltd.  
Collins Canada Division  
SED Systems Inc.  
Sinclair Radio Laboratories Ltd.  
SkyWave Electronics Ltd.

**Microwave Communications  
Equipment (see also  
Communications)**

COM DEV Ltd.  
Epsco Microwave Technologies Inc.  
Harris Farinon Canada Inc.  
Lindsay Specialty Products Ltd.  
Microtel Limited  
Motorola Canada Ltd.  
Communications Division  
Nexus Engineering Corp.  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Rockwell Telecommunications of Canada  
SED Systems Inc.  
TIW Systems Ltd.

**Mobile Radio-Communications  
Equipment**

Browning Communications Canada Inc.  
Canadian Larsen Electronics Ltd.  
Daniels Electronics Ltd.  
Dataradio Inc.  
Glenayre Electronics Ltd.  
LeBlanc International  
Lindsay Specialty Products Ltd.  
LNS Systems Inc.  
Miller Communications  
Mobile Data International Inc.  
Motorola Canada Ltd.  
Communications Division  
Nardeux America Inc.  
RF TEL Communications Ltd.  
RMS Industrial Controls Inc.  
Rockwell International of Canada Ltd.  
Collins Canada Division  
Rockwell Telecommunications of Canada

SED Systems Inc.  
Sinclair Radio Laboratories Ltd.  
SkyWave Electronics Ltd.  
Spilsbury Communications Ltd.

**Packet Radio-Communications  
Equipment**

Daniels Electronics Ltd.  
Dataradio Inc.  
Motorola Canada Ltd.  
Communications Division  
Northern Telecom Limited  
RMS Industrial Controls Inc.  
Spilsbury Communications Ltd.

**Paging Communications  
Equipment**

Glenayre Electronics Ltd.  
Motorola Canada Ltd.  
Communications Division  
Silcom Communications Inc.  
Sinclair Radio Laboratories Ltd.  
TIE/communications Canada Inc.

**Portable Radio-Communications  
Equipment**

Canadian Larsen Electronics Ltd.  
Glenayre Electronics Ltd.  
Motorola Canada Ltd.  
Communications Division  
Nardeux America Inc.  
RMS Industrial Controls Inc.  
Rockwell International of Canada Ltd.  
Collins Canada Division  
Sinclair Radio Laboratories Ltd.  
SkyWave Electronics Ltd.  
Spilsbury Communications Ltd.

**Satellite Communications**

4-12 Electronics Corp.  
B.E.L.-Tronics Limited  
COM DEV Ltd.  
Epsco Microwave Technologies Inc.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
GFA Technologies Inc.  
GPT (Canada)  
Microtel Limited  
Miller Communications  
Mitec Electronics Ltd.  
Nexus Engineering Corp.  
Parabolics Communications Inc.  
Pylon Electronic Development  
Company Ltd.  
RMS Industrial Controls Inc.  
SED Systems Inc.  
Spar Aerospace Limited  
Satellite and Communications Group  
Tee-Com Electronics Inc.  
TIW Systems Ltd.

**Spectrum Management**

LNS Systems Inc.  
Miller Communications  
SED Systems Inc.

**Telephone Equipment  
(see Communications)**

Browning Communications Canada Inc.  
Calgary Controls Ltd.  
Communications Technology (Canada)  
Ltd.  
CVDS Inc.  
DBA Communication Systems Inc.  
Dees Communications Engineering Ltd.  
GPT (Canada)  
Microtel Limited  
Microtronix Systems Ltd.  
Mitel Corporation  
Northern Telecom Limited  
Quality Communication Products  
(1979) Ltd.  
Reliance Comm/Tec Canada  
Division of Reliance Electric Limited  
RF TEL Communications Ltd.  
RMS Industrial Controls Inc.  
SkyWave Electronics Ltd.  
Tee-Com Electronics Inc.  
Trillium Telephone Systems Inc.

**Terminal Devices**

**Data (Computer)**

4C Technologies Ltd./Ltée  
Amdahl Communications Inc.  
Andover Telecommunications Inc.  
DY-4 Systems Inc.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Gandalf Technologies Inc.  
Mobile Data International Inc.  
Motorola Information Systems  
RMS Industrial Controls Inc.  
TIL Systems Limited  
Ubitech Systems Ltd.  
Westinghouse Canada, Information &  
Defense Technologies Division

**Facsimile**

Atlas Telecom International Ltd.  
CVDS Inc.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Northern Telecom Limited  
Spilsbury Communications Ltd.  
TIE/communications Canada Inc.  
Ubitech Systems Ltd.

**Telephone**

Amdahl Communications Inc.  
Browning Communications Canada Inc.  
CVDS Inc.  
DBA Communication Systems Inc.  
Dictograph Corporation  
GPT (Canada)  
LNS Systems Inc.  
Northern Telecom Limited  
Trillium Telephone Systems Inc.

**Telex**

Andover Telecommunications Inc.  
Extel Communications (Canada) Corp.  
Division of NEI Canada Limited  
Ubitech Systems Ltd.

**Towers and Accessories**

4-12 Electronics Corp.  
Abroyd Communications Limited  
Audor Communications Inc.  
Browning Communications Canada Inc.  
Cometic Technology Inc.  
Delhi Antenna Products Division  
LeBlanc International  
Lindsay Specialty Products Ltd.  
LNS Systems Inc.  
Mitec Electronics Ltd.  
Sinclair Radio Laboratories Ltd.

**Videotex Equipment and Software**

Digital Video Systems Corp.  
EDA Instruments Inc.  
Nexus Engineering Corp.  
Norpak Corporation  
Teledac Inc.

**Broadcast/CATV Equipment****Broadcast Transmitters**

4-12 Electronics Corp.  
AEG Bayly Inc.  
Harris Farinon Canada Inc.  
Larcan Communications Equipment Inc.  
Nautel  
(Nautical Electronic Labs Ltd.)  
Nexus Engineering Corp.  
Triple Crown Electronics Inc.

**CATV Distribution Equipment and Systems**

4-12 Electronics Corp.  
Central Dynamics, Division of  
International Datacasting Corp.  
Communications Gigahertz Inc.  
Digital Video Systems Corp.  
Electroline Television Equipment Inc.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
Lindsay Specialty Products Ltd.  
Nexus Engineering Corp.  
SED Systems Inc.  
Tee-Com Electronics Inc.  
Triple Crown Electronics Inc.

**CATV Head-Ends**

4-12 Electronics Corp.  
Digital Video Systems Corp.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
Lindsay Specialty Products Ltd.  
Nexus Engineering Corp.  
SED Systems Inc.  
Tee-Com Electronics Inc.  
Triple Crown Electronics Inc.

**Studio Control Equipment**


Central Dynamics, Division of  
International Datacasting Corp.  
Image Video Ltd.  
Les Produits de Télécommunications  
Telnox Ltée  
McCurdy Radio Industries Limited  
Ross Video Ltd.  
Solutec Ltd. (H.A.)

**Studio-Transmitter Link**

Harris Farinon Canada Inc.

**Video/Audio Switching Equipment**

Central Dynamics, Division of  
International Datacasting Corp.  
CVDS Inc.  
General Instrument of Canada Ltd.  
(Jerrold Division)  
Image Video Ltd.  
Leitch Video International Inc.  
McCurdy Radio Industries Limited  
Nexus Engineering Corp.  
Ross Video Ltd.  
Solutec Ltd. (H.A.)  
Szeto Telecom Inc.

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