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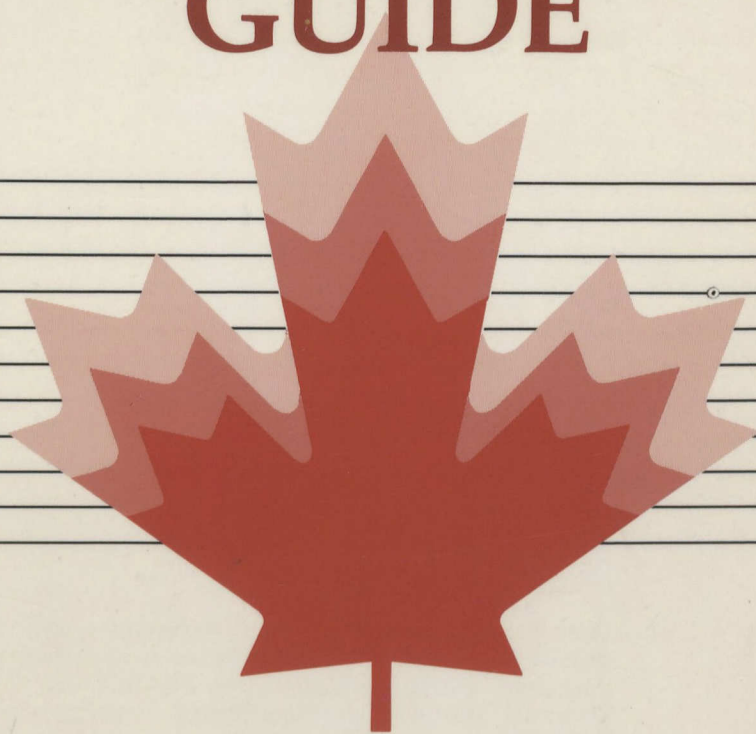
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1987/88

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CANADA'S AEROSPACE INDUSTRY:

A CAPABILITY GUIDE



1987•1988



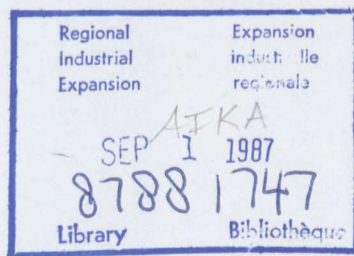
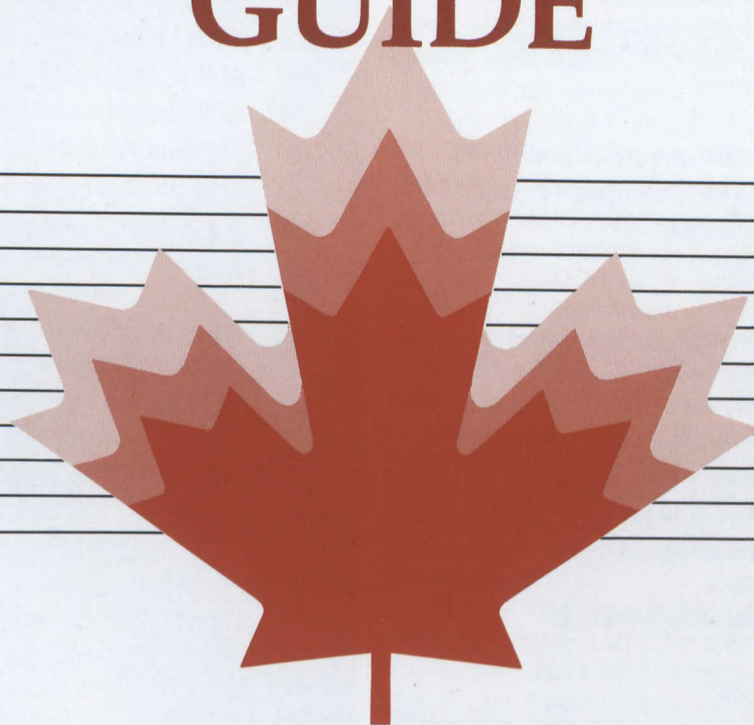
"Canada's Aerospace Industry: A Capability Guide" is published by *Aerospace Canada International* magazine, a Maclean Hunter publication. The 1987/88 Guide was designed, produced and distributed in cooperation with the Aerospace Industries Association of Canada, the federal Department of Regional Industrial Expansion, and the Department of External Affairs.

Publisher: M.J. O'Brien
Aerospace Canada International
Maclean Hunter Building
777 Bay Street
Toronto, Ontario
Canada M5W 1A7

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A CAPABILITY GUIDE



1987•1988

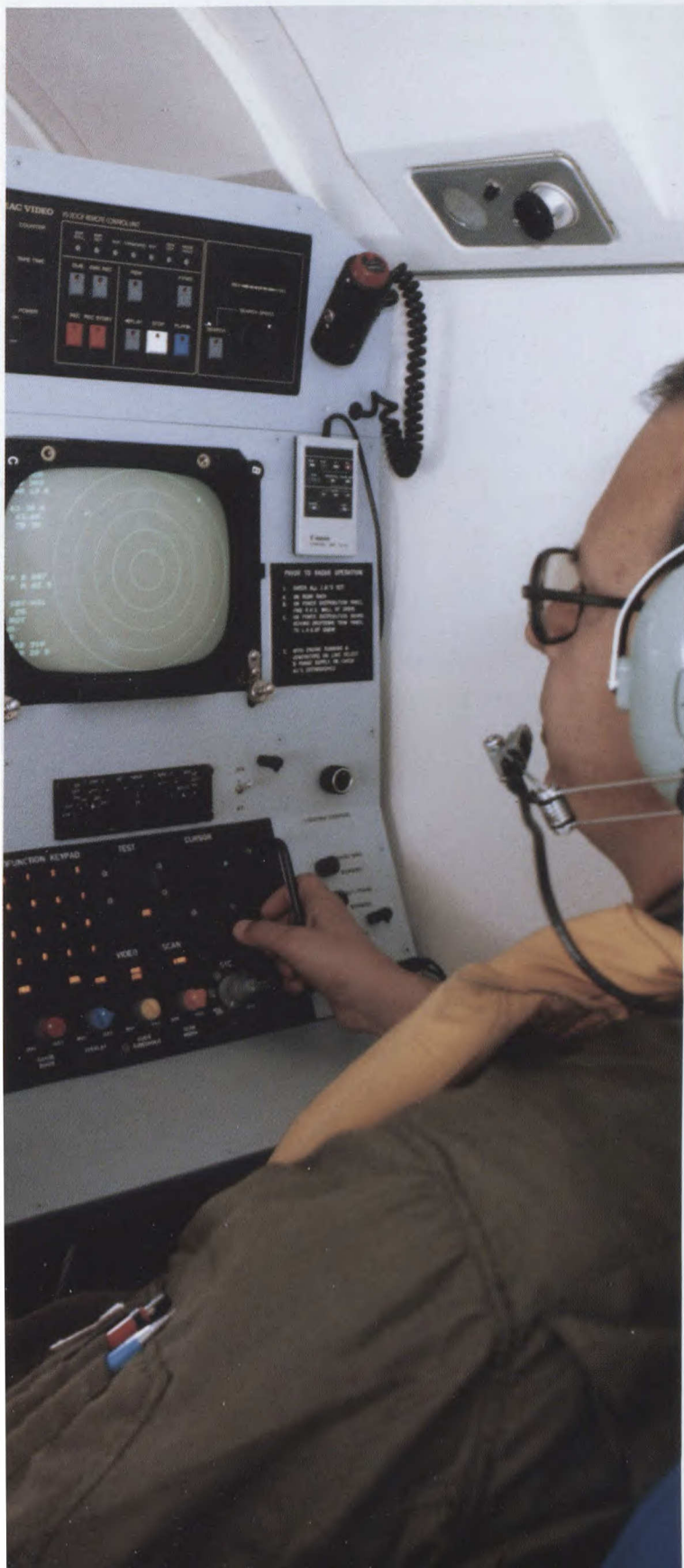
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| 96 | Field Aviation Company Limited* | 182 | Vac Developments Limited* |
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** denotes a member of the Aerospace Industries Association of Canada*



Specialists for the World



The continued success of the Canadian aerospace and defence industries is being shaped by the political and economic initiatives now being pursued both in Canada and internationally. In the past five years, industry sales have doubled to an estimated \$5 billion in 1987. This impressive rate of growth is expected to continue, spurred on by a new cooperative approach to government-industry relations, the privatization of the major Canadian airframe manufacturers, commencement of freer trade negotiations with the United States, and a comprehensive equipment modernization effort by the Canadian Armed Forces. At the same time, the Canadian aerospace industry is establishing a stronger presence on the international stage through participation in the Space Station program, world product mandates for defence production, and new cooperative efforts with other major aerospace producers in such areas as commercial aviation.

Specialized Canadian aerospace products can be found the world over. In fact, more than 80 percent of this country's aerospace production is exported. The Canadair CL-215 amphibian aircraft is called "le Canadair" in France, an everyday term meaning "water-bomber." More than 70 percent of all turbo-prop aircraft are powered by engines produced by Pratt & Whitney Canada in Montreal. De Havilland Canada has the distinction of producing the only aircraft, the Dash 7, approved for operation from the planned Stolport in the east end of London. Many commercial and military pilots have been trained on flight simulators built by CAE Electronics.

These highly-visible products represent only one aspect of Canadian aerospace activity. Subsystem and component manufacturing — in such areas as inertial navigation systems, aircraft landing gear, infrared surveillance systems, hybrid microcircuits, and precision machining — is the hidden strength of Canadian specialization.

The role of government is critical to world aerospace. In Canada, national requirements cannot directly support a diversified aerospace industry. Canadian firms are providing radar and associated systems for Canada's Department of Transport's Radar Modernization Program (RAMP) and the Department of National Defence's North Warning System (NWS).

Litton Systems Canada Limited airborne search radar installed aboard GAF Searchmaster (Nomad) aircraft in service with the Australian Customs Department. Photo: Litton.

Other defence requirements have nurtured Canadian specialization in Anti-Submarine Warfare technologies. The recently-awarded Low Level Air Defence program involves several Canadian firms in a teaming arrangement with Switzerland's Oerlikon Buhrle, the prime contractor.

Although industry specifically addresses national requirements, it is the international market that provides the impetus behind developments in Canadian high technology. The government does fulfill an important role in helping create a positive environment, exemplified by a recent Memorandum of Understanding between the federal government and the 185-member Aerospace Industries Association of Canada. Essentially, this agreement provides a framework for co-operation and further industry development.

The government has relinquished an active role in aerospace with the sale of Canadair Limited to a large Canadian transportation technology firm, Bombardier Inc., in the fall of 1986. This followed the sale of another Crown corporation, de Havilland Canada, to Boeing of the U.S. earlier in the year. Both

companies have benefitted from the strong direction provided by private ownership. Recent Canadair activities include the go-ahead of a turboprop version of the CL-215 waterbomber; providing engineering support for the Canadian Forces CF-18 fighter; and completed studies of a possible stretch of the Challenger business jet. De Havilland has rolled out its new Dash 8 Series 300 commuter aircraft, a stretched 50/56-passenger variant of the 37/40-passenger Dash 8 Series 100. In addition, the company has delivered its first Dash 8M (military) to the Canadian Forces as part of a six-aircraft order for utility/transport and navigation training applications.

Almost 70 percent of all Canadian aerospace products are produced for commercial applications, and the customer network is worldwide. In the defence area, the predominant market for Canadian production continues to be found in the United States. Under the U.S.-Canada Defence Production Sharing Agreement, there is a free trade environment which permits Canadian firms to compete for U.S. contracts on an equal footing with American companies. However, a more for-

de Havilland Canada's 50/56 passenger stretched Dash 8 Series 300 joins the popular 50 passenger Dash 7 and the 37/40 passenger Dash 8 Series 100 now in use by airlines around the world. Photo: de Havilland Canada.





Spearheading the Department of National Defence modernization programme; the CF-18. Photographed by WO Vic Johnson, this formation flies a routine training mission from 409 Tactical Fighter Squadron, CFB Baden-Soellingen, West Germany.

malized arrangement, which could result from the current freer trade negotiations, would remove non-tariff barriers and other irritants to this crossborder trade. Benefits would result for both the defence and civil sectors.

New capabilities have been established as a result of a comprehensive modernization program for the Canadian Armed Forces. Paramax Electronics is providing the systems integration management for the Canadian Patrol Frigate program, the first time in many years that this responsibility has been assigned to the private sector. A similar role is being filled by Litton Systems Canada for the Tribal-Class Update and Modernization Program (TRUMP) to convert four Canadian destroyers to the area air defence role. Spar Aerospace, as one of the Canadian members of the Oerlikon Low Level Air Defence team, has further enhanced its capability in electro-optics through production of the ADATS Forward Looking Infrared (FLIR) system. New opportunities will result from teaming arrangements with EH Industries and Aero-spatale to compete for the New Shipborne

Aircraft (NSA) program to replace the ASW Sea King helicopter in service with the Canadian Forces.

Canadian industry is committed to increased international cooperation in aerospace. Canada will provide the Mobile Servicing Centre supporting the construction and operation of the U.S. Manned Space Station. Companies such as Garrett Canada are actively involved in design and development work for NATO. In the area of commercial transportation, de Havilland has joined forces with Shorts Brothers of Northern Ireland to pursue the possible joint production of a new commuter aircraft for the 1990s.

The 1987-88 edition of AEROSPACE CANADA INTERNATIONAL's Capability Guide details the activities of this forward-looking industry. The listed companies are representative of the specialization which characterizes Canada's position as a world leader in aerospace technologies.

SOURCES OF SUPPLY

Aerial Delivery Systems

Conair Aviation Ltd.*
Okanagan Helicopter Limited

Aerial Surveying Equipment

Field Aviation Company Ltd.*
JGW Systems Ltd.*
MacDonald Dettwiler*
MPB Technologies Inc.*
Optech Inc.

Air Traffic Control Systems, Equipment

ADGA Group*
Aerotech International Inc.*
Andrew Antenna Company
Limited*
Atlantis Aerospace Corporation*
Bendix Avelex*
CAE Electronics Ltd.*
Garrett Canada*
Hughes Aircraft Company
JGW Systems Ltd.*
Leigh Instruments Limited*
Leigh Navigations Systems Ltd.*
Litton Systems Canada Limited*
Lockheed Canada Inc.*
Miller Communications Systems
Ltd.
Paramax*
Raytheon Canada*
SED Systems Inc.*
Thomson CSF Systems Canada
Limited*
Unisys Canada Inc.

Aircraft Completions and Interiors

Abercorn Aero
Fell-Fab International Inc.*
Field Aviation Company Ltd.*
Fleet Industries*
Innotech Aviations Limited*
MBB Helicopter Canada Ltd.*
Okanagan Helicopter Limited

Aircraft Environmental Controls

Casey Copter Accessories Ltd.
Garrett Canada*
Thomson-CSF Systems Canada
Inc.*
Westland Technologies Canada
Ltd.

Aircraft Instruments

Aircraft Appliances & Equipment
Limited*
Bendix Avelex Inc.*
Canadian Marconi Company*

Field Aviation Company Ltd.*

Honeywell Limited*
Howard Kneen Associates
Limited

JGW Systems Ltd.*

Kaycom Inc.*

MHD International Aviation
Parts Inc.*

Okanagan Helicopter Limited
Robin Aerospace Products Ltd.*
Simmonds Precision Canada
Limited*

Thomson-CSF Systems Canada
Inc.*

Unisys Canada Inc.

Vac Developments Limited*

Aircraft Manufacture

Bell Helicopter Canada Inc.
Canadair Limited*
Decade Industries Ltd.*
The de Havilland Aircraft
Company of Canada Limited*
Fleet Industries*
Lockheed Canada Inc.*
MBB Helicopter Canada Ltd.*
Northrop Corporation*
Sikorsky Aircraft*

Aircraft Sales

Aerotech International
Incorporated*
Bell Helicopter Canada Inc.
Canadair Limited*
Conair Aviation Ltd.*
The de Havilland Aircraft
Company of Canada Limited*
Field Aviation Company Ltd.*
Innotech Aviation Limited*
Lockheed Canada Inc.*
MBB Helicopter Canada Ltd.*
Northrop Corporation*
Okanagan Helicopter Limited

Aircraft Supplies and Accessories

Abercorn Aero*
Aerotech International
Incorporated*
Aircraft Appliances & Equipment
Limited*
Bancroft Industries Limited*
Bell Helicopter Canada Inc.
Bendix Avelex Inc.*
Bristol Aerospace Limited
C.F.H. Industries Ltd.*
Conair Aviation Ltd.*
The de Havilland Aircraft
Company of Canada Limited*
Emhiser Research Limited

Fell-Fab International Inc.*

Field Aviation Company Ltd.*

Fleet Industries*

Geometrix Limited

Howard Kneen Associates
Limited

Innotech Aviation Limited*

International Fasteners Limited

Invar Manufacturing Ltd.*

Irvin Industries Canada Limited*

Kaycom Inc.*

Leavens Aviation Inc.*

Lucas Industries Canada Limited*

MHD International Aviation Parts
Inc.*

Northrop Corporation*

Okanagan Helicopter Limited

Patlon Aircraft & Industries

Limited*

Robin Aerospace Products Ltd.*

Simmonds Precision Canada

Limited*

Spar Aerospace Limited*

Standard Aero*

UDT Industries Inc.*

Unisys Canada Inc.

Vac Developments Limited*

Valcom Limited*

Airframe Components

Abercorn Aero*
Bell Aerospace Canada Textron
Bell Helicopter Canada Inc.
Bendix Avelex Inc.*
Boeing of Canada Ltd.
(Arnprior Division)*
Bristol Aerospace Limited
Canada Forgings Inc.*
Canadair Limited*
Canadian Aircraft Products Ltd.*
Chicopee Manufacturing Ltd.*
Conair Aviation Ltd.*
Decade Industries Ltd.
The de Havilland Aircraft
Company of Canada Limited*
Devtek Corporation*
Diemaster Tool Inc.*
Ebco Industries Limited*
English Plastics Inc.
Enheat Incorporated, Aircraft
Division*
Field Aviation Company Ltd.*
Fleet Industries*
Genaire Limited*
Geometrix Limited
Howard Kneen Associates
Limited
IMP Group

Innotech Aviation Limited*
 Invar Manufacturing Ltd.*
 Kaycom Inc.*
 Leavens Aviation Inc.*
 Leigh Instruments Limited*
 Lockheed Canada Inc.*
 McDonnell Douglas Canada Ltd.*
 Menasco Aerospace Ltd.*
 MHD International Aviation
 Parts Inc.*
 Northrop Corporation*
 Okanagan Helicopter Limited
 Plastal Inc.
 Specialized Welding &
 Fabrications Ltd.*
 Tube-Fab Limited*
 UDT Industries Inc.*
 Westland Technologies Canada
 Ltd.*
 Williams Machines, Division of
 Havlik Technologies Inc.
**Airframe Repair and Overhaul,
 Modifications and Engineering**
 Bell Helicopter Canada Inc.
 Boeing of Canada Ltd.
 (Arnprior Division)*
 Bristol Aerospace Limited
 Canadair Limited*
 Decade Industries Ltd.*
 The de Havilland Aircraft
 Company of Canada Limited*
 Enheat Incorporated, Aircraft
 Division*
 Field Aviation Company Ltd.*
 Fleet Industries*
 Genaire Limited*
 Geometrix Limited
 Heroux Inc.*
 IMP Group Ltd.
 Innotech Aviation Limited*
 Leavens Aviation Inc.*
 Lockheed Canada Inc.*
 Menasco Aerospace Ltd.*
 Okanagan Helicopter Limited
 Pacific Western Airlines Ltd.
 Vis-U-Ray Testing*
Anodozing
 Cametoid Limited*
 Material Processing, Division of
 Havlik Technologies Inc.
**Avionics Manufacture, Repair
 and Overhaul**
 Aircraft Appliances & Equipment
 Limited*
 Atlantis Aerospace Corporation*
 Bendix Avelex Inc.*
 Canadian Marconi Company*
 Computing Devices Company*

Garrett Canada*
 Honeywell Limited*
 Howard Kneen Associates
 Limited
 Hughes Aircraft Company*
 Innotech Aviation Limited*
 JGW Systems Ltd.*
 Leigh Instruments Limited*
 Litton Systems Canada Limited*
 M.E.L. Defence Systems Ltd.*
 Northrop Corporation*
 Okanagan Helicopter Limited
 Pacific Western Airlines Ltd.
 Robin Aerospace Products Ltd.*
 Simmonds Precision Canada
 Limited*
 Spar Aerospace Limited*
 Thomson-CSF Systems Canada
 Limited*
 Valcom Limited*
 Unisys Canada Inc.

Cadmium Plating
 Material Processing, Division of
 Havlik Technologies Inc.

**Castings, Forgings, Precision
 Machined Components**
 Abercorn Aero*
 Aerotech International
 Incorporated*
 Boeing of Canada Ltd.
 (Arnprior Division)*
 Bristol Aerospace Limited*
 Cametoid Limited*
 Canada Forgings*
 Cercast
 Chicopee Manufacturing Ltd.*
 Decade Industries Ltd.*
 Devtek Corporation*
 Diemaster Tool Inc.*
 Donlee Precision*
 Dowty Canada Limited*
 Ebco Industries Limited*
 Fleet Industries*
 General Aluminium Forgings,
 Inc.
 Geometrix Limited
 Haley Industries Limited*
 Heroux Inc.*
 Invar Manufacturing Ltd.*
 Leavens Aviation Inc.*
 Lockheed Inc.*
 McDonco Machine Ltd.*
 Price & Knott Manufacturing
 Co. Ltd.*
 Reil Industrial Enterprises
 Limited*
 Robco Metal Prod. Div.

Rolls-Royce (Canada) Ltd.*
 Roto Precision*
 UDT Industries Inc.*
 Vac Developments Limited*
 Williams Machines, Division of
 Havlik Technologies Inc.

Communications Equipment
 ADGA Group*
 Andrew Antenna Company
 Limited*
 Atlantis Aerospace Corporation*
 Bendix Avelex Inc.*
 Canadian Astronautics Limited*
 Canadian Marconi Company*
 Com Dev Ltd.*
 Devtek Corporation*
 Emhiser Research Limited
 Field Aviation Company Ltd.*
 Garrett Canada*
 Honeywell Limited*
 Howard Kneen Associates
 Limited
 Hughes Aircraft Company*
 Kaycom Inc.*
 Leigh Instruments Limited*
 Leigh Navigation Systems Ltd.*
 Manutronics Division of Microtel
 Limited
 Miller Communications Systems
 Ltd.*
 MPB Technologies Inc.*
 SED Systems Inc.*
 Spar Aerospace Limited*
 Standard Aero*
 Telesat Canada*
 Thomson-CSF Systems Canada
 Limited*
 Unisys Canada Inc.
 Vac Developments Limited*
 Valcom Limited*

Communications Processors
 ADGA Group*
 Com Dev Ltd.*
 Honeywell Limited*
 Leigh Instruments Limited*
 Miller Communications Systems
 Ltd.*
 MPB Technologies Inc.*
 SED Systems Inc.*
 Sperry Information Systems
 Group*
 Thomson-CSF Systems Canada
 Limited*

Composite Components
 Abercorn Aero*

Bell Helicopter Canada Inc.
 Boeing of Canada Ltd.
 (Winnipeg Division)*
 Bristol Aerospace Limited
 Canadair Limited*
 Canadian Aircraft Products Ltd.*
 The de Havilland Aircraft
 Company of Canada Limited*
 English Plastics
 Enheat Incorporated, Aircraft
 Division*
 Fleet Industries*
 International Fasteners Limited
 ITT Cannon Canada*
 Lockheed Canada Inc.*
 Plastal Inc.
 Thomson-CSF Systems Canada
 Limitd*
 Westland Technologies Canada
 Ltd.

**Computer Systems, Computer
 Graphics Display Products**
 ADGA Group*
 Advanced Electronics Limited
 Canadian Astronautics Limited*
 Canadian Marconi Company*
 Computing Devices Company*
 Geometrix Limited
 Honeywell Limited*
 ICAM Technologies Corporation
 JGW Systems Ltd.*
 Lockheed Canada Inc.*
 MacDonald Dettwiler
 Miller Communications Systems
 Ltd.*
 MPB Technologies Inc.*
 Sperry Information Systems
 Group*
 Thomson-CSF Systems Canada
 Limited*
 Unisys Canada Inc.
 Valcom Limited*

Consulting Services
 ADGA Group*
 Aerodevco Consultants Ltd.*
 Aerotech International
 Incorporated*
 AMTEK Group*
 Aviation Planning Services Ltd.*
 Bunnell Aerospace Consulting
 Services*
 Calian Technology Ltd.*
 Canadian Aircraft Products Ltd.*
 CFN Consultants*
 Computing Devices Company*
 Conair Aviation Ltd.*

The de Havilland Aircraft
 Company of Canada*
 D.S. Adams & Associates Inc.*
 DSMA Atcon Ltd.
 Field Aviation Company Ltd.*
 Garrett Canada*
 Geometrix Limited
 Honeywell Limited*
 Howard Kneen Associates
 Limited
 Ian S. Macdonald Consultants
 Inc.*
 ICAM Technologies Corporation
 Indal Technologies Inc.*
 Innotech Aviation Limited*
 Intercon Consultants Ltd.*
 JGW Systems Ltd.*
 M.E.L. Defence Systems Ltd.*
 MPB Technologies Inc.*
 Okanagan Helicopter Limited
 Paramax Electronics Inc.
 Quantum Inspection and Testing
 Limited*
 SNC Inc.*
 Spar Aerospace Limited*
 Spiece Associates Inc.*
 Sypher Consultants Inc.
 Telesat Canada*
 Thomson-CSF Systems Canada
 Limited*
 Vac Developments Limited*
 Valcom Limited*
 Vis-U-Ray Testing*

Contract Batch Manufacturing
 Aerotech International
 Incorporated*
 Atlantis Aerospace Corporation*
 Casey Copter Accessories Ltd.
 Conair Aviation Ltd.*
 Invar Manufacturing Ltd.*
 Vac Developments Limited*
 Valcom Limited*

Crash Position Indicators, ELT'S
 Bristol Aerospace Limited
 Garrett Canada*
 Leigh Instruments Limited*
 Standard Aero*

Dry Fil Lubricants
 Cametoid Limited*
 Material Processing, Division of
 Havlik Technologies Inc.

**Electronic Equipment,
 Components**
 Atlantis Aerospace Corporation*
 Bendix Avelex Inc.*
 Canadian Marconi Company*

Com Dev Ltd.*
 Decade Industries Ltd.*
 Devtek Corporation*
 Diemaster Tool Inc.*
 Dowty Canada Limited*
 Emhiser Research Limited
 Garrett Canada*
 Honeywell Limited*
 Howard Kneen Associates
 Limited
 ITT Cannon Canada*
 Kaycom Inc.*
 Leigh Instruments Limited*
 Lucas Industries Canada Limited*
 Manutronics Division of Microtel
 Limited
 M.E.L. Defence Systems Ltd.*
 MPB Technologies Inc.*
 Murata Erie North America
 Northrop Corporation*
 Optech Inc.
 Robin Aerospace Products Ltd.*
 SED Systems Inc.*
 Simmonds Precision Canada
 Limited*
 Spar Aerospace Limited*
 Thomson-CSF Systems Canada
 Limited*
 Unisys Canada Inc.
 Valcom Limited*
 Westland Technologies Canada
 Limited*

Electronic System Integration
 Paramax*

Electroplating
 Cametoid Limited*
 Material Processing, Division of
 Havlik Technologies Inc.

Engine Components
 Abercorn Aero*
 Aerotech International
 Incorporated*
 Aeroquip (Canada) Inc.*
 Aircraft Appliances & Equipment
 Limited*
 Bachan Aerospace of Canada
 Ltd.*
 Bendix Avelex Inc.*
 Bristol Aerospace Limited
 Canada Forgings Inc.*
 Chicopee Manufacturing Ltd.*
 Devtek Corporation*
 Diemaster Tool Inc.*
 Donlee Precision*
 Geometrix Limited

Hawker Siddeley Canada Inc., Orenda Division*	Kaycom Inc.*	Diemaster Tool Inc.*
Howard Kneen Associates Limited	Okanagan Helicopter Limited	Enheat Incorporated, Aircraft Division*
ITT Cannon Canada*	Spar Aerospace Limited*	Fleet Industries*
Kaycom Inc.*	Vis-U-Ray Testing*	Howard Kneen Associates Limited
Lucas Industries Canada Limited*	Westland Technologies Canada Ltd.*	Indal Technologies*
MHD International Aviation Parts Inc.*	Governments	Kaycom Inc.*
Okanagan Helicopter Limited	ADGA Group*	Lucas Industries Canada Limited*
Price & Knott Manufacturing Co. Ltd.*	Gov't of Canada: Dept. of Regional Industrial Expansion/ External Affairs	MHD International Aviation Parts Inc.*
Robco Metal Prod. Div.	Halifax County Industrial Commission	MPB Technologies Inc.*
Robin Aerospace Products Ltd.*	Kaycom Inc.*	Okanagan Helicopter Limited
Rolls-Royce (Canada) Ltd.*	Standard Aero*	Price & Knott Manufacturing Co. Ltd.*
Simmonds Precision Canada Limited*	Ground Support Equipment	Unisys Canada Inc.
Spar Aerospace Limited*	Abercorn Aero*	Vac Developments Limited*
Specialized Welding & Fabrications Ltd.*	Aerotech International Incorporated*	Helicopter Maintenance
Standard Aero*	Aircraft Appliances & Equipment Limited*	Atlantis Aerospace Corporation*
Tube-Fab Limited*	AMTEK Group*	Boeing of Canada Ltd. (Arnprior Division)*
Vac-Aero International Inc.*	Atlantis Aerospace Corporation*	Bristol Aerospace Limited
Engine Manufacture	Bendix Avelex Inc.*	Field Aviation Company Ltd.*
Pratt & Whitney Canada	Boeing of Canada Ltd. (Arnprior Division)*	Fleet Industries*
Rolls-Royce (Canada) Ltd.*	Canadian Marconi Company*	IMP Group Ltd.
Engine Repair and Overhaul, Service	Casey Copter Accessories Ltd.	Innotech Aviation Limited*
Bristol Aerospace Limited	C.F.H. Industries Ltd.*	Okanagan Helicopter Limited
Decade Industries Ltd.*	Computing Devices Company*	Spar Aerospace Limited*
Garrett Canada*	Decade Industries Ltd.*	Westland Technologies Canada Ltd.*
Hawker Siddeley Canada Inc., Orenda Division*	DSMA Atcon Ltd.	
Innotech Aviation Limited*	Fell-Fab International Inc.	Bell Helicopter Canada Inc.
Leavens Aviation Inc.*	Fleet Industries*	Canadian Aircraft Products Ltd.*
Okanagan Helicopter Limited	Garrett Canada*	Decade Industries Ltd.*
Pratt & Whitney Canada*	Genaire Limited	Fleet Industries*
Rolls-Royce (Canada) Ltd.*	Indal Technologies Inc.*	MBB Helicopter Canada Ltd.*
Spar Aerospace Limited*	Kaycom Inc.*	Sikorsky Aircraft*
Standard Aero*	Litton Systems Canada Limited*	Westland Technologies Canada Ltd.*
Vac-Aero International Inc.*	Lucas Industries Canada Limited*	
Vis-U-Ray Testing Limited*	MPB Technologies Inc.*	Hydraulic Pumps & Actuators
Flight Simulators	Patlon Aircraft Industries*	Aerotech International Incorporated*
Atlantis Aerospace Corporation*	Robin Aerospace Products Ltd.*	NYAB VICOM*
CAE Electronics Ltd.*	Simmonds Precision Canada Limited*	Okanagan Helicopter Limited
JGW Systems Ltd.*	Standard Aero*	
Thomson-CSF Systems Canada Limited*	Williams Machines, Division of Havlik Technologies Inc.	Insurance
Gears and Transmissions	Heat Treating	Reed Stenhouse*
Aerotech International Incorporated*	Material Processing, Division of Havlik Technologies	Landing Gear, Components
Bachan Aerospace of Canada Ltd.*	Helicopter Landing Systems, Components	Bachan Aerospace of Canada Ltd.*
Canada Forgings Inc.*	Bendix Avelex Inc.*	Bendix Avelex Inc.*
Devtek Corporation*	Canada Forgings*	Canada Forgings*
Diemaster Tool Inc.*	Chicopee Manufacturing Ltd.*	Chicopee Manufacturing Ltd.*
Geometrix Limited	DAF Indal Ltd.	Decade Industries Ltd.*
	Devtek Corporation*	Devtek Corporation*
		Diemaster Tool Inc.*
		Donlee Precision*

Dowty Canada Limited*
 English Plastics Inc.
 Fleet Industries*
 Genaire Limited*
 Geometrix Limited
 Heroux Inc.*
 Invar Manufacturing Ltd.*
 Kaycom Inc.*
 Lucas Industries Canada Limited*
 Menasco Aerospace Ltd.
 MHD International Aviation Parts Inc.*
 NYAB VICOM*
 Okanagan Helicopter Limited
 Specialized Welding & Fabrications Ltd.*
 Standard Aero*
 Thomson-CSF Systems Canada Limited*
 Vac Developments Limited*
 Williams Machines, Division of Havlik Technologies Inc.

LTA Heavy Lift Systems
 Magnus Aerospace Corporation

Navigation Systems, Equipment
 ADGA Group*
 Advanced Electronics Limited
 Aircraft Appliances & Equipment Limited*
 Andrew Antenna Company Limited*
 Bendix Avelex Inc.*
 Canadian Marconi Company*
 Computing Devices Company*
 Honeywell Limited*
 Howard Kneen Associates Limited
 JGW Systems Ltd.*
 Leigh Instruments Limited*
 Litton Systems Canada Limited*
 Micronav Ltd.*
 Northrop Corporation*
 Paramax Electronics Inc.*
 Spar Aerospace Limited*
 Unisys Canada Inc.

Optical Coatings and Systems
 Cametoid Limited*
 MPB Technologies Inc.*

Painting

Material Processing, Division of Havlik Technologies Inc.

Parachute Systems and Equipment
 Abercorn Aero*

Irvin Industries Canada Limited
 Standard Aero*

Precision Sheet Metal Work
 Vac Developments Limited*

Publications

AMTEK Group*
 Hawker Siddeley Canada Inc., Orenda Division

Radar Systems and Equipment

Andrew Antenna Company Limited*
 Bachan Aerospace of Canada Ltd.*
 Bendix Avelex Inc.*
 Canada Forgings*
 Canadian Astronautics Limited*
 Canadian Marconi Company*
 Com Dev Ltd.*
 Fleet Industries*
 Honeywell Limited*
 Howard Kneen Associates Limited
 Hughes Aircraft Company*
 Litton Systems Canada Limited*
 MacDonald Dettwiler
 M.E.L. Defence Systems Ltd.*
 MPB Technologies Inc.*
 Okanagan Helicopter Limited
 Optech Inc.
 Paramax Electronics Inc.*
 Raytheon Canada*
 SED Systems Inc.*
 Spar Aerospace Limited*
 Thomson-CSF Systems Canada Limited*
 Vac-Aero International Inc.*
 Vac Developments Limited*

Remote Sensing Equipment & Services

ADGA Group*
 Advanced Electronics Limited
 Atlantis Aerospace Corporation*
 Bristol Aerospace Limited
 Canada Centre for Remote Sensing
 Canadian Astronautics Limited*
 Canadian Marconi Company*
 Emhiser Research Limited
 Field Aviation Company Ltd.*
 Honeywell Limited*
 Howard Kneen Associates Limited*
 Innotech Aviation Limited*
 Leigh Instruments Limited*
 Lockheed Canada Inc.*
 MacDonald Dettwiler
 M.E.L. Defence Systems Ltd.*

Miller Communications Systems Ltd.*

MPB Technologies Inc.*
 Muirhead Systems Limited
 Optech Inc.
 Paramax Electronics Inc.*
 SED Systems Inc.*
 Spar Aerospace Limited*
 Thomson-CSF Systems Canada Limited*

Valcom Limited*

R&D Facilities

Aerotech International Incorporated*
 Andrew Antenna Company Limited*
 Casey Copter Accessories Ltd.
 DSMA Atcon Ltd.
 Emhiser Research Limited
 Fell-Fab International Inc.*
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The national trade association for the aerospace industries, AIAC was incorporated in 1962. Representing nearly 200 Canadian firms, the association has formed committees on airworthiness; electronics systems; contracts and finance; customs and traffic; energy conservation; general aviation; human resources; marketing (defence and air shows); product support; productivity; research and development; small business; space; technical standards; and trade legislation and regulatory affairs. The following is a list of the Association's committees:

AIRWORTHINESS COMMITTEE

The Airworthiness Committee is to provide an effective medium by which the Canadian aerospace industry segment represented by AIAC can participate constructively in the formulation of policy, regulatory and interpretive material relative to the development and approval of aerospace products, for domestic and/or international markets; and to inform the Canadian aerospace community of impending or proposed changes to current policy or regulations. The scope of this committee involves both Transport Canada and international agencies or organizations concerned with airworthiness.

ELECTRONICS SYSTEMS COMMITTEE

The Electronics Systems Committee has as its primary objective the fostering of communication and co-operation among member companies in the development of a viable and progressive electronics and electro-mechanical industry in Canada. Its membership represents a broad base of specialized electronics and electro-mechanical applications in both the military and commercial fields, with a strong emphasis on export market potential.

CONTRACTS AND FINANCE COMMITTEE

The Contracts and Finance Committee is responsible for formulating views on this function-oriented sector of the aerospace industry. It will be called upon to deal with problems associated with the financial policies and the contracting practices of the government which relate to the economic welfare of members of AIAC.

CUSTOMS AND TRAFFIC COMMITTEE

The Customs and Traffic Committee is formed to maintain a close liaison with government departments with respect to customs, traffic and excise legislation as it relates to the Canadian aerospace industry.

ENERGY CONSERVATION COMMITTEE

This committee is formed to provide leadership within the AIAC in support of the voluntary energy conservation program and to encourage the maximum participation of

AIAC companies and employees. The committee works closely with the Transportation Sector Manufacturing Energy Conservation Task Force and annually sets targets and reports to the Membership on achievements.

GENERAL AVIATION COMMITTEE

The General Aviation Committee is formed to deal with problems associated with general aviation and its relationship with governments and the public, general aviation being all business activity carried on by member companies relating to the service and support of aircraft other than those aircraft engaged in scheduled commercial or military operation.

HUMAN RESOURCES COMMITTEE

The Human Resources Committee is formed to devise means by which to facilitate the exchange of information pertaining to all aspects of manpower utilization and its development among members, and to maintain close liaison in these respects with government agencies and educational institutions.

MARKETING COMMITTEE

The Marketing Committee is formed to promote production and development sharing activities and the marketing of goods and services made by the Canadian aerospace and associated industries. Sub-committees within the Marketing Committee cover Defence Marketing and International Exhibitions.

PRODUCT SUPPORT COMMITTEE

The Product Support Committee is formed to establish the principles by which all repair and overhaul contractors or contractors anticipating participation in repair and overhaul contracts can further business interests with Canadian and foreign governments or private agencies.

PRODUCTIVITY COMMITTEE

The objective of the Productivity Committee is to provide leadership towards improving productivity in order to maintain world competitive levels in the Canadian aerospace industry, through the development of a continuing program of action for the association and its committees; the generation and co-ordination of a suitable data base and related specific activities; the development of a forum for communication and exchange of new management, manufacturing and systems technology information within the industry; the organization of seminars within the industry and with other groups interested in productivity improvement; the preparation of position papers on areas for productivity improvement; the direction of industry-wide studies.

RESEARCH AND DEVELOPMENT COMMITTEE

The Research and Development Committee is formed to determine and recommend policies that the government should implement with respect to research and development in the aerospace field, especially as they affect expenditure of public funds.

SMALL BUSINESS COMMITTEE

In accordance with the Aims and Objectives of the AIAC, to ensure that small business interests are given full consideration, it is the function of this Committee to obtain the views of small and medium size companies; to ensure that the capabilities of small and medium size companies are known and understood by large companies within the industry, procurement agencies, and main contractors with offsets obligations; to identify common problems of small and medium size companies; to refer questions and problems to appropriate committees of AIAC; to ensure that small and medium size companies are well represented on committees, task forces, work groups and Board of Directors of AIAC; to work with the Board of Directors and staff of AIAC to solve particular problems of small and medium size businesses and to organize and present special sessions at Annual and Semi-Annual general meetings.

SPACE COMMITTEE

The Space Committee is set up to foster and develop the segment of the aerospace industry which is involved with spacecraft, rockets, missiles and other components of space and satellite systems, including their ground segments, and

to promote the growth of a space-related industry in Canada that can serve, analyse and play an active role in advising the government on its Space Policy and related activities, recommending and assisting in the formulation and implementation of space programs in Canada.

TECHNICAL STANDARDS COMMITTEE

This committee is formed for the purpose of discussion of problems related to materials and processes, international standards, engineering and quality assurance specifications, and metric conversion, and to co-ordinate these activities with, and assist, government agencies and AIAC member companies.

Sub-committees and groups within the Technical Standards and Metric Conversion Committee are: Materials & Processes Sub-Committee; Metric Conversion Sub-Committee; International Standards Group.

TRADE LEGISLATION & REGULATORY AFFAIRS COMMITTEE

This committee was recently formed to monitor and evaluate legislative and regulatory matters involving international trade which could have significant effect on the Canadian aerospace industry as well as advise on pending foreign legislation or foreign political trends which could impact on the industry. The committee also analyses the effectiveness of the operation of the Canada/U.S. defence development and production sharing arrangements, and liaises with foreign aerospace associations on matters of foreign trade and regulatory affairs.

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(613) 592-3430 Telex: 053-4614
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TEL: (613) 996-1745

Canada's Aerospace Industry

Canada has the world's second largest fleet of civil aircraft, was the first country to develop a domestic satellite communications system, pioneered short take-off and landing (STOL) airplanes, and is an acknowledged leader in the design and production of long-range airborne navigation equipment and flight training simulators. Sixty-five percent of the world's turboprop general aviation aircraft are powered by Canadian designed, developed, and produced engines.

According to the latest statistics, Canada's aerospace industry sold \$478 million abroad in 1986, contributing to a major share of almost \$1.4 billion in total product sales. Over the past twenty-five years aerospace sector sales alone have accounted for 7 billion, or forty percent, of total defence trade exports.

Canada is an excellent source of supply for defence requirements because of its international reputation for high quality products and equipment, manufactured to exacting standards.

An Overview of Canada's Defence Trade Industry

In addition to the important aerospace element, Canada's defence trade marketing ability has been enhanced in other important areas.

Our geography, with its vast distances and extremely wide range of climatic conditions, has demanded innovative, advanced ground transportation and communications equipment and cold weather apparel, specially designed for military use under severe weather conditions. In addition, Canadian-made security products and services include devices ranging from surveillance equipment through physical security materials. Canadian protection and detection equipment can also be used to counter the threat of nuclear, biological, and chemical warfare, with all equipment being tested by Canada's Armed Forces under battle conditions. Canadian industry is also thoroughly familiar with North American and NATO military specifications and standards.

Research and Development

As a major purchaser of aerospace products for defence, civil aviation, and satellite communications programs, the federal government is an active partner in technological development. The Departments of Ex-

ternal Affairs, Regional Industrial Expansion, National Defence, Communications, the National Research Council, and other government agencies, have participated with industry in numerous programs in international defence and space.

Canadian Commercial Corporation (CCC)

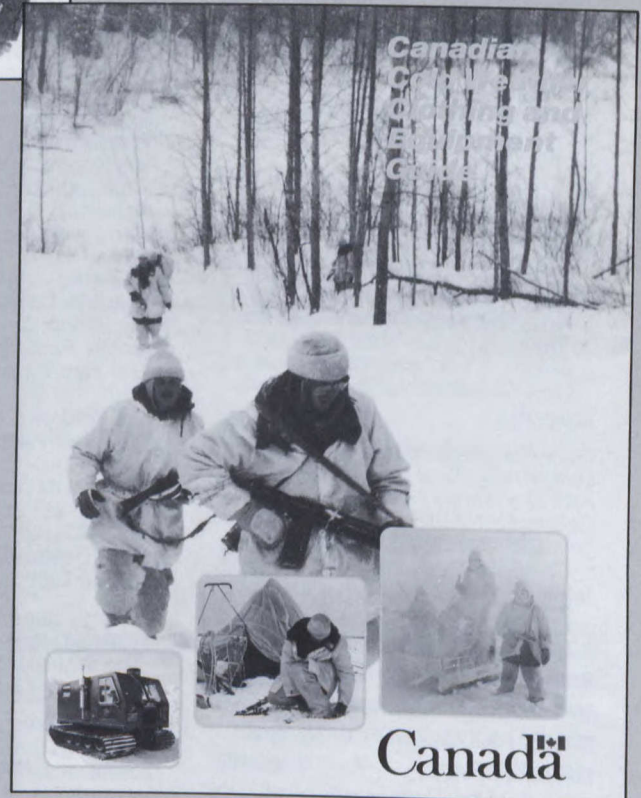
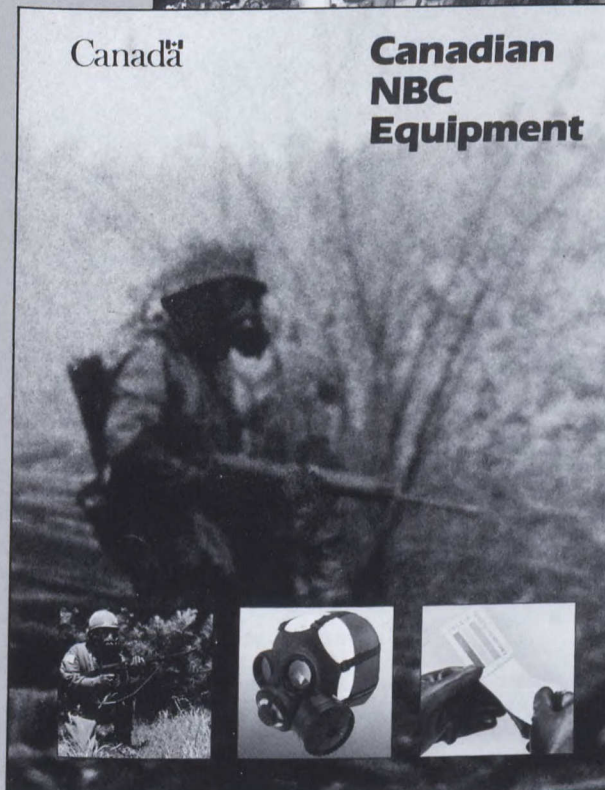
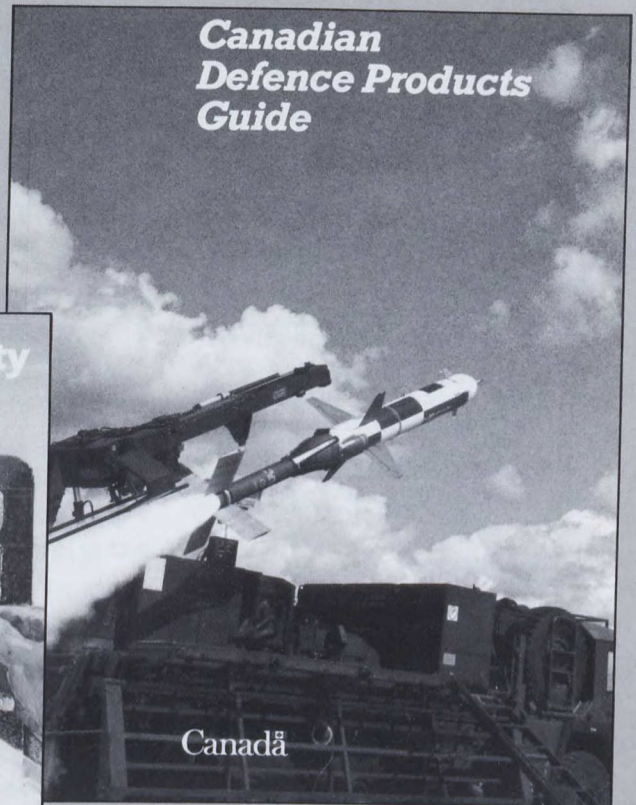
A Crown Corporation owned by the Government of Canada, the principal function of the CCC is to act as contracting agency to foreign governments and international agencies who wish to purchase goods or services from Canada on a government-to-government basis. Contracting for the Corporation is carried out by the Department of Supply and Services, the central procurement agency for the Government of Canada. Customers are guaranteed that Canadian suppliers are financially and technically capable of conforming with bid specifications, contract terms, and supplier warranties. The availability of CCC's services does not prevent foreign governments or agencies from contracting directly with Canadian manufacturers if desired. The Corporation can, however, provide foreign buyers with the same level of purchasing services as enjoyed by the Canadian Government. Using the services of the government's own purchasing experts, CCC can identify competent sources and assure customers that prices and terms are equitable. The financial aspects of transactions are also simplified: approved customers receive open-account privileges and CCC assumes responsibility for paying suppliers' invoices and performing contract audits when required. The Corporation can also make arrangements to have Quality Assurance and acceptance of defence goods carried out in Canada on behalf of the customer government by the Department of National Defence.

Services Abroad

Canadian Government Trade Officers are located in embassies and consulates in 83 countries. Their role is to promote Canadian exports abroad, while assisting foreign companies, industrial organizations, or government agencies interested in doing business with Canada, whether as purchasers of Canadian goods or services, or in joint ventures involving the development, manufacture, marketing, or licensing of aerospace products.

The following publications are available from your nearest Canadian trade office:

- Canadian Defence Products Guide
- Canadian Security Products Guide (available in English or Spanish)
- Canadian NBC Equipment
- Canadian Cold Weather Clothing and Equipment Guide



ALGERIA

Canadian Embassy

27 bis. rue d'Anjou
Hydra
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Algiers-16000-Algeria
Cable: CANAD DZ
Tel: 60-66-11/60-61-90
Telex: (Destination code 408) 66043
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ARGENTINA

Canadian Embassy

Casilla de Correo 3898 (1000)
Suipacha 1111, P. 25
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Tel: (011-54-1) 312-9061/88
Telex: (Destination code 033) 21383
(21383 CANAD AR)
Territory: Argentina, Uruguay

AUSTRALIA

Canberra*

Canadian High Commission

Commonwealth Avenue
Canberra ACT 2600, Australia
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Tel: (062) 73-3844
Telex: (Destination code 71) 62017
(DOMCAN AA62017)

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63-66-26/28
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BALEARIC ISLANDS - see Spain

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Territory: Northern Ireland, Scotland

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(Note: For invaluable advice, contact in Rangoon: Kyaw Zaw Win, Officer at Canadian Interests Section, British Embassy; Tel: 81708, 81812, 81700, 81138, 81702 and 81703; Telex: BM 21223 (CAN SEC))

CAMBODIA — see Kampuchea

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Canadian Embassy
Edificio Belmonte
6th Floor
Calle Corea 126 Y Amazonas (Frente
al CCI)

(Mailing Address: Casilla 6512 C.C.I.)
Quito, Ecuador
Tel: 458-016, 458-156; 458-578;
458-873
Telex: (Destination code 308) 22622
(DOMCAN ED)

EGYPT, ARAB REPUBLIC OF

Canadian Embassy
6 Mohamed Fahmy el Sayed St.
Garden City
(Mailing Address:
P.O. Box 2646
Cairo, Arab Republic of Egypt)
Cable: DOMCAN CAIRO
Tel: (20-02) 354-3110
Telex: (Destination code 91) 9-2677
(CANCAR UN)
Territory: Egypt, Sudan

ETHIOPIA

Canadian Embassy
Unity Square
P.O. Box 1130
Addis Ababa, Ethiopia
Cable: DOMCAN ADDIS ABABA
Tel: 15-11-00, 15-92-00, 15-12-28,
15-13-19
Telex: 21053 (DOMCAN ADDIS)
Territory: Ethiopia, Djibouti

EUROPEAN COMMUNITIES

Mission of Canada to the European Communities

rue de Loxum, 6
8-1000 Brussels, Belgium
Cable: CANMISEUR
Tel: (1-32-2) 513-0600
Telex: (Destination code 46) 21613
(DOMAN B)
Territory: European Economic
Community,
European Atomic Energy
Community,
European Coal and Steel
Community

The Mission is involved in market access issues and the development of industrial and economic co-operation between Canada and the EEC. Export market enquiries should be directed to the Canadian embassies and consulates in the member countries of the EEC.

FINLAND

Canadian Embassy
Pohjois Esplanadi 258
00100 Helsinki, Finland
(Mailing Address:
P.O. Box 779
SF-00101, Helsinki)
Cable: DOMCAN HELSINKI
Tel: (358-0) 171 141
Telex: (Destination code 5) 121363
(121363 DMCNH SF)

FRANCE

Canadian Embassy
35, avenue Montaigne
75008 Paris, France
Cable: CANADIAN PARIS
Tel: (1) 47.23.01.01
Telex: (Destination code 42) 280806
(CANAD A 280806F)
Territory: France, Andorra, Monaco

Lyon

Canadian Consulate
Bonnell Part-Dieu Bldg.
74 Bonnell St.
3rd Floor

69003 Lyon, France
Tel: (33) 72.61.15.25

FRENCH GUIANA - see *Trinidad and Tobago*

FRENCH POLYNESIA - see *New Zealand*

GABON

Canadian Embassy
P.O. Box 4037
Libreville, Gabon
Tel: (241) 72.41.54; 72.41.56; 72.41.69.
Telex: 5527 GO (DOMCAN 5527 GO)
Territory: Equatorial Guinea, Gabon,
Principe, Sao Tome

GERMANY (FRG)

Bonn

Canadian Embassy
Friedrich-Wilhelm-Straße 18
D-5300 Bonn
Federal Republic of Germany
Cable: CANADIAN BONN
Tel: (011-49-228) 23 10 61
Telex: (Destination code 41) 886421
(DOMCA D)
Territory: States of Hesse, Rhineland-Palatinate, Saar

Berlin

Canadian Military Mission and Consulate
Europa Centre
D-1000 Berlin 30
Federal Republic of Germany
Tel: (011-49-30) 261 11 61
Telex: (Destination code 41) 185487
(CANAD D)
Territory: West Germany

Düsseldorf

Canadian Consulate General
Immermannstraße 3
D-4000 Düsseldorf
Federal Republic of Germany
Cable: CANADIAN DÜSSELDORF
Tel: (011-49-211) 35 34 71
Telex: (Destination code 41) 8587144
(DMCN D)
Territory: State of North Rhine-Westphalia except Administrative District of Cologne

Munich

Canadian Consulate General
Maximiliansplatz 9
D-8000 Munich 2
Federal Republic of Germany
Tel: (011-49-89) 55 85 31
Telex: (Destination code 0411)
5214139 (CAND D)
Territory: Bavaria and
Baden-Wuerttemberg

GHANA*

Canadian High Commission
46 Independence Avenue
P.O. Box 1639
Accra, Ghana
Cable: DOMCANADA ACCRA
Tel: 2285555
Telex: 2024 (DOMCAN GH)

**Trade Commissioner responsible for Ghana resident in Lagos, Nigeria*

GIBRALTAR - see *Britain (London)*

GILBERT ISLANDS - see *New Zealand*

GREECE

Canadian Embassy
4 Ioannou Ghennadiou Street

115 21 Athens, Greece
Cable: CANADIAN ATHENS
Tel: (30-1) 723-9511
Telex: (Destination code 601) 215584
(215584 DOM GR)

GUATEMALA

Canadian Embassy
Edificio Galerías España, 6th Floor
(Mailing Address: P.O. Box 400)
7 Avenida 11-59, Zona 9
Guatemala City, Guatemala, C.A.
Cable: CANADIAN GUATEMALA
CITY
Tel: 321411/321413/321417/321418/
321419/321428/321429/321426
(Immigration)
Telex: (Destination code 37) 5206
(5206 CANADA GU)
Territory: Guatemala, Honduras

GUINEA

Canadian Embassy
Corniche sud, Colean
Conakry, Guinea
(Mailing Address: B.P. 99)
Tel: 46-37-33; 46-37-32; 46-36-26
(Residence: 46.32.71)
Telex: 2170 DOMCAN GE

GUINEA-BISSAU - see *Senegal*
GUYANA*

Canadian High Commission
P.O. Box 10880
High and Young Streets
Georgetown, Guyana
Cable: DOMCAN GEORGETOWN
Tel: (592) 202-72081, -5
Telex: 2215 (DOMCAN GY)

**Trade Commissioner responsible for
Guyana resident in Port-of-Spain,
Trinidad and Tobago*

HAITI

Canadian Embassy
C.P. 826
Edifice Banque Nova Scotia
Route de Delmas 18
Port-au-Prince, Haiti
(Mailing Address: P.O. Box 826)
Cable: DOMCAN PORT-AU-PRINCE
Tel: (509-2-1) 2-2358, 2-4231, 2-4919
Telex: 2030069 (DOMCAN 2030069)

HONDURAS - see *Guatemala*

HONG KONG

Commission for Canada
P.O. Box 11142, General Post Office
11th-14th Floors
Tower 1, Exchange Square
8 Connaught Place
Hong Kong
Cable: DOMCA HONG KONG
Tel: 5-8104321, 5-8100880
(Immigration enquiries)
Telex: (Destination code 802) 73391
(73391 DOMCA HX)
Territory: Hong Kong, Macao; also
includes ASEAN countries and
South China

HUNGARY

Canadian Embassy
Budakeszi ut 32
H-1121 Budapest, Hungary
Cable: CANADA BUDAPEST
Tel: (36-1) 767-686 or (36-1) 767-711
Telex: (Destination code 61) 224588
(CDA H)

INDIA

Canadian High Commission

P.O. Box 5208
Shantipath
Chanakyapuri 110021
New Delhi, India
Cable: CANADIAN NEW DELHI
Tel: (011) 60-8161
Telex: (Destination code 81)
031-66346 (031-66346 DMCN IN)
Territory: India, Bhutan, Sri Lanka,
Nepal, Maldives

Bombay

Trade Office
Hotel Oberoi Towers, Suite 1234
Nariman Point
Bombay 400021
Tel: (022) 202-4343

INDONESIA

Canadian Embassy
5th Floor
Wisma Metropolitan I
Jalan Jenderal Sudirman, Kav 29
Jakarta Selatan 12920, Indonesia
(Mailing Address:
P.O. Box 52/JKT
Jakarta Selatan 12000, Indonesia)
Cable: DOMCAN JAKARTA
Tel: 510-709
Telex: (Destination code 73) 62131
(62131 DMCAN JKT)

IRAQ

Canadian Embassy
P.O. Box 323
Central Post Office
Baghdad, Iraq
(Embassy located in the suburb of
Al-Mansour)
Cable: DMCAN BAGHDAD
Tel: (01) 542-1459, 542-1932, 542-1933
Telex: (Destination code 0491) 212486
(DMCAN IK)

IRELAND

Canadian Embassy
65/68 St. Stephen's Green
Dublin 2, Ireland
Cable: DOMCAN DUBLIN
Tel: (011-353-1) 781988
Telex: (Destination code 500) 93803
(93803 DMCN EI)

ISRAEL

Canadian Embassy
220 Hayarkon Street
(Mailing Address: P.O. Box 6410)
Tel Aviv, Israel 63405
Cable: CANADIAN TEL AVIV
Tel: (03) 228122
Telex: (Destination code 606) 341293
(341293 CANAD IL)
Territory: Israel, Cyprus

ITALY

Rome

Canadian Embassy
Via G.B. de Rossi 27
00161 Rome, Italy
Cable: CANADIAN ROME
Tel: (06) 855-341
Telex: (Destination code 43) 610056
(DOMCAN I)

Territory: Provinces of Toscana,
Marche, Umbria, Lazio, Abruzzi-
Molise, Puglia, Campania,
Basilicata, Calabria, Sicilia,
Sardegna
Other countries: Malta, Libya

Milan

Canadian Consulate General
Via Vittor Pisani 19

20124 Milan, Italy
Cable: CANTRACOM MILAN
Tel: (039) (02) 65-70-451/2/3
Telex: (Destination code 43) 310368
(310368 CANCON I)
Territory: Provinces of Liguria,
Piemonte, Val d'Aosta, Lombardia,
Trentino-Alto Adige, Friuli-Venezia
Giulia, Emilia-Romagna e Veneto

IVORY COAST

Canadian Embassy
C.P. 4104
23, rue Nogues
Edifice Trade-Center
Abidjan 01, Ivory Coast
Cable: DOMCAN ABIDJAN
Tel: (225) 32-20-09
Telex: (Destination code 983) 23593
(DOMCAN CI)
Territory: Ivory Coast, Burkina Faso,
Liberia, Niger, Sierra Leone, Mali

JAMAICA

Canadian High Commission
30-36 Knutsford Boulevard
Kingston 5, Jamaica, W.I.
(Mailing Address:
P.O. Box 1500, Kingston 10)
Cable: BEAVER KINGSTONJA
Tel: (809) 926-1500 to 9
Telex: (Destination code 291) 2130
(2130 BEAVER JA)
Territory: Jamaica, Cayman Islands,
Turks and Caicos Islands,
Bahamas, Belize

JAPAN

Canadian Embassy
7-3-38 Akasaka, Minato-ku
Tokyo 107, Japan
Cable: CANADIAN TOKYO
Tel: (03) 408-2101/8
Telex: (Destination code 72) 22218
(DOMCAN J22218)
FAX: (G3 System) 03-479-5320
Territory: Japan, Guam

Osaka

Canadian Consulate General

28 Hachiman-cho
Minami-Ku, Osaka 542
(Mailing Address: P.O. Box 150,
Osaka Minami 542-91)
Tel: (06) 212-4910
Telex: Send through Embassy in
Tokyo (Destination code 72)
22218 (DOMCAN J22218) but
indicate for CONGEN OSAKA
Fax: (G3 System) 06-212-4914
Territory: Prefectures of Osaka,
Hyogo, Kyoto, Nara, Mie,
Shiga, Wakayama

JORDAN

Canadian Embassy

Amman, Jordan
(Mailing Address:
P.O. Box 815403
Amman, Jordan)
Tel: 666-124
Telex: (Destination code 493) 23080
(23080 CANAD JO)
Territory: Jordan, Lebanon, Syria

KENYA

Canadian High Commission

P.O. Box 30481
Nairobi, Kenya
(Situated in:
Comcraft House
Hailé Sélassié Avenue
Cable: DOMCAN NAIROBI

Tel: 334023/6
Telex: (Destination code 987) 22198
(22198 DOMCAN)
Territory: Kenya, Comoros Islands,
Tanzania, Uganda, Democratic
Republic of Madagascar, Mauritius,
Réunion, Seychelles, Somali
Democratic Republic

KOREA (South)

Canadian Embassy
Kolon Building
45 Mugyo-Dong, Jung-Ku
(Mailing Address:
P.O. Box 6299)
Seoul 100, Republic of Korea
Cable: SEOUL DOMCAN
Tel: (02) 776-4062/8
Telex: (Destination code 801) 27425
(CANADA K27425)

KUWAIT

Canadian Embassy
Plot 1
28 Quraish Street
Nuzha District
(Mailing Address:
P.O. Box 25281
Safat, Kuwait)
Cable: CANADA KUWAIT
Tel: 251-1451/255-5754/255-934
Telex: (Destination code 496) 23549
(MCAN KT)
Territory: Kuwait, Bahrain, Qatar

MALAYSIA

Canadian High Commission
Plaza MBF, 7th Floor
Jalan Ampang
50450 Kuala Lumpur
(Mailing Address:
P.O. Box 10990
50732 Kuala Lumpur
Malaysia)
Cable: DOMCAN KUALA LUMPUR
Tel: (03) 261-2000
Telex: (Destination code 84) 30269
(DOMCAN MA 30269)
Territory: Malaysia, Brunei

MALI*

Canadian Embassy
B.P. 198
Bamako, Mali
Tel: (223) 22-22-38
Telex: (985) 530
Territory: Mali
**Trade Commissioner responsible for
Mali resident in Abidjan, Ivory Coast*

MEXICO

Canadian Embassy
Calle Schiller No. 529
Colonia Polanco
(Mailing Address:
Apartado Postal 105-05
11560 Mexico DF)
Cable: CANADIAN MEXICO CITY
Tel: (905) 254-3288
Telex: (Destination code 22) 1771191
(DMCNE)

MOROCCO

Canadian Embassy
13 bis Zankat Jaafar As-Sadik
(Mailing Address:
C.P. 709)
Rabat-Agdal, Morocco
Tel 713-7576/77
Telex: (Destination code 407) 31964M
(CDARABAT 31964M)

NETHERLANDS

Canadian Embassy
Sophalaan 7
2514 JP The Hague, Netherlands
(Mailing Address:
Commercial Division
P.O. Box 30820, 2500 GV The Hague,
Netherlands)
Cable: DOMCAN THE HAGUE
Tel: (70) 614111
Telex: (Destination code 44) 31270
(31270 DMCN NL)

NEW ZEALAND

Wellington
Canadian High Commission
P.O. Box 12-049 Wellington
CI House, 4th Floor
Molesworth Street
Wellington, New Zealand
Cable: DOMCAN WELLINGTON
Tel: 739-577
Telex: (Destination code 74) 3577
(NZ3577 CANAD)
Territory: New Zealand, Cook Islands,
Kiribati, Tonga, Western Samoa,
Fiji, Tuvalu, Niue, French
Polynesia, Tahiti

NIGERIA

Canadian High Commission
4 Idowu Taylor St., Victoria Island
P.O. Box 54506
Ikoyi Station
Lagos, Nigeria
Cable: CANADIAN LAGOS
Tel: 612382/385
Telex: (Destination code 905) 21275
(21275 DOMCAN NG)
Territory: Nigeria, Ghana, Benin,
Togo

NORTH ATLANTIC COUNCIL

**Delegation of Canada to the North
Atlantic Council**
B-1110 Brussels, Belgium
Cable: CANDEL BRUSSELS
Tel: (1-32-2) 215-8853
Telex: (Destination code 46) 21613
(DOMCAN B)

NORWAY

Canadian Embassy
Oscars Gate 20
0352 Oslo 3
Cable: DOMCAN
Tel: (011-47-2) 46-69-55 (After hours:
011-47-2) 46-69-59
Telex: (Destination code 56) 71880
(71880 DOMCAN)
Territory: Norway, Iceland

OMAN - see *United Arab Emirates*

PAKISTAN

Canadian Embassy
Diplomatic Enclave
Islamabad, Pakistan
(Mailing Address: G.P.O. Box 1042,
Islamabad, Pakistan)
Cable: DOMCAN ISLAMABAD
Tel: 821101-04
Telex: (Destination code 82) 5700
(5700 DOMCAN PK)
Territory: Pakistan, Afghanistan

PERU

Canadian Embassy
Libertad 130, Miraflores
Lima 18, Peru
Cable: CANADIAN LIMA

Tel: (51-14) 444-015; (Night line:
444-032)
Telex: (Destination code 36) 25323
(25323PE DOMCAN)
Territory: Peru, Bolivia

PHILIPPINES

Canadian Embassy
9th Floor, Allied Bank Centre
6754 Ayala Avenue
Makati, Metro Manila, Philippines
3117
(Mailing Address:
P.O. Box 971, Makati Central Post
Office Makati, Metro Manila,
Philippines 3117)
Cable: DOMCAN MANILA
Tel: (632) 815-9536 to 41
Telex: (Destination code 75) 63676
(63676 DOMCAN PN)
Territory: Philippines, Guam, Republic
of Palau, the Northern Marianas,
the Federated States of Micronesia,
the Republic of the Marshall
Islands

POLAND

Canadian Embassy
Ullca Matejki 1/5
Warsaw 00-481, Poland
Cable: DOMCAN WARSAW
Tel: (48-22) 29-80-51
Telex: (Destination code 63) 813424
(813424 CAA PL)
Territory: Poland, German Democratic
Republic

PORTUGAL

Canadian Embassy
Rua Rosa Araujo, 2
Lisbon 1200, Portugal
Cable: CANADIAN LISBON
Tel: (351-1) 56-38-21
56-38-25 (Trade Section Night Line)
Telex: (Destination code 404) 12377
(DOMCAN P)
Territory: Portugal, Azores, Madeira

ROMANIA

Canadian Embassy
36, Nicolae Iorga
C.P. 2966
Oficiul Postal No. 22
71118 Bucharest, Romania
Tel: 50-63-30/50-59-56
Telex: (Destination code 651) 10690
(CANAD R)

SAUDI ARABIA

Canadian Embassy
Diplomatic Quarter
P.O. Box 94321
Riyadh 11693
Cable: DOMCAN RIYADH
Tel: (011-966-01) 488-2288
Telex: 404893 (DOMCAN SJ)
Territory: Kingdom of Saudi Arabia,
Arab Republic of Yemen, People's
Democratic Republic of Yemen

SENEGAL

Canadian Embassy
45, av. de la République, C.P. 3373
Dakar, Senegal
Cable: DOMCAN DAKAR
Tel: 210290
Telex: 632 (DOMCAN SG)
Territory: Senegal, Gambia, Guinea-
Bissau, Mauritania, Cape Verde
Islands

SINGAPORE

Canadian High Commission

Faber House, 10th Floor
230 Orchard Road
Singapore 0923
(Mailing Address:
Maxwell Rd. P.O. Box 845
Singapore, 9016)
Cable: CANADIAN SINGAPORE
Tel: (65) 737-1322
Telex: (Destination code 87) RS21277
(DOMCAN RS21277)

SOUTH AFRICA*

Canadian Embassy

Nedbank Plaza
Corner of Church and Beatrix
Arcadia, Pretoria 0083, South Africa
(Mailing Address:
P.O. Box 26006
Arcadia, Pretoria 0007)
Cable: CANDOM PRETORIA
Tel: 287062/3/4
Telex: 3-22112 SA
Territory: South Africa, Lesotho,
Swaziland, St. Helena

**The Canadian Embassy in Pretoria is responsible for prompting trade with Lesotho, Swaziland and St. Helena. It does not promote trade with South Africa but provides normal consular assistance to all Canadian visitors. In the case of the territory of Namibia, Canada does not recognize the current South African administration there and no Canadian government services are provided.*

SPAIN

Canadian Embassy

Apartado 117
35, Nunez de Balboa
28001 Madrid, Spain
Cable: CANADIAN MADRID
Tel: (91) 431-4300
Telex: (Destination code 52) 27347
(27347 DOMCA E)
Territory: Includes provinces outside the peninsula - Balearic Islands, Canary Islands

SRI LANKA*

Canadian High Commission

P.O. Box 1066
6 Gregory's Road
Colombo 7, Sri Lanka
Cable: DOMCANADA COLOMBO
Tel: (0094-1) 59-58-41/42/43; 59-87-97
Telex: 21106 (21106 DOMCAN CE)

**Trade Commissioner responsible for Sri Lanka resident in New Delhi, India*

SWEDEN

Canadian Embassy

Tegelbacken 4 - 7th Floor
Stockholm, Sweden
(P.O. Box 16129
S-103 23 Stockholm 16, Sweden)
Cable: CANADIAN STOCKHOLM
Tel: (46-8) 23 79 20
Telex: (Destination code 54) 10687
(10687 DOMCAN S)

SWITZERLAND

Canadian Embassy

Kirchenfeldstraße 88
CH-3005 Berne, Switzerland
Cable: CANADIAN BERNE
Tel: (41-31) 44-63-81
Telex: (Destination code 45) 911308

(DMCN CH)

Territory: Switzerland, Liechtenstein

SYRIA*

Canadian Embassy

Al Jala Hotel
P.O. Box 3394
Damascus, Syria
Tel: 664936
Telex: (Destination code 0492) 412616
(CANADA SY)

**Trade Commissioner responsible for Syria resident in Amman, Jordan*

TAHITI - see New Zealand

TANZANIA, UNITED REPUBLIC OF*

Canadian High Commission

P.O. Box 1022
Pan Africa Insurance Building
Samora Avenue
Dar-es-Salaam, United Republic of Tanzania
Cable: DOMCAN DAR-ES-SALAAM
Tel: 20651, 20652, 20653
Telex: 41015 (41015 DOMCAN)

**Trade Commissioner responsible for Tanzania resident in Nairobi, Kenya*

THAILAND

Canadian Embassy

The Boonmitr Building, 11th Floor
138 Silom Road
P.O. Box 2090
Bangkok 5, Thailand
Cable: DOMCAN BANGKOK
Tel: 234-1561/8
Telex: (Destination code 86) 82671
(82671 DOMCAN TH)
Territory: Thailand, Laos, Kampuchea, Burma, Vietnam

TRINIDAD AND TOBAGO

Canadian High Commission

Huggina Building
72 South Quay, P.O. Box 1246
Port-of-Spain, Trinidad and Tobago
Cable: DOMCAN PORT OF SPAIN
Commercial Office (Trinidad): Cable: CANADIAN PORT OF SPAIN
Tel: (809) 623-7254/8, 623-4787
Telex: (Destination code 294) 22429
(22429 DOMCAN WG)
Territory: French Guiana, Guadeloupe, Guyana, Haiti, Martinique, Surinam, Trinidad and Tobago

TUNISIA

Canadian Embassy

3, rue du Sénégal
Place de Palestine
C.P. 31
Belvédère
Tunis, Tunisia
Cable: DOMCAN TUNIS
Tel: 286-577/377/619
Telex: 15324 (15324 DOMCAN TN)
Territory: Tunisia

TURKEY

Canadian Embassy

Nenehatun Caddesi 75
Gaziosmanpasa, Ankara, Turkey
Cable: DOMCAN ANKARA
Tel: (41) 36-12-75/76/77/78/79
Telex: (Destination code 607) 42369
(A/8 42369 DCAN TR)

TURKS AND CAICOS ISLANDS - see Jamaica

UNION OF SOVIET SOCIALIST REPUBLICS (U.S.S.R.)

Canadian Embassy

23 Starokonyushenny Pereulok
Moscow, U.S.S.R.
Cable: CANAD MOSCOW
Tel: 241-9034/9155/5070
Telex: (Destination code 64) 413401
(413401 DMCAN SU)
Territory: U.S.S.R., Mongolia

UNITED ARAB EMIRATES

Canadian Embassy

Abu Dhabi Commercial
Bank Building, 4th Floor
Abu Dhabi, U.A.E.
(Mailing Address: P.O. Box 6166)
Tel: (011-971-2) 723-800
Telex: (Destination code 893) 22446
(CANADA EM)
Territory: United Arab Emirates, Oman

UNITED KINGDOM - see Britain

UNITED NATIONS

Permanent Mission of Canada to the United Nations

866 United Nations Plaza
Suite 250
New York, N.Y. 10017
Cable: CANINUN NEW YORK CITY
Tel: (212) 751-5600
Telex: 126269
Territory: United Nations Secretariat, UNDP, UNICEF and other New York-based UN bodies

UNITED STATES

Washington

Canadian Embassy

1746 Massachusetts Avenue, N.W.
Washington, D.C. 20036-1985
Cable: CANADIAN WASHINGTON
Tel: (202) 785-1400
Telex: 0089664 (DOMCAN A WSH)

Trade Promotion and Market Access Section

*The Trade Promotion and Market Access Section is located at the Sheridan Circle Chancery of the Canadian Embassy
2450 Massachusetts Avenue, N.W.
Washington, D.C. 20008-2881
Tel: (202) 483-5505
Telex: 0089664 (DOMCAN A WSH)
The section is responsible for trade promotion with U.S. government civil and defence agencies. The International Financial Institutions Section, also located at the Sheridan Circle Chancery, is responsible for international organizations (World Bank, Inter-American Bank, etc.) with headquarters in Washington. All other trade promotion enquiries relating to the Washington D.C. area should be addressed to the Consulate General in Philadelphia.*

Atlanta

Canadian Consulate General

400 South Tower
One CNN Centre
Atlanta, Georgia 30303-2705
Tel: (404) 577-8810
Telex: 054-2676 (DOMCAN ATL)
Territory: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, U.S. Virgin Islands

Boston

Canadian Consultant General

Three Copley Place, Suite 400
Boston, Massachusetts 02116
Tel: (617) 262-3760
Telex: 94-0625 (DOMCAN BSN)
Territory: States of Maine,
Massachusetts, New Hampshire,
Rhode Island, Vermont
Other countries: Saint-Pierre-et-
Miquelon

Buffalo

Canadian Consulate General

One Marine Midland Center
Suite 3550
Buffalo, New York 14203-2884
Tel: (716) 852-1247
Telex: 0091329 (DOMCAN BUF)
Territory: Western, Central and
Upstate New York

Chicago

Canadian Consulate General

310 South Michigan Avenue,
12th Floor
Chicago, Illinois 60604-4295
Cable: DOMCAN CHICAGO
Tel: (312) 427-1031; (Night Line:
(312) 427-1035)
Telex: 00254171 (DOMCAN CGO)
Territory: Illinois, Missouri, Wisconsin,
the Quad-City region of Iowa

Cleveland

Canadian Consulate General

Illuminating Building, Suite 1008
55 Public Square
Cleveland, Ohio 44113-1983
Cable: CANADIAN CLEVELAND
Tel: (216) 771-0150
Telex: 00985364 (DOMCAN CLV)
Territory: States of Kentucky, Ohio,
West Virginia, Western
Pennsylvania

*Office of the Government of Canada
MCLDDP
Room 148, Building 11A, Area B
Wright Patterson Air Force Base
Dayton, Ohio 45433
Tel: (513) 255-4382, 255-4492,
255-4537

Dallas

Canadian Consulate General

St. Paul Place, Suite 1700
750 N. St. Paul Street
Dallas, TX 75201-3281 (Registered
Mail)
75201-9990 (Business Reply)
Cable: CANADIAN DALLAS
Tel: (214) 922-9806,
(214) 922-9812 (Immigration),
(214) 922-9814 (Tourism)
Telex: 00732637 (DOMCAN DAL)
Territory: States of Texas, Arkansas,
Kansas, Louisiana, New Mexico,
Oklahoma

Detroit

Canadian Consulate General

1920 First Federal Building
1001 Woodward Avenue
Detroit, Michigan 48226-1966
Cable: CANADIAN DETROIT
Tel: (313) 955-2611
Telex: 23-0715 (DOMCAN DET)
Territory: City of Toledo, States of
Michigan and Indiana

Los Angeles

Canadian Consulate General

300 South Grand Avenue
10th Floor

California Plaza

Los Angeles, California 90071
Tel: (213) 627-9511
Telex: 00674119 (DOMCAN LSA)
Territory: States of Arizona, California
(10 southern counties), Clark
County in Nevada

Investment Development

L.R. Mackay
Consul and Trade Commissioner

Defence Liaison

222 N. Sepulveda Blvd., 11th floor
El Segundo, CA 90245
Tel: (213) 335-4439

Minneapolis

Canadian Consulate General

701 Fourth Avenue
Minneapolis, Minnesota 55415
Tel: (612) 333-4641
Telex: 29-0229 (DOMCAN MPS)
Territory: States of Iowa, Nebraska,
Minnesota, North Dakota, South
Dakota, Montana

New York

Canadian Consulate General

1251 Avenue of the Americas
New York, N.Y. 10020-1175
Cable: CANTRACOM NEW YORK
CITY
Tel: (212) 568-2400; (Night Line:
586-2406)
Telex: 00126242 (DOMCAN NYK)
Territory: States of Connecticut,
New Jersey (12 northern counties),
southern New York
Other countries: Bermuda

San Francisco
Canadian Consulate General
One Maritime Plaza, Suite 1100
Alcoa Building
Golden Gateway Center
San Francisco, California 94111-3468
Tel: (415) 981-2670
Telex: 0034321 (DOMCAN SFO)
Territory: States of California (except
the 10 southern counties),
Colorado, Hawaii, Nevada (except
Clark County), Utah, Wyoming

Seattle

Canadian Consulate General

412 Plaza 600, Sixth and Stewart
Seattle, Washington 98101-1286
Tel: (208) 443-1777
Telex 032-8762 (DOMCAN SEA)
Territory: States of Alaska, Idaho,
Oregon, Washington

VANUATU - see *Australia (Sydney)*

VENEZUELA

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Caracas 1060A)
Cable: CANADIAN CARACAS
Tel: (58-2) 951-6166
Telex: (Destination code 31) 23377
(DOMCAN VE)
Territory: Venezuela, Netherlands,
Antilles, Dominican Republic

YUGOSLAVIA

Canadian Embassy

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Cable: DOMCAN BELGRADE

Tel: (38-11) 644-666

Telex: (Destination code 62) 11137
(11137 DOMCA YU)

Territory: Yugoslavia, Bulgaria,
Albania

ZAIRE

Canadian Embassy

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Angle av. Wangata et boul. du 30-juin
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C.P. 8341)
Kinshasa, Republic of Zaire
cable: DOMCAN KINSHASA
Tel: 22-706 and 24-346
Telex: (Destination code 982) 21303
(21303 DOMCAN ZR)
Territory: Burundi, Rwanda, People's
Republic of Congo, Angola, Zaire

ZAMBIA*

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Tel: (260-1) 216161
Telex: ZA 42480 (DOMCAN)

*Trade Commissioner responsible for
Zambia resident in Harare, Zimbabwe

ZIMBABWE

Canadian High Commission

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Tel: 793801
Telex: (Destination code 907) 4465
(4465 CANADA ZW)
Territory: Zimbabwe, Zambia,
Mozambique, Malawi, Botswana



ADGA Group

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TELEX: 053-4568
CABLE: ADGA OTT

PRESIDENT: A. Denis Gagnon, P. Eng.
DIRECTOR, BUSINESS DEVELOPMENT:
J. Kevin Burke, P. Eng.

The ADGA Group is a Canadian professional engineering organization created in 1967 to meet the needs of clients throughout the world. From Canada's arctic environment to equatorial climates, the company's consultants have planned, designed, installed, operated and maintained technically oriented systems in all modes of transport and in the telecommunications field.

Staffed by some 250 engineers, technical and support staff, ADGA with headquarters in Ottawa, Canada has branch and associate offices within Canada in Montreal, Toronto and Vancouver and abroad in Geneva, Switzerland; London, England; and Hong Kong.

The organization is wholly owned and operated by its employees. There are no ties with suppliers, manufacturers, contractors, fiscal agents or government agencies, thus ensuring the provisioning of truly independent consulting services.

To provide comprehensive consulting services, ADGA has developed working associations with many highly specialized consulting groups in several countries. Additionally, ADGA has engaged in international joint-venture projects where company consultants provide the electronic/computer system expertise as part of a multi-disciplined team.

Services can be provided directly in English, French, and Spanish with translation services being available for most other languages, as may be required. The experience of company staff in conducting projects in varying cultural, social and language environments, minimizes transitional problems associated with international work.

In-house computing facilities are available to assist consultants in project work as are extensive office, drafting, translation and library services.

ADGA's services are distributed equally among:

- consulting engineering to include economic and technical feasibility studies, system concept and design, specifications, proposal evaluation and the preparation of implementation plans;
- project management, from conception through to acceptance, including training of personnel, operation and maintenance of medium scale international and domestic projects, on a turn key basis.

• assignment of professional engineers, technologists and technicians to major equipment manufacturers, system operators and government agencies.

ADGA's diversified experience is exemplified by several completed projects:

Terminal Radar program for Canada's Department of National Defence: ADGA provided engineering services in the specification of communication control systems, specification of computer elements for communication and radar data processing subsystems, selection of computer systems and the design of interfaces for communication and computer links.

Abu Dhabi National Oil Company: ADGA conducted a technical and economic feasibility study for an offshore Vessel Traffic Management Systems (VTMS) followed by the preparation of system, equipment and installation specifications, tender briefings and a proposal evaluation for the complete system.

Canadian Mobile Satellite (MSAT): ADGA undertook a detailed commercial viability study for the program to include investigation of alternative mobile radio terrestrial systems.

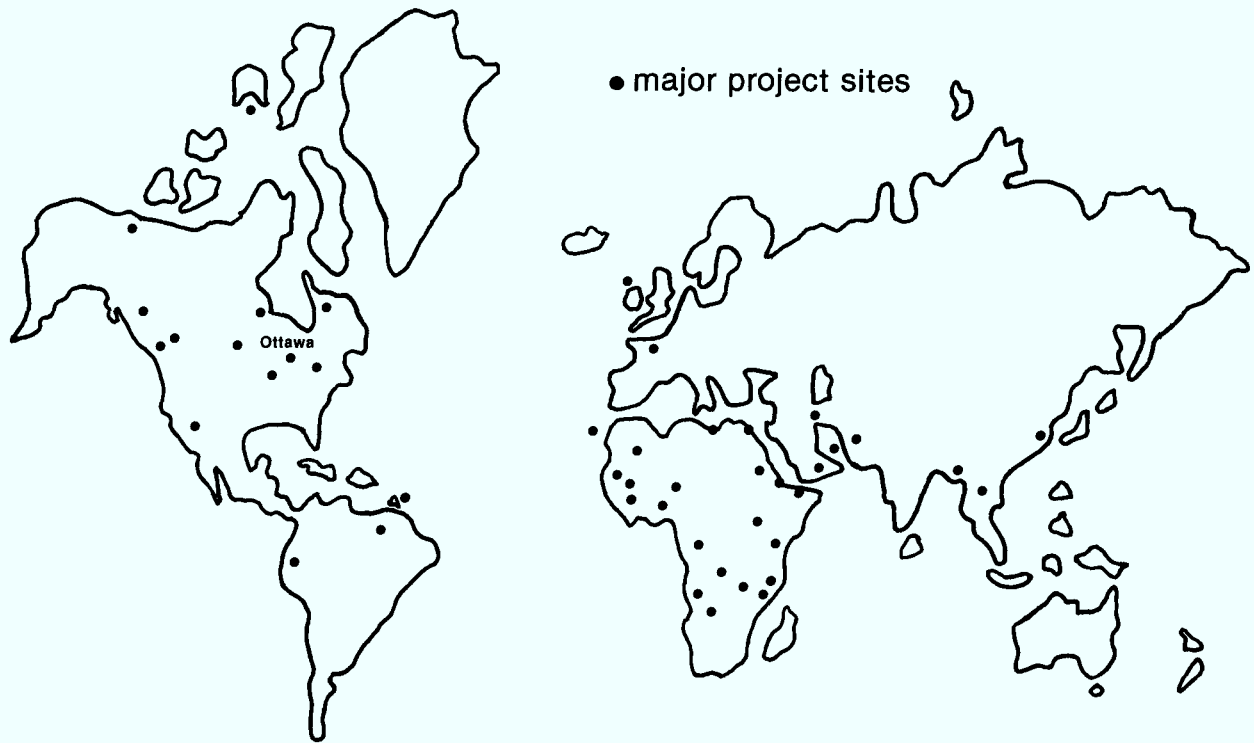
Security systems: ADGA has engineering expertise to design, install, maintain and operate a wide range of electronic and computer-based security systems.

Intelsat A station, Bangladesh: Operation and maintenance of an Intelsat V satellite earth station in the Gulf of Bengal for the government of Bangladesh to Intelsat V standards, by ADGA technical staff.

Naval communications: ADGA consultants developed system concept and specifications for the advanced communications systems used in Canadian submarines, destroyers and the new Canadian Patrol Frigate.

Radar systems: A team of ADGA engineers provides hardware and software design and maintenance of an experimental radar used in radar research programs by the Canadian Department of Communications.

A Global Capability



GLOBAL CAPABILITY

ELECTRONICS CONSULTING ENGINEERS
LAND, AIR AND MARINE TRANSPORTATION
AND COMMUNICATIONS SYSTEMS
CONCEPT - DESIGN - IMPLEMENTATION
TRAINING - OPERATION - MAINTENANCE
INTEGRATED LOGISTICS

GENERAL

As a totally independent organization our two hundred and fifty management and engineering specialists have successfully completed major consulting projects in Canada, the United States, Africa, the Middle East, Far East and South America. Our company capabilities are well known in engineering, computers, management and defence systems with EXPERTISE IN:

- air traffic control
- marine traffic control
- radio communications
- telephone switching
- navigational aids
- facilities management
- integrated logistics systems
- radar display
- microwave
- security systems
- satellite communications
- related civil works

The ADGA Group is a professional consulting engineering organization established in 1967, with Headquarters in Ottawa, Canada and Associate offices throughout the world. Company consultants specializing in electronic systems have planned, designed, installed, operated and maintained technically oriented systems in all modes of the transportation and telecommunications fields.

adga
group - groupe

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Aerotech International Incorporated

140 Eagle Drive
Winnipeg, Manitoba R2R 1V5
TELEPHONE: (204) 633-1999
TELEX: 07-55272

CHIEF EXECUTIVE OFFICER: Paul Sigurdson
GENERAL MANAGER: Lew Jones
SALES MANAGER: Madeline Jones

Aerotech International Incorporated supplies and manufactures portable heaters, ducting, and aerospace ground support equipment for defence and commercial applications.

The company's ground support equipment comprises a line of heaters, ground power units, hydraulic aircraft maintenance platforms, aircraft engine hoists, portable engine cranes and electric prime movers.

Aerotech has developed the Arctic Fox single-wall and Polar Bear double-wall canvas ducting for the Canadian Armed Forces. The company also supplies the Royal Air Force, Royal Navy, U.S. Air Force and U.S. Army. Arctic Fox is manufactured from treated canvas to be mildew and acid resistant, waterproof and fire retardant. The single wall canvas ducting features collapsible inner spirals and internal locking collars. Standard sizes are 12 inch diameter by 15 feet long or a six inch diameter by 15 feet long. Custom manufacture to any diameter and length is available. For extra durability, Polar Bear ducting features a double wall of canvas and a fiberglass lining. Product line applications include aircraft servicing, portable blowers and heaters, and inflatable shelters. Aerotech's portable heaters include the BT400 models which provide heat output of 400,000 BTU per hour at -54°C (-65°F) for such applications as aircraft pre-heating. The BT400-80 heater is designed to burn diesel fuel or gasoline and can be operated as a totally self-contained portable heater or as a slave type heater using an electric motor power package.

Aerotech has a dealer/distributor network covering the United States and Canada, as well as Europe, Africa, South America and Pacific Rim countries.

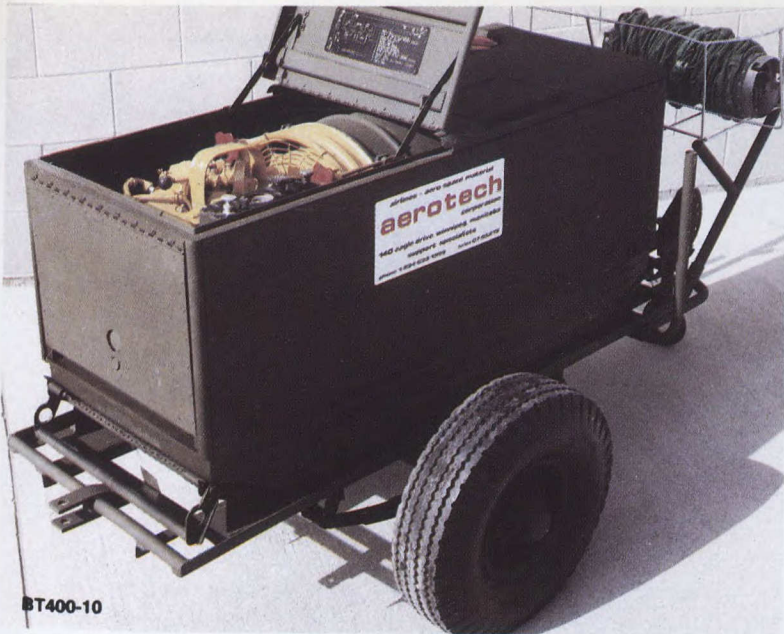
Aerotech International Inc. has satisfied Customers needs in many areas and indeed all around the world. Some of our satisfied customers include:

- The Dept. of Defence - Government of Canada
- The Dept. of Defence - Government of U.S.
- The Dept. of Defence - Government of U.K.
- The Dept. of Defence - Government of Italy
- The Dept. of Defence - Government of Australia
- United Airlines
- Finnair
- Japan Airlines
- Korean Airlines
- Greenland Air
- Pacific Western Airlines/C.P. Air
- Federal Express
- Many more Regional and National Carriers.
- Customer or Dealers Enquiries Welcome.

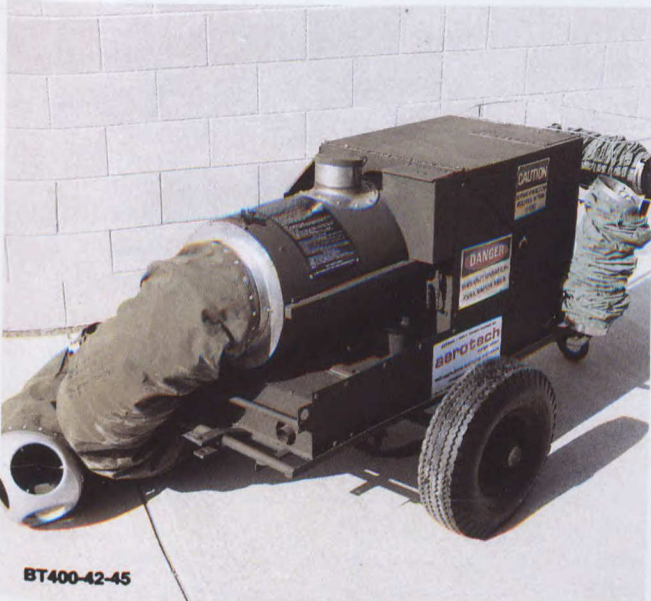
Products

Aerotech manufactures and supplies the military, airlines and the construction industry. Our unique product line includes portable heaters plus the full series of Herman Nelson heaters, hydraulic aircraft maintenance platforms, aircraft maintenance hoists, yukon stoves, ground power units, electric prime movers, and canvas & vinyl ducting.

Deserving a special note is our Arctic Fox and Polar Bear canvas ducting. Introduced just 3 short years ago as a premium performance line of ducting, they are designed to eliminate old ducting problems such as tearing and cracking. Featuring innovative and heavy duty canvas construction, these tough and flexible ducts have quickly gained universal acceptance in air movement applications.



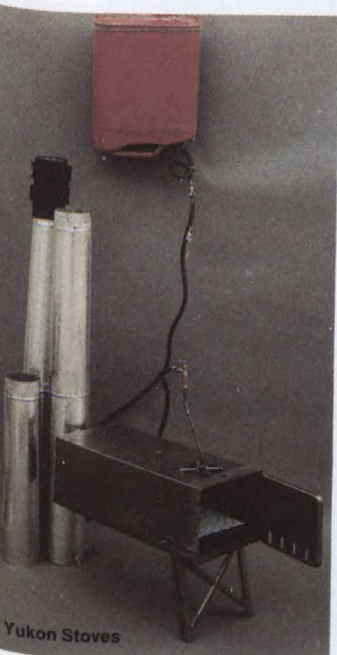
BT400-10



BT400-42-45



BT400-80



Yukon Stoves



Aerotech Utility



Arctic Fox and Polar Bear Canvas Ducting



Aircraft Appliances and Equipment Limited

150 East Drive
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TELEPHONE: (416) 791-1666
TELEX: 069-7540
FAX: 416-791-7218

CHAIRMAN OF THE BOARD: L.V. Myslivec
PRESIDENT & GENERAL MANAGER: W.J. White
EXECUTIVE VICE-PRESIDENT: B.T. Dawson
VICE-PRESIDENT FINANCE: D.Z. Schmidt
DIRECTOR Q.C. OPERATIONS: C.J. Stanislow

Aircraft Appliances and Equipment Limited (AAE) is located at 150 East Drive in Brampton. The company manufactures, repairs, overhauls, and distributes equipment for aircraft and ships. Firms with which it deals include such commercial accounts as de Havilland Aircraft of Canada Limited, Canadair Limited, Strong Electric, Lealand, 3M, GE, Teledyne, and the contractors for the Departments of National Defence in Canada and the United States.

AAE, a privately owned Canadian company, was founded and incorporated under an Ontario charter in 1949 by L.V. Myslivec, the present chairman of the board. Initially its principal operation was the repair and overhaul of aircraft accessories and the distribution of aircraft electrical product accessories to Canadian owners and users of aircraft built by U.S. companies.

In 1959 the firm designed and began the manufacture of fuel filters and also pioneered the development of coalescers for the separation of water and solid contaminants from lubricating and fuel systems for marine gas turbine power plants. The design and manufacture of aircraft tachometer generators commenced in 1966, to be followed seven years later by the design and manufacture of ground power AC/DC generators and generator sets.

Aircraft Appliances and Equipment Limited is divided into three divisions, each with its own responsibilities. A fourth, the Generator Division, which catered to the industrial, agricultural, and export markets, was recently sold.

The Repair and Overhaul Division is a Department of National Defence and Ministry of Transport-approved facility for the repair and overhaul of commercial and military aircraft equipment, ground support equipment, power supplies, generator test stands, and test equipment of all kinds. The division services automatic flight controls, sensing devices, electrical power system components, pumping systems components, ground power units, motor generators, and fuel test stands.

In the field of avionics testing equipment, the company offers a Universal Avionic Component Tester, a self-contained manual tester with flexible capability,

power control, signal service, and measuring devices. It also repairs, overhauls, and rewinds stators, armatures, and rotors for aircraft rotating equipment. Among the items produced for the Department of National Defence are three conversions of existing DND test stands to enable testing of the VSCF generator system on the Canadian Forces fighter-aircraft, the CF-18.

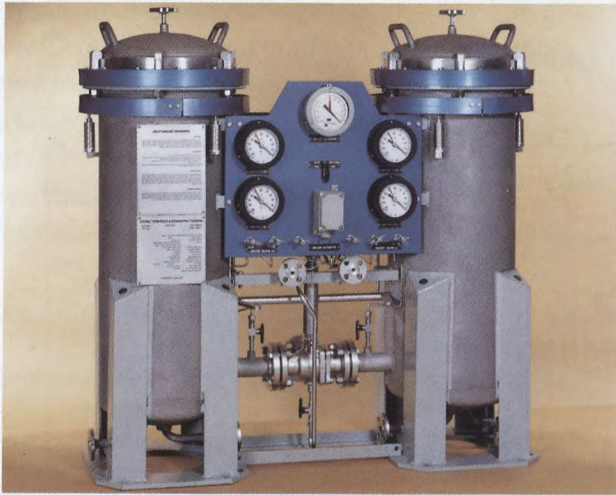
More than 26 years' experience in research and development by the Fluid Power Division has resulted in the installation of AAE equipment on many U.S. and Canadian naval ships. Installations range from simple in-line filters to duplex coalescers that automatically change over from clogged filter elements to clean ones. They come complete with service indicators, pressure and temperature gauges, heaters, automatic level controls, safety locks, and other features. The equipment can accommodate flow rates from 0.1 g.p.m. to 200 g.p.m., and many designs meet rigid military standards for shock and vibration.

Several patented designs are available in different alloys to cope with the most demanding shocks — from arctic vessels to the high-frequency vibrations of hydrofoils and surface-effect ships. Micronic filters and pipeline strainers have been produced for the most advanced navies in the world. Major filtration systems are being supplied to all U.S.-built frigates and destroyers and to Canadian frigates.

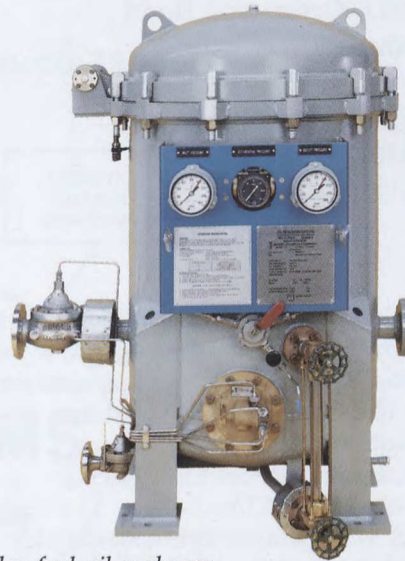
The Technical Sales and Service Division functions as a stocking distributor for products manufactured by others. Selling equipment to the Canadian aerospace industry, this division has distribution rights for aircraft electrical, avionics, and fuel accessories produced by divisions of Lear Siegler Inc.

Items include AC/DC generating systems, pitch trim actuators, controllers, heading reference units, land navigation, muzzle velocity radar, radar antennae, display and transceiver units, fuel booster, and lube and scavenge pumps. In addition, a line of RFI/EMI filters are available, and, for industrial applications, the division handles self-lubricating bearings and air-conditioning systems for commercial and military aircraft.

Products and Services



Duplex prefilters.



Simplex fuel oil coalescer.



Duplex fuel oil coalescer.



Universal Avionic Component Tester.



Repair & Overhaul Services.



Electrical Component Rewind Facilities.



AMTEK Group

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PRESIDENT: Ron Nash
VICE-PRESIDENT, MARKETING: Laurie McClare
DIRECTOR OF ENGINEERING: Tony Canning
GENERAL MANAGER (AESL): S. Sellars
GENERAL MANAGER (ATL): Laurie McClare
GENERAL MANAGER (LODAY): D. Curling
GENERAL MANAGER (PC NOVA): R. Novokowsky

The AMTEK Group consists of a number of small wholly Canadian owned companies engaged in various fields of support to aerospace weapon systems and related fields. The Group currently consists of:

AMTEK Management Inc.
AMTEK Engineering Services Ltd. (AESL)
AMTEK Testware Ltd. (ATL)
LODAY Project Management International Ltd.
PC NOVA Productivity Inc.

The lead company of the group is AMTEK Management Inc., providing professional engineering and management services to both government and industry. The company specializes in the application of advanced management techniques in the fields of Integrated Logistics Support (ILS) and project/proposal management. Services are provided to Canadian customers as well as the international community including the United States, the United Kingdom, Sweden, Italy and West Germany.

A featured product of AMTEK Management Inc. is the Logistic Analysis and Management System (LAAMS), developed by AMTEK to meet today's requirement for life cycle logistics support data analysis and management. (See page opposite).

Other products and services offered by AMTEK Management Inc. include:

- Integrated Logistics Support (ILS) Planning and Management
- ILS Logistics Support Analysis (LSA)
- ILS Training Courses
- Automatic Test Equipment (ATE) Support
- Software and Data Base Management Systems Development
- Technical Training Course Development and Presentation
- Proposal Preparation and Management
- Industrial Benefits Management

AMTEK Engineering Services Limited (AESL) specializes in engineering and technical services to both government and commercial clients, embracing marine, electrical, electronic, mechanical and chemical disciplines. This expertise is well suited to the support of Life Cycle Material Management. AESL's technical authors have a proven bilingual capability in the pro-

duction of technical manuals to Department of National Defence standards.

AMTEK Testware, located in Edmonton, provides automatic test hardware and software services.

PC NOVA Inc. specializes in microcomputers, including management, technical consulting, training, marketing and distribution of microcomputer products.

LODAY Project Management International Ltd. is a dynamic company applying advanced project management techniques and systems for clients in aerospace, defence and industrial equipment development sectors. LODAY provides experience in the development of work breakdown structures, cost and schedule control systems and project management training and skills development.

AMTEK Management Inc. was the founding company of the AMTEK Group. It is a privately owned Canadian corporation based in Ottawa. The principal officers are Mr. Ron Nash, Mr. Laurie McClare and Mr. Tony Canning.

Formed in January 1981 to satisfy a growing need for more comprehensive and structured approaches to life cycle support, AMTEK Management Inc. widened its circle of clients and services to the point that it is now Canada's leader in ILS technology and a front-running company for the other services listed. As a natural outgrowth of this ever increasing success, the other AMTEK Group companies were formed to meet the emerging specialized needs.

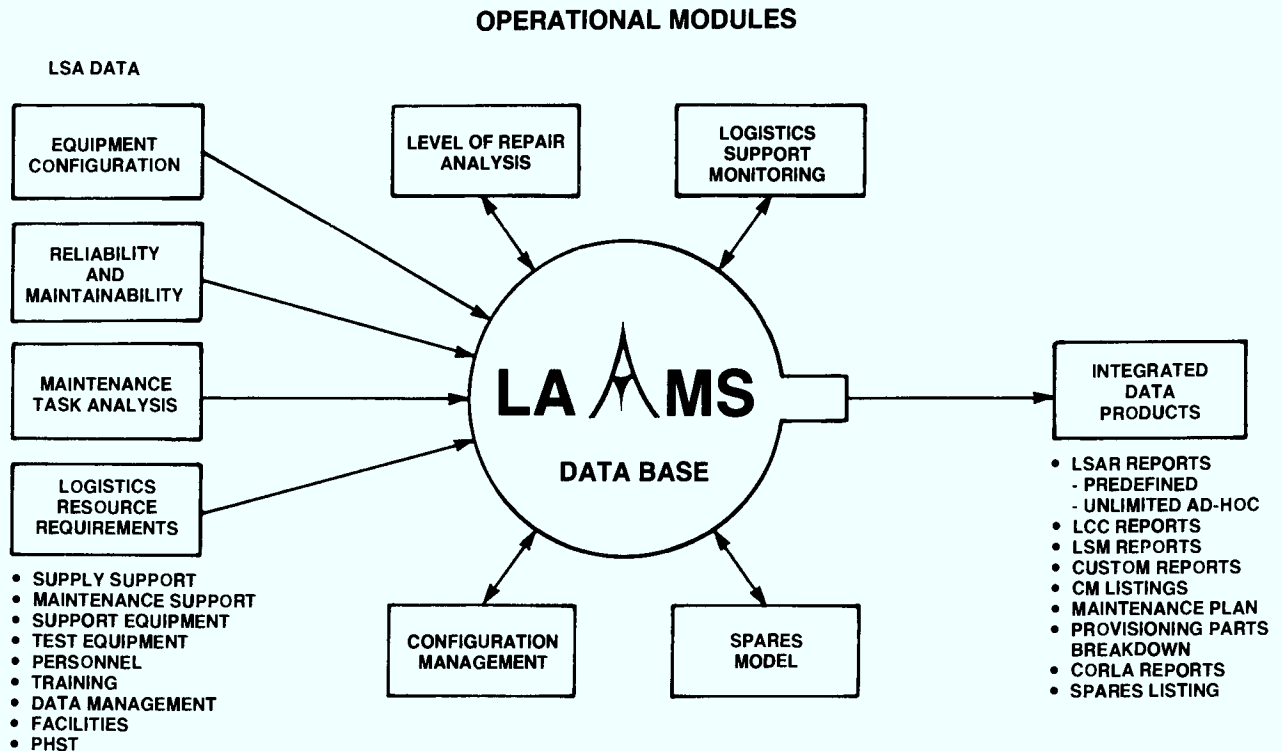
AMTEK Group sales figures for fiscal year 1986 were \$3.3M and expected to exceed \$4.0M in 1987.

AMTEK Group personnel number in excess of 100, including over 20 engineers, 8 computer science graduates and 30 technologists.

AMTEK's Ottawa facility comprises approximately 23,000 square feet of office and support space. Computer facilities include MicroVax II with laser printing capabilities and twelve IBM or IBM compatible PCs. Software in use includes ORACLE, LOTUS 1-2-3, dBase, Pascal, COBOL and Enable.

The AMTEK Group has branch operations in El Segundo, California; Halifax, Nova Scotia; and Edmonton, Alberta.

CANADA'S LEADER IN INTEGRATED LOGISTICS SUPPORT (ILS) TECHNOLOGY



AMTEK's leading position in this field stems from an integrated approach to life cycle ILS data management.

LAAMS

AMTEK has developed a Logistics Analysis and Management System (LAAMS) to meet today's requirement for life cycle logistics support data analysis and management. LAAMS has the following features:

- a relational data base, in fourth generation software, specifically designed for integrated and automated management of Logistics Support data for operational systems.
- interactive analysis tool for performing LSA.
- modular design (LAAMS modules available from AMTEK include Configuration Status Accounting, Level of Repair Analysis, Spares Model, Logistics Support Monitoring, Life Cycle Cost Model and Maintenance System).
- all modules, as well as the core LAAMS, can be easily tailored to specific needs of the user—including MIL-STD 1388 compatibility.
- more cost effective with good flexibility for modification, growth potential and interfacing with other data systems.
- developed in recognition of Canadian Forces requirements.

EXPERIENCE

AMTEK has done significant contract work in a full range of ILS services (Planning and Management; Logistics Support Analysis; Data Base Systems Development — LAAMS; Training and Proposal Preparation) over the following major capital procurement projects:

- CP-140 Aurora
- CF-18 Fighter
- Low Level Air Defence (LLAD)
- Canadian Patrol Frigate (CPF)
- New Shipborne Aircraft (NSA)
- NATO Frigate Replacement (NFR 90)

FACILITIES

AMTEK's Ottawa facility comprises approximately 23,000 square feet of office and support space. Our computer facilities include MICROVAX II with laser printing capabilities and 20 IBM or IBM compatible PCs. Software in use includes ORACLE, LOTUS 1-2-3, dBase, Pascal, COBOL and Enable.



Andrew Antenna Company Limited

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PRESIDENT: Hugh J. Swain
BUSINESS DEVELOPMENT MANAGER, GOVERNMENT PRODUCTS:
John J.D. Lawson
BUSINESS DEVELOPMENT MANAGER, COMMERCIAL PRODUCTS:
Alex R. Mackenzie
BUSINESS MANAGER, GOVERNMENT PRODUCTS:
William F. Cowperthwaite
MANAGER, MARKETING: George Tong

Andrew Antenna Company Limited, established in Canada in 1953, is a subsidiary of Andrew Corporation of Orland Park, Illinois, U.S.A., a multi-national firm with 50 years of antenna engineering and manufacturing experience.

Andrew Antenna has grown and expanded with the dynamic Canadian communications industry. The design and manufacturing efforts of the company have been centred on antenna systems (both earth stations and terrestrial), transmission lines (waveguides and coaxial cables) and related equipment, such as towers and shelters. This narrow field has allowed Andrew Antenna engineers to pace the industry through the years in these specialties. Andrew Antenna also has an established reputation as a designer and manufacturer of air traffic surveillance, weather, navigation aid and other special purpose and tactical antenna systems built to meet exacting government and military specifications. Recently introduced products include a complete line of transportable and fixed station HF antennas and devices for military, government and communications needs.

From its first directional broadcast arrays to the current state-of-the-art satellite earth station and radar/navaid antenna systems, Andrew has grown in physical size and technical capability.

Andrew's main manufacturing facility and headquarters are located in the town of Whitby, Ontario, 25 km east of Toronto. A second property at Ashburn, 20 km north of Whitby, has a radar antenna assembly building and a modern antenna pattern range. Currently over 180 people staff the Canadian operation. The company is organized into six major departments, for research and development, manufacturing, sales and marketing, materials management, field service and quality control.

The company's manufacturing facilities include metal spinning, stretch forming, welding, machining, silver brazing, soldering, metal finishing and painting. There are assembly and electrical test departments and packing and crating facilities. Andrew has a full complement of CNC machines, including a 30 tonne CNC punching machine. Facilities also exist for the assembly of coaxial cables and elliptical waveguide. All purchasing and manufacturing operations are monitored and

controlled through the use of an on-line Manufacturing and Production Information Control System.

At the company's main plant, about 8,036 square metres are devoted to manufacturing operations. The company has the capability to construct any antenna up to 10 metres in diameter. In addition, high bay areas are available at the main manufacturing facility and in the Ashburn radar assembly building for the manufacture of antennas requiring large specialized tooling, such as the 14 metre L-Band radar antennas.

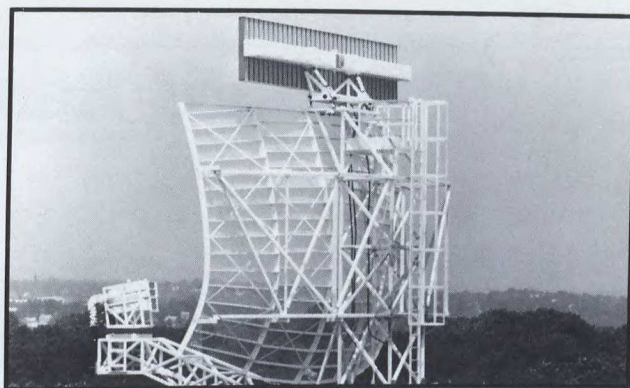
A structured quality system allows Andrew Antenna to comply with the requirements of military customers and specifications of Canadian and U.S. government agencies including DOT and FAA. The quality assurance program meets AQAP-1, AQAP-4 and equivalent international standards.

In addition to Andrew's proprietary line of antennas, extensive engineering and test resources allow the development of specialized antenna systems to meet specific customer requirements. The engineering department has extensive facilities for conducting research and development. There is a well equipped model shop and a 19 metre near field anechoic chamber. Additional testing is conducted on the antenna pattern test range which has unobstructed sources ranging from 200 to over 5,000 metres from the main test tower. The range has a fully computerized 3-axis positioner and data collection system. Research on antenna systems is currently being conducted up to 90 GHz.

Andrew's field service department offers a comprehensive customer service package, including program management, delivery, site civil works, tower erection and antenna assembly and installation, system testing and guarantees.

Andrew Antenna has the capability to provide complete program management and turnkey installations from systems concept, through engineering and manufacturing, to installation and commissioning.

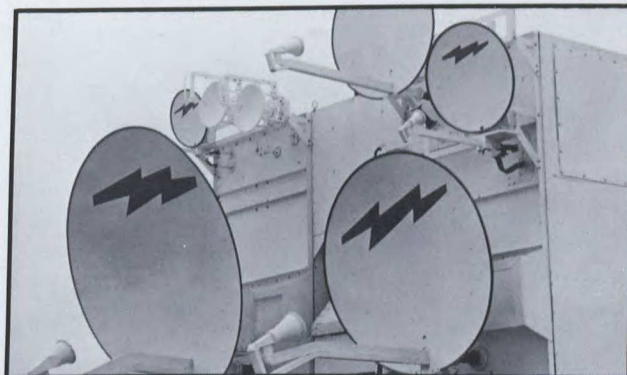
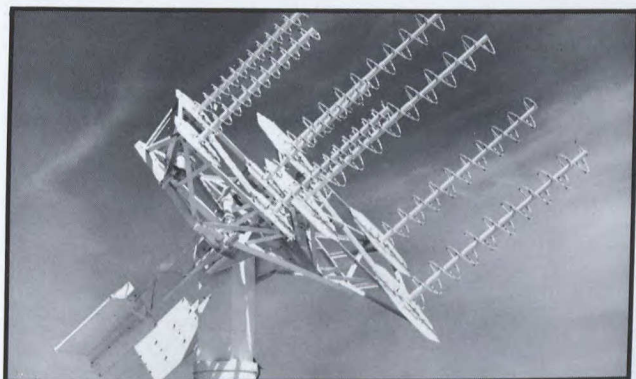
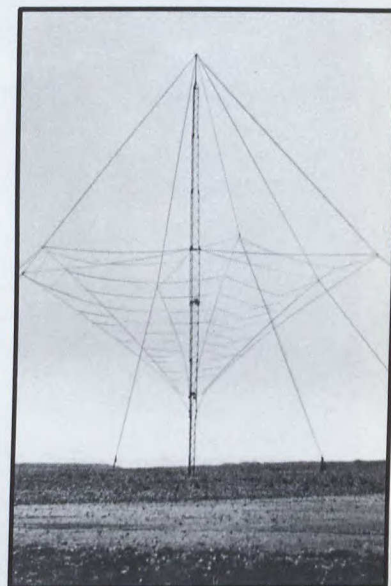
INTERNATIONAL MANUFACTURER OF ANTENNA SYSTEMS



QUALITY
RELIABILITY
PERFORMANCE



ANDREW



ANDREW ANTENNA COMPANY LIMITED

606 Beech Street, Whitby, Ontario, Canada L1N 5S2
Tel: 416-668-3348



Atlantis Aerospace Corporation

951 Rowntree Dairy Road
Woodbridge, Ontario
L4L 4E4
TELEPHONE: (416) 851-8531
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TELEX: 06-986766

MANAGING DIRECTOR: Dale Simmons
SIMULATION SYSTEMS, LAND & SEA: Carl Byers
SIMULATION SYSTEMS, AIR: Chris Lehman
TEST EQUIPMENT: Doyle Stinnett

Atlantis has earned an excellent reputation for quality and performance in the international aerospace community. The company is emerging as a leader in the application of leading edge technologies to demanding aerospace requirements.

Training Systems Group

The Training Systems Group develops maintenance and operational systems simulation for air, land and sea applications. The Group has produced training technology as diverse as a Cockpit Procedures Simulator for the Canadair Challenger to a special pilot selection system for the Canadian Forces, known as the Canadian Automated Pilot Selection System (CAPSS). Involvement with the CF-18 fighter program resulted in the development of Environmental Control System (ECS) maintenance trainer for this aircraft.

A complete maintenance training package was developed for the Royal Australian Air Force F/A-18 fighter. The trainer's encompass avionics, armament, ECS, flight control electronics, hydraulics and fuel systems. Trainers have also been produced for the Boeing-Vertol H-46 hydraulics and AFCS systems for the U.S. Navy and Marine Corps. Both of these maintenance trainer projects featured micro-computer driven systems simulation, interactive laser video disk technology, mathematically modelled test equipment, simulated multimeter test points and instructor selected system faults.

Atlantis' recent simulation contract awards include a complete suite of E-6 aircraft maintenance trainers for the U.S. Navy. Electrical, ECS, Hydraulics and APU trainers are being produced under a subcontract from Boeing Aerospace.

Atlantis has also designed HELIOS, a state of the art operational procedures simulator built around the OH58/Bell Jet Ranger III for instrument flight training, operational procedures training and emergency procedures training. HELIOS is designed to be easily tailored to a variety of helicopter and light aircraft airframes and avionics suites.

Other training system contracts underway include a live fire trainer for the Leopard 1 MBT, a computer based EW training system (CBRWTS), and a submarine

fire control system trainer — all for the Canadian Armed Forces.

Test Equipment Group

The Test Equipment Group has developed technology ranging from avionics interface panels to sophisticated digital test equipment.

MIL-STD-1553 A/B Bus testing capability is represented with the DCM-1553 designed as a user friendly interface for performance evaluation and troubleshooting of LRU's 1553 Bus aircraft. The DCM-1553 is presently in use with the airforces of Australia, Canada and the United States.

The Group's DRA-707 and ARA-552 digital and analog radio altimeter Ramp Simulators can interface to virtually all commercial altimeters in service, and are in use with major international airlines. Boeing Seattle has purchased several of these units for its mobile test vans, used to perform pre-delivery aircraft system checks.

A complete line of dedicated ARINC 429 test equipment is offered, designed to support the new digital commercial aircraft such as the 757/767. All applications from the bench to the flight line are covered, including ATE configurations.

Instrumentation/Control Group

The Instrumentation/Control Group at Atlantis has been responsible for the development of a complete line of guidance and control systems for use in a large variety of Remotely Piloted Vehicles (RPVs) and target drones. These include the Robot-X target drone produced in cooperation with DRES and Boeing of Canada, Winnipeg.

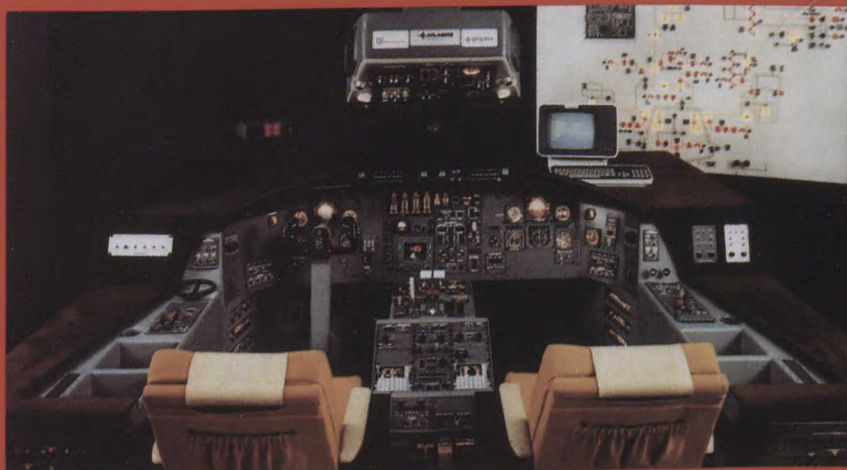
This group has also produced the electronics portion of the Muzzle Reference System (MRS) for the Leopard 1 MBT which provides the Fire Control Computer with electronic compensation for thermal gradients along the gun barrel.

Atlantis Quality Assurance program is based on MIL-Q-9858 for hardware and MIL-S-52779 for software.

Products and Services

INSTRUMENTATION & CONTROL SYSTEMS

Atlantis produces a complete line of guidance and control systems for RPVs and targets, including the ROBOT-X target drone.

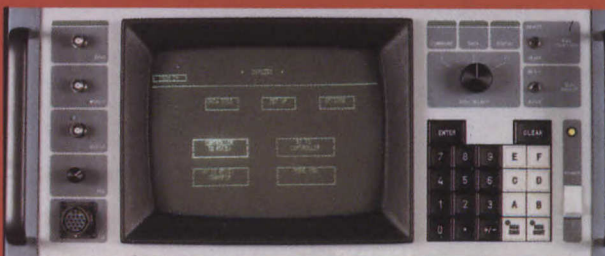
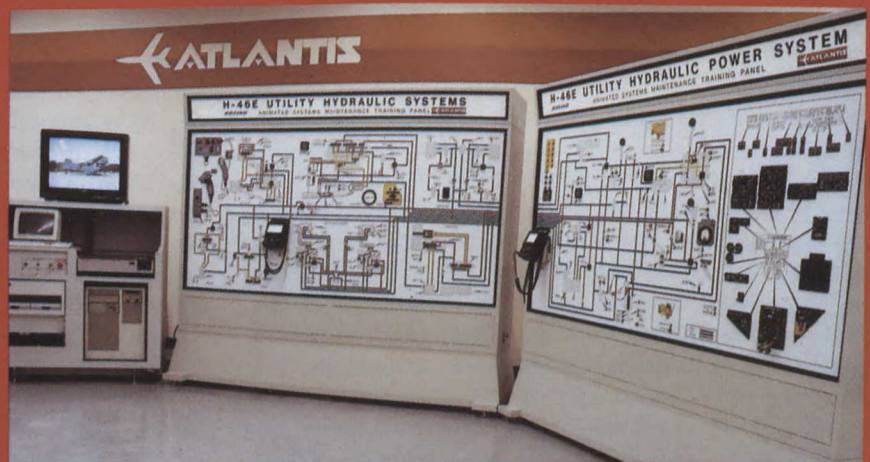


OPERATIONAL & PROCEDURES SIMULATORS

The Canadair Challenger Cockpit Procedures Simulator is one of a variety of simulator types manufactured by Atlantis for air, land and sea elements.

MAINTENANCE TRAINING SYSTEMS

Atlantis is an industry leader in the production of state-of-the-art, free-play simulators designed specifically to enhance transfer-of-training for maintenance technicians.



DCM-1553 DIGITAL BUS COMMUNICATOR

The DCM-1553 is one element of a complete line of commercial and military digital test equipment, supporting all applications from the bench to the flight line.



Aviation Planning Services Limited (APS)/Aerolift Inc.

AVIATION PLANNING SERVICES LTD.

800 Dorchester Blvd. West
Suite 1420,
Montreal, Quebec H3B 1X9

TELEPHONE: (514) 878-4388

TELEX: 055-60725

FAX: (514) 871-8772

PRESIDENT: C.E.B. McConachie

Aviation Planning Services Limited (APS) was formed in 1967 to provide professional consulting services to all sectors of the aviation industry. Since its inception, the company has performed approximately 360 projects for over 100 clients in 27 countries outside of Canada and the United States. Major activities are directed toward commercial air transportation, airport planning, general aviation, product analysis for aerospace manufacturers, maintenance base planning, and aviation system planning and development programs for industry and government.

The multi-disciplinary staff consists of specialists in engineering, flight operations, airline economics, aircraft maintenance, aircraft noise impact, and aviation products marketing. APS project supervisors average more than 25 years of aviation experience, both in industry and consulting services. The firm is dedicated to keeping pace with the latest developments in all facets of the industry and maintains an up-to-date library of research reports and aviation statistics.

APS developed a technique for the use of aircraft flight simulators equipped with computer generated imagery for the evaluation of prospective airports. The firm is currently working on behalf of Canadair in the market assessment of a stretched CL-601 Regional Jet (48 seat derivative of the corporate aircraft). As consultants to the airline industry, the firm has also developed a number of procedures in the sizing of new maintenance and overhaul facilities, which have been utilized on both domestic and overseas projects. The clientele of APS consist of international airlines, business aircraft operators, foreign, federal, provincial and local governments, financial and industrial organizations and aircraft manufacturers. The high ratio of repeat business is an indication of the confidence these diverse groups have in the capabilities of the company.

Aerolift Inc. (which controls 48 per cent of APS shares) is currently working on the development of a Heavy lift Lighter-Than-Air vehicle. This invention, called the "Cyclo-Crane" has accumulated over 20 hours of flight testing with a two-ton capacity proof-of-concept model which can be scaled up to 35-tons or more. With Research and Development funding from

AEROLIFT INC.

666 Sherbrooke St. West
Suite 700,
Montreal, Quebec H3A 1E7

TELEPHONE: (514) 284-1004

CHAIRMAN, PRESIDENT AND CEO:

John R. Aikman

a number of sources, APS will be assisting Aerolift Inc. with a proposed commercial unit having a slingload of 8 to 12 tons for the commercial logging role.

Aerolift's Cyclo-Crane has been demonstrated in flight to represent a practical solution to problems associated with all alternative aerial heavy lift devices. Compared to an equivalent helicopter, the Cyclo-Crane requires about one-fourth the horsepower, since the aerostat lifts not only the Cyclo-Crane's own structural weight but also one-half of the maximum slingload. It dispenses with the need for both a high speed rotor and an expensive wear-prone gear box. Utilizing relatively unsophisticated materials of construction and off-the-shelf components results in low operating and maintenance costs. Above all, it can lift far more than the largest helicopter with much lower investment.

The Cyclo-Crane appears to have many other advantages over the heavy-lift helicopter, its only current competitor:

- it can be overloaded by 20% or more with only minor performance impairment;
- it can be ferried up to 3,000 miles or can work a full 8-hour shift without refueling;
- its inherent stability will permit operation by remote control;
- it features two lift systems, one aerostatic, the other aerodynamic, to enhance safety;
- in a surveillance mode it can remain aloft on station on land or at sea for days.

Products and Services

APS provides a wide spectrum of services to the aviation industry, a number of which are outlined below:

General Aviation

- Corporate Aircraft Selection
- Evaluation of Current Usage
- Technical Audits
- Market Surveys for Manufacturers
- Marketing Programs

Equipment

Procurement

- Navigational Aids
- Communications
- Maintenance and Test Equipment
- Ground Support Equipment

Commercial Air Services

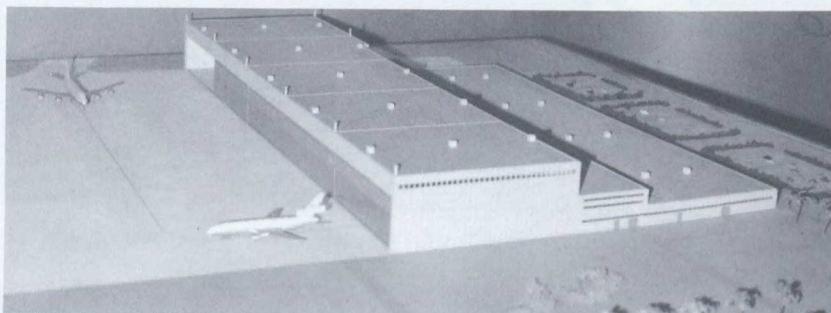
- Demand Forecasts
- Route Analysis
- Aircraft Selection
- Economic Analysis
- Marketing Programs
- Operational Studies
- Management Services
- In-Flight Surveys
- Maintenance & Overhaul Facility Planning
- Manufacturing & Organizational Studies



- Evaluation for Financial Institutions

Airport Planning

- Master Plans
- Regional Airport Systems
- National Aviation Systems
- Facility Planning
- A.T.C. Analysis
- Traffic Forecasts
- Economic Feasibility Analysis
- Ecological & Environmental Analysis
- Equipment Procurement Programs
- STOL port Planning
- Navigational Aid Systems
- New airport Site Selection

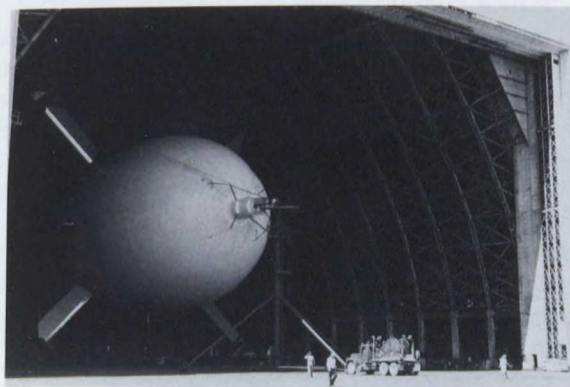


AEROLIFT INC. is developing a unique, patented, heavylift hybrid aircraft called a "Cyclo-Crane".

Below: A prototype of this Lighter-Than-Air vehicle is test flown lifting a Volkswagen Van.



Below: The proof-of-concept Cyclo-Crane resting in one of two Tillamook hangars constructed as blimp hangars by the U.S. Navy during World War II. The hangars feature a clear span covering seven acres. They are 1,000 feet long, 296 feet wide and 195 feet high at the center.





Bachan Aerospace of Canada Limited

300 East Pike Rd.
Post Office Box 39
Emeryville,
Ontario N0R 1C0
TELEPHONE: (519) 727-6666; (313) 963-7533
TELEX: 064 77957

VICE-PRESIDENT & GENERAL MANAGER:

Ed Ropac

DIRECTOR OF MARKETING:

Keith Branston

Bachan Aerospace of Canada Limited is a modern manufacturing facility engaged in the fabrication of precision gears, components, and assemblies for aerospace, defence, and related high-technology industries.

Bachan of Canada maintains a complete gearbox and gear facility for the design, manufacture and test of gearboxes and precision spur, helical, and bevel gears. This facility includes the latest in gear grinding and gear inspection equipment capable of handling gears from one inch (2.5 cm) to 24 inches (60 cm).

Bachan of Canada's gear facility supplies items such as flap actuator gears for the Boeing 757 and oil pump gears for Pratt & Whitney's JT15 and PT6 and PW100 engine programs.

To meet the demanding productivity requirements of the 1980s, Bachan of Canada has established a high precision department. This department is composed of the latest in three spindle 3- and 4-axes C/NC machining centers capable of milling up to 26 x 26 x 60 inches (66 x 66 x 154.4 cm), and N/C turning centers with capabilities from .350-inches (.889-cm) diameter to 35-inches (88.9-cm) diameter, while holding tolerances within .000050 inch (.000127 cm).

Bachan of Canada's high precision department has machined the highly complex gas turbine disks for Pratt & Whitney's commercial engines, and has maintained a zero rejection record on this program.

The firm also supplies completed assemblies, including testing, on items such as cable and shaft assemblies for Bendix Energy Controls for use in their FJ-A unified control system.

The manufacture of such components requires strict adherence to quality control standards, and Bachan of Canada operates to MIL-Q-9858A. The inspection department is fully facilitated with modern inspection equipment including a computer-controlled co-ordinate measuring machine, as well as a complete magnaflux and nital etch facility.

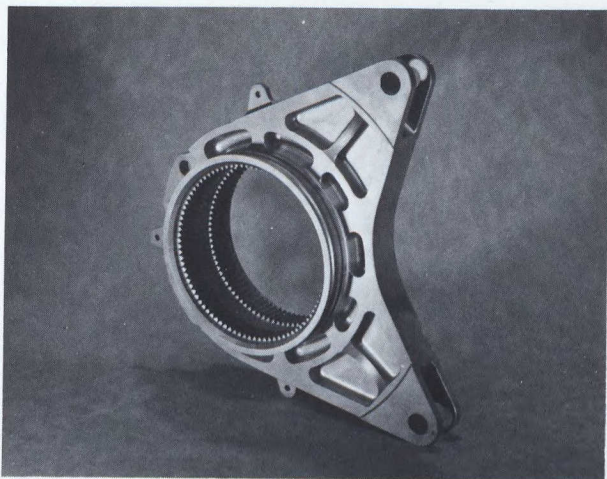
Marketing and sales for Bachan Aerospace of Canada is being done through direct contact with customers by officers and executives of the company. Bachan has been surveyed and approved for its quality assurance by Avco Lycoming, Bell Helicopter, Bendix

Energy Controls, Boeing Company, General Dynamics, General Electric, Hawker Siddeley, McDonnell Douglas, Menasco Manufacturing, Pratt & Whitney Aircraft of Canada, Limited, Pratt & Whitney Power Systems Division, Rockwell, Rolls Royce, Sikorsky, Sundstrand Aviation, P.W. Turbo and Westland Helicopter.

The firm occupies a 33,000-square-foot (3,065 m²) facility in Emeryville, Ontario. The ultra-modern, completely air conditioned plant was built on 45 acres (18.2 hectares), allowing ample room for future expansion.

Bachan of Canada has a formal apprenticeship program, and is currently heavily involved with the Canadian Manpower Service in training skilled machinists.

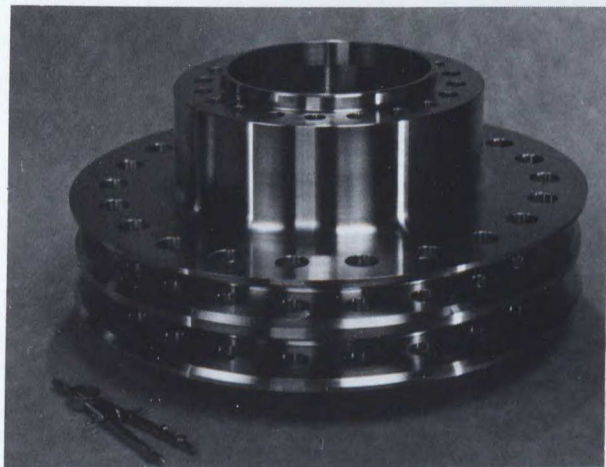
Bachan Aerospace of Canada's objective is to continue to be a leading Canadian manufacturer in the fields of aerospace and defence throughout the 1980s, offering 1990 technology today.



Space shuttle actuator gear



Precision ground gears and components for the aircraft industry



BACHAN
Precision
Components
&
assemblies
for the
aircraft
defence
&
turbine
engine
industries.

Bachan Aerospace of Canada Ltd.
300 East Pike Rd.
Windsor, Ontario, Canada N8X 4G3
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TELEX: 064-77957
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Bell Helicopter Textron

A Division of Textron Canada Ltd.
P.O. Box 5005
Ste. Therese, Quebec
J7E 4K7
TELEPHONE: (514) 437-3400

At Bell Helicopter our customers have always been our first priority. We will provide them with the best products, backed by the most thorough and comprehensive training, service and support systems in the industry.

Our Motto, "The Future is Ours by Design" best describes our new facility in Mirabel. The 151 acre site includes 400,000 square feet of plant housing manufacturing, fabricating, processing, assembly, engineering design, research and development, marketing and administration. Bell Helicopter Textron Canada employs more than 100 engineers and technicians with broad technological experience. They staff five engineering laboratories and a design and technology section equipped to perform a multitude of test and analytical functions at the Mirabel facility. Today's instant communications allow constant information flow between Mirabel and Fort Worth as well as across our international network. This results in our customers always having ready access to us.

Bell Helicopter Textron at Mirabel is fully equipped to fulfill the needs of our customers now and into the future. An exceptional facility. Innovative product development. Thorough customer training programs. The best after-sale support network in the industry. Provided by people whose specific skills and expertise complete the commitment we have to our customers.

THE PRODUCTS

At present Bell Helicopter Textron Canada is manufacturing the 206B JetRanger III and the 206L LongRanger III as well as components for some of Bell's other products. Additional production will follow in the near future.

206B JetRanger III

The JetRanger is the world's most popular 5-place turbine helicopter with or without autopilot. It is unsurpassed as an air taxi, executive transport, police aircraft, aerial crane, medivac or utility vehicle.

The JetRanger can travel from point to point faster than any combination of air and ground transport within a 400 mile range at cruising speeds of 132 m.p.h.

206L LongRanger III

The 7-place LongRanger is a larger version of the popular JetRanger. It fulfills a wide variety of single-engine helicopter requirements from a corporate transportation configuration to a stripped-down hard-working utility craft. With autopilot IFR, the LongRanger can also handle a range of other assignments that the rest of the light helicopters cannot. The turbine-powered LongRanger is capable of cruising speeds of 132 m.p.h.

Products



The Mirabel facility



206L LongRanger III



206B JetRanger III



S/N 3959, our 1st Can. Assembled 206B undergoing final inspection by the Canadian Dept. of Transport



The 206B assembly line at the Mirabel facility.



Bendix Avelex Inc.

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TELEX: 05-826688

PRESIDENT & CHIEF EXECUTIVE
OFFICER: K. Kivenko
DIRECTOR, MARKETING: J. Beaven
DIRECTOR, ENGINEERING: E. Segev
DIRECTOR, PRODUCT SUPPORT: G. Walker
DIRECTOR, PROGRAMS: M. Cote

As a recognized leader in technological innovation and advanced engineering design, Bendix Avelex Inc. is a major international supplier of aerospace and defence electronic products. With a dedicated and experienced team, Bendix Avelex provides the aerospace and defence industry with a wide range of products including: Night Vision Goggles, Night Observation Devices (Long Range), Radar related systems, Vehicle Navigation Systems, Gun Alignment and Control Systems, simulators and training systems, flow monitors, Aircraft Engine Controls and Accessories. Product Support services include: integrated logistic support, reliability improvement programs, technical publications, comprehensive aftermarket sales service, and repair and overhaul.

In addition to the products manufactured by Bendix Avelex, the Company actively markets many products manufactured by Bendix Aerospace Divisions of the U.S.A. and other high technology companies from around the world. These include: air, sea and land-based electronic products and systems, simulators, radars and meteorological systems.

The main plant and headquarters are located in Montreal, Quebec, Canada in a modern 220,000 square foot complex. Housed in this complex are the engineering design offices, electronic, electro-optic and R&D laboratories, extensive CAD/CAM facilities, precision machining centres, and a repair and overhaul facility recognized as one of the largest and most versatile in Canada.

In Cornwall, Ontario, our electronic production facility manufactures sophisticated electronic systems and sub-systems for aerospace and defence applications. In Vancouver, British Columbia, the Aero/Marine Division specializes in aircraft and marine products with related repair and overhaul.

Bendix Avelex has developed world class expertise in a wide range of engineering disciplines which include electro-optics, lasers, simulation, geo-magnetics, pneumatics, fluid dynamics and hydro-mechanics, electronics and software generation.

Avelex R&D programs play a vital role in maintaining a leading edge in critical technologies. In excess of 10% of sales is invested in research and product

development in applications as diverse as fluid flow measurement, night vision, tactical training, and land navigation.

The electronic production facility is equipped with the latest in continuous flow soldering and conformal coating equipment and an environmental test capability which includes sinusoidal and quasi-random vibration systems, burn-in chambers, and automatic test equipment for PCB diagnostics and repair. The Machine Shop includes precision CNC and DNC machine tools reflecting the latest advances in metal removal technology capable of achieving tolerances of 50 millionths of an inch.

Bendix Avelex' total quality concept ensures that reliability and dependability are designed into the product. This philosophy is an integral aspect of the Avelex management approach. This quality control system meets the requirements of DND 1015/NATO AQAP-1, Transport Canada, and many international prime contractors.

The Product Support program at Bendix Avelex starts right at the design stage. Avelex seeks out and harnesses the most cost-effective technologies to further improve a program that gives our clients cost-effective product support around the clock and around the world.

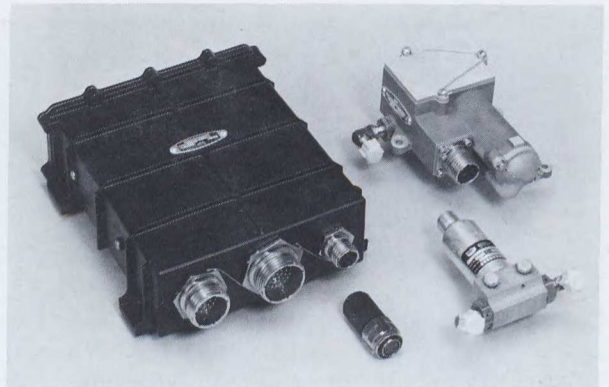
Repair and overhaul is a crucial aspect of product support. Bendix Avelex maintains one of the most diversified repair and overhaul facilities in Canada. In addition to all Avelex products, the company repairs equipment made by other Bendix Aerospace companies, as well as products from 250 original equipment manufacturers.

Bendix Avelex is a unit of the Bendix Aerospace Sector of Allied-Signal Inc., a major international organization.

Products and Services



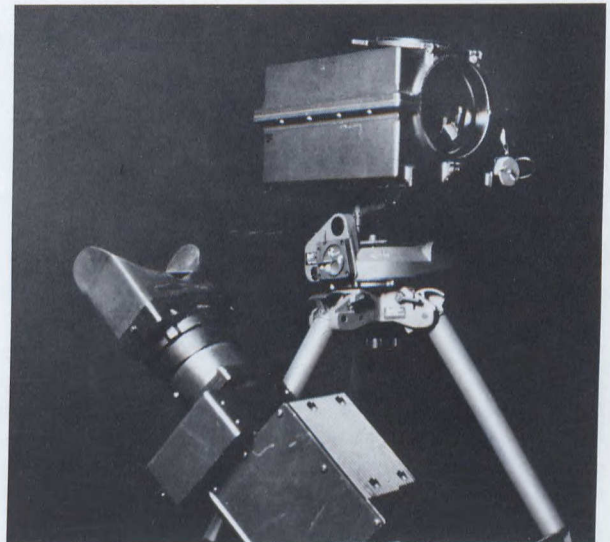
Vehicle Navigation System



Electronic Limiting Unit



Night Vision Goggle



Night Observation Device
Long Range



Gun Alignment and Control System



Boeing of Canada Ltd.

Arnprior

Arnprior Airport
Arnprior, Ontario K7S 3M1
TELEPHONE: (613) 623-4267
TELEX: 05-34110

PRESIDENT: G.B. Sampson
VICE-PRESIDENT/GENERAL MANAGER:
K.G. Laver
DIRECTOR OF BUSINESS: R.L. McDonald

Boeing of Canada Ltd., Arnprior Division, is extensively involved in the repair, overhaul and modification of tandem rotor helicopters and their components, produced by Boeing Vertol and operated by the Canadian Armed Forces. Logistic support, technical investigations and engineering services are also part of the services provided.

From 1980 through early 1986, Arnprior conducted a major modification and modernization program for the Canadian Forces Search and Rescue CH 113 helicopter fleet.

The Arnprior Division is the principal manufacturer, under license, of the 107 type helicopter lag damper. The lag damper is a sophisticated hydraulic component which forms part of the helicopter rotor hub assembly. This product is distributed worldwide, although the primary market is the U.S. Military.

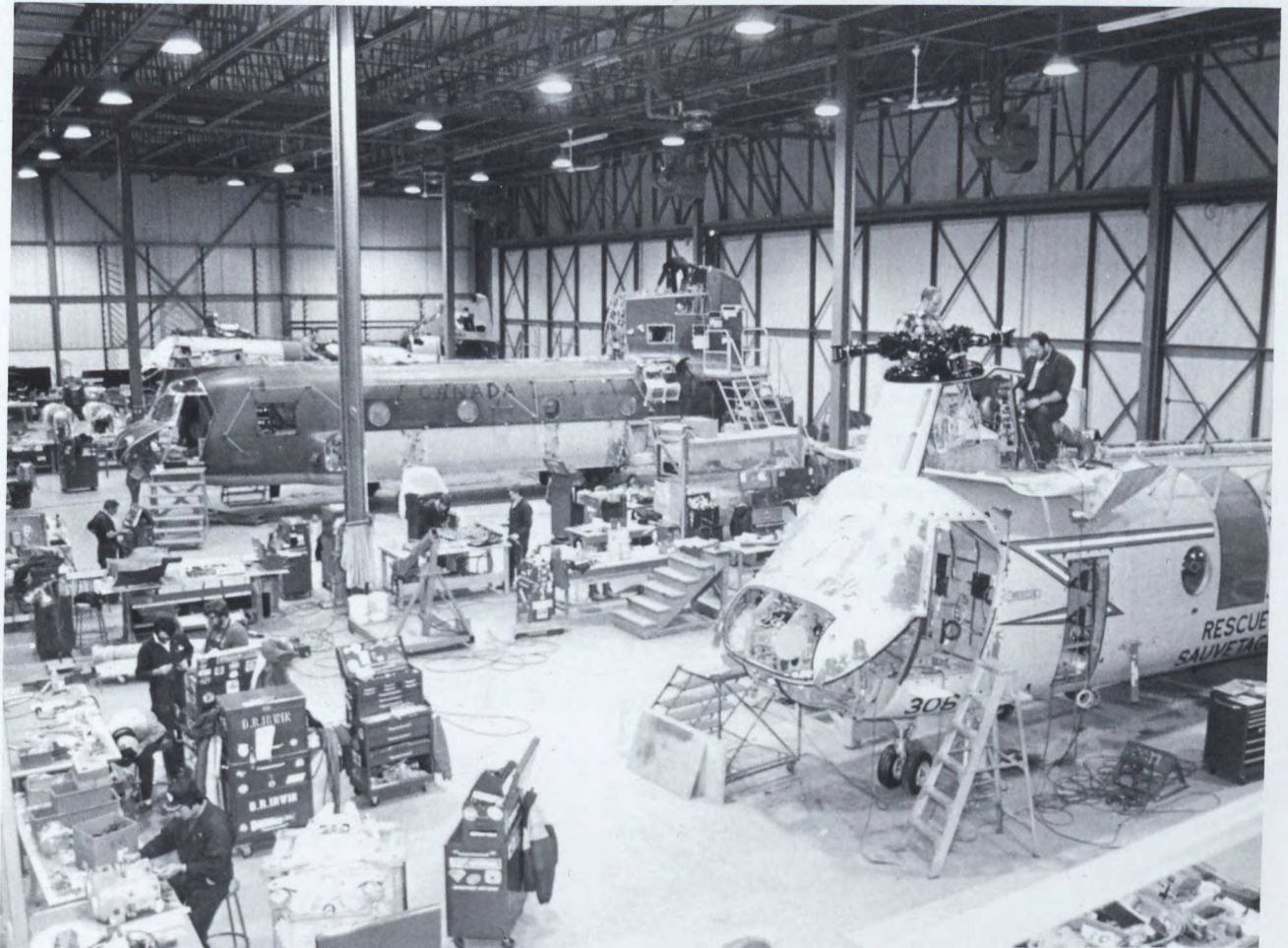
The Arnprior Division has the manufacturing mandate for selected machine shop and sheet metal shop detail parts and assemblies required in support of the Boeing Company's various commercial airplane programs. It is the sole supplier of the electrical/electronic trays and shelves for the new generation 757 and 767 aircraft.

In order to support its expanding workload, the Arnprior Division constructed a 25,000 square foot aircraft overhaul and paint facility in 1978 and has now concluded the construction of a new 60,000 square foot facility dedicated to manufacturing. The acquisition of CNC machine and turning centres, new heat treat, NDT process and paint equipment, have all added to the production capability. In addition, CAE/CAD/CAM capabilities are being installed to support rapidly growing engineering and publication staff.

The Arnprior Division's quality control program conforms to FAA MIL-Q-9858, DND AQAP-1, and Boeing standards. The Division is also an approved supplier for other major aircraft companies including Bell Textron and Fairchild.

The Arnprior Division has consistently pursued the objectives of growth and diversification to remain competitive in metal fabrication, repair and overhaul.

Products and Services



—ARNPRIOR DIVISION—

PRODUCTS AND SERVICES

- 1) Sheet metal fabrication, machining and assembly of components for Model 737, 747, 757, 767 commercial airplanes and CH 113 and 147 helicopters.
- 2) Repair and overhaul for CH 113 and 147 helicopter airframes and components.
- 3) Manufacture and overhaul of 107 type helicopter lag damper.
- 4) Engineering, publications, logistics support, and field service for tandem rotor helicopters.

MAJOR EQUIPMENT

- CNC Machine Centres
- Heat Treat Ovens
- Helicopter Paint Spray Booth
- CNC Turning Centre
- Process Line, Alodize, Anodize and Cadmium Plate Inspection Equipment Coordinate Measuring Machine (Computerized)
- NDT Equipment



Boeing of Canada Ltd.

Winnipeg

99 Murray Park Road
Winnipeg, Manitoba R3J 3M6
TELEPHONE: (204) 888-2300
TELEX: 07-57309

PRESIDENT: G.B. Sampson
DIRECTOR OF MARKETING/CONTRACTS: E.M. Sloane
TECHNICAL SALES MANAGER: R.D. Palmer

The Winnipeg Division, a wholly owned subsidiary of the Boeing Commercial Airplane Company in Seattle, was established in 1971 in facilities adjacent to the Winnipeg Airport. The facilities currently comprise 225,000 sq. ft. of manufacturing space. Principal manufacturing equipment includes three autoclaves (the largest 15' dia. x 35' long & rated at 200 psi, 600 degrees F.), two air heated ovens with 800 degree capability, a 4-axis NC filament winding machine & a fully automated multi-channel through transmission ultrasonic data acquisition and analysis test system.

Products & Services

The advanced composite aerospace components designed and fabricated at the Winnipeg facility are composed of a number of materials, including Nomex honeycomb core, pre-impregnated fiberglass, Kevlar, graphite and hybrids of Kevlar and graphite fabrics in phenolic, epoxy and BMI resin systems. Production processes meet the quality assurance requirements of DND AQAP-1, MIL-Q-9858A, FAA and Boeing Standards.

Boeing of Canada Winnipeg, designs, manufactures and supplies aerial target systems for Canadian and foreign military requirements. The target family consists of rocket boosted, towed, propeller driven, and helicopter vehicles which provide cost-effective air-to-air and point defence training and weapon systems evaluation. In addition, a complete line of services such as operation, training and logistics support is available to assist the user in satisfying his operational requirements.

The Company maintains an aggressive R & D program to ensure their target family is compatible with the latest state-of-the-art weapon systems and changing training scenarios.

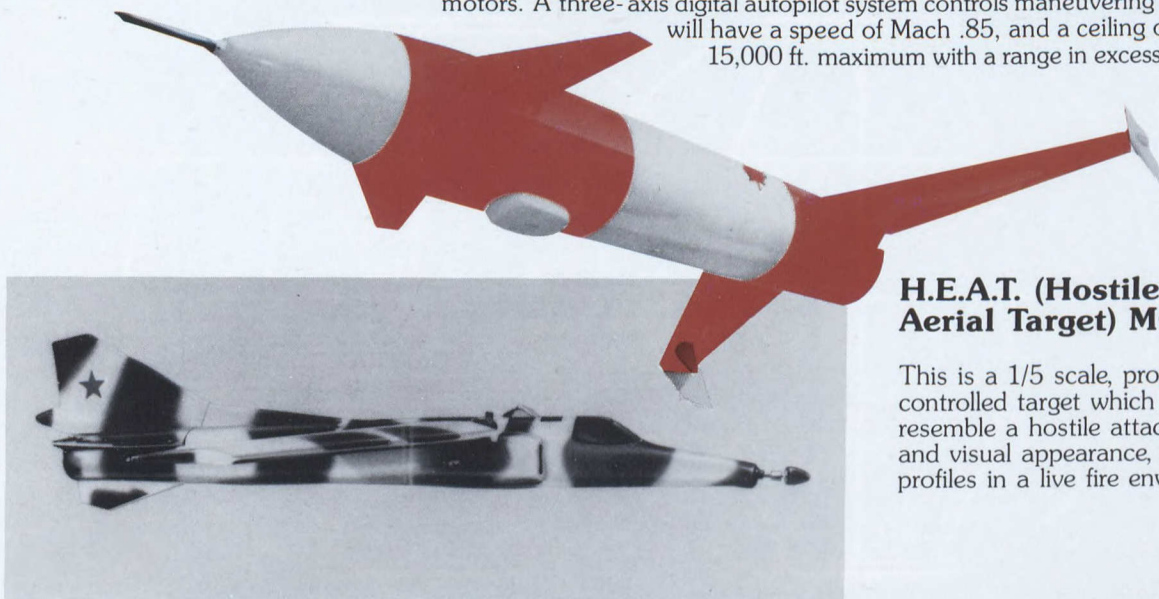
Personnel (03/30/87)

Factory/Manufacturing	666
Inspection	73
Design Engineering	49
Office/Administration	263
	<u>1,051</u>

Products and Services

Robot-X

Is designed as a low cost, low-altitude sea skimming or cruise missile target for low level air defence requirements. This new rocket boosted target provides "over the horizon" radar range with the sequential firing of the nineteen 2.75" rocket motors. A three-axis digital autopilot system controls maneuvering capabilities. Robot-X will have a speed of Mach .85, and a ceiling of 50 ft. minimum to 15,000 ft. maximum with a range in excess of 20 nautical miles.

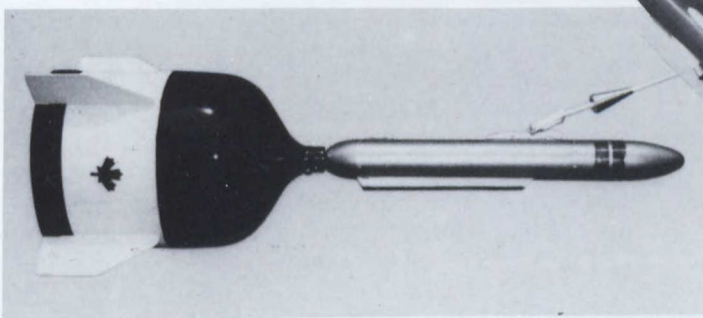


H.E.A.T. (Hostile Expendable Aerial Target) MG 27

This is a 1/5 scale, propeller driven, radio controlled target which is constructed to resemble a hostile attack aircraft in speed and visual appearance, during attack profiles in a live fire environment.

Hind-D

This is a 1/5 size target drone developed to simulate the attack and evasion maneuvers of the latest attack helicopters. This low cost yet sophisticated target can facilitate a number of training scenarios. Remote flight operations include jinking, hovering maneuvers, plus slow forward flight 'S' turns.



Milkcan

This vehicle is a towed target with a lightweight towline to facilitate use of a lower performance, lower cost aircraft. The target has a complete scoring system and passive radar augmentation. Stores clearance has been completed on the T33 aircraft utilizing a Delmar winch.

Robot-5 and Robot-9

These targets provide simulation of high speed air attack vehicles and are designed as disposable units for sea and ground training, as well as weapons evaluation programs.

These vehicles have a range of 10 to 14 km, at a maximum height of 15,000 ft., with speeds varying from Mach .85 to Mach 1.4.

The targets are ballistic, with sequential firing of the rocket motors and a varied launch elevation.

Robot-9 targets are in use with the Canadian and Danish navies as Sea Sparrow missile targets.





Bristol Aerospace Limited

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660 Berry Street
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TELEX: 07-57774
07-57804
TWX: 610-671-3598

PRESIDENT: J.A. Bowden
VICE-PRESIDENT, MARKETING: K.F. Burrows
MARKETING MANAGER: R.R. Dungey

Bristol Aerospace Limited is Western Canada's largest aerospace company. Employing 1,400 people, about 175 of whom are professional engineers and technologists, the company offers complete design, development, and manufacture of a diverse range of products and services.

Located in Winnipeg, Canada, Bristol owns and operates its main facility comprising over 620,000 square feet of floor space, and has direct taxiway access to the Winnipeg International Airport.

The nucleus of Bristol's operation is manufacturing. Manufacturing is carried out to meet the stringent quality requirements of MOT and FAA commercially, and the Department of National Defence. Bristol operates under a single Quality Control System that conforms to the NATO standard AQAP-1.

Skilled technicians supported by a dedicated engineering staff and a quality assurance group form a team that produces this sophisticated range of products:

Fixed and rotary wing aircraft Repair and Overhaul; Afterburner Restoration; Engine Component Manufacture; Airframe Sub-assembly Manufacture including metal and composite material structures; Nuclear Reactor Component Manufacture; design, development and manufacture of Proprietary Aircraft Accessories; Electronics for military defense and space applications; Solid Propellant Research Rockets and Space Science programs; Defense Rockets and Missiles; and Research and Development.

The company's growing involvement in engine component manufacture is linked with its adoption of advanced welding and forming techniques and its experience with exotic new alloys. Its expertise, particularly with sheet metal hot section components has been valued by leading Original Equipment Manufacturers. Manufacturing operations at Bristol embrace a complete spectrum of technology. In addition to conventional machining, Bristol's machine shops are equipped with several numerically controlled machines used in the fabrication of a new generation of complex components for gas turbine engines. Bristol's new 75,000 square foot flexible machining centre will centralize and add to the company's CNC machining capa-

bility, further enhancing its status as a Canadian leader in manufacturing technology. Bristol also has a burgeoning expertise in manufacturing with composite materials.

Bristol maintains extensive facilities for the overhaul, modification and repair of military and civilian aircraft and gas turbine hot section components, as well as an extensive afterburner restoration facility.

CAD/CAM — computer aided design and computer aided manufacturing — is provided at Bristol by a mini-computer based interactive graphic system. This system enables Bristol's engineers to perform all of the functions ranging from product design to the programming of the various numerically controlled machines.

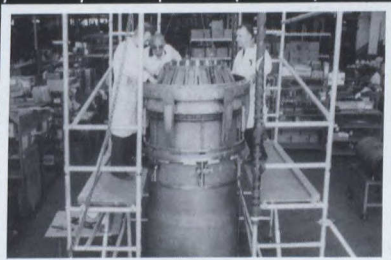
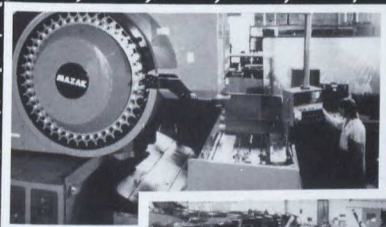
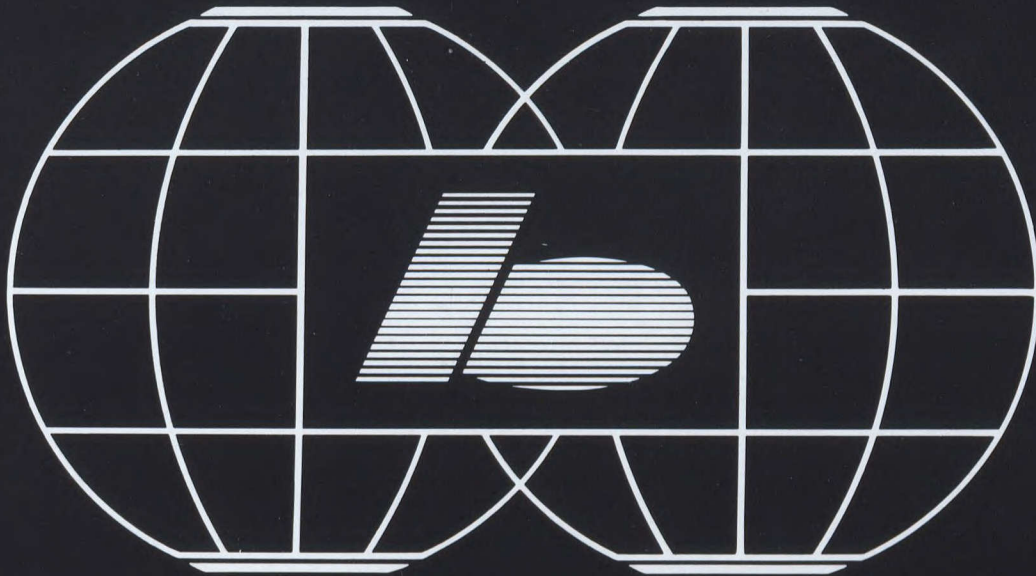
Bristol's capabilities include manufacturing of airframe structures such as ailerons, flaps and leading edges for the Lockheed P3C/CP140 aircraft, composite wing to fuselage fairings and dorsal fairing for the de Havilland Dash 8, a heat pan assembly for the Boeing 767, and, most recently, the control surface assembly and several other structural parts for the Standard Missile II built by Raytheon.

Another example of Bristol research and development capability is the Wire Strike Protection System for helicopters. The WSPS was designed and developed initially for the Canadian Forces and is now manufactured and marketed worldwide.

The CRV7 rocket weapon system developed by Bristol Aerospace in conjunction with the Canadian Department of National Defence is the chosen 2.75 inch rocket weapon system of more than ten airforces around the world. The system is cost effective and boasts higher speed, better accuracy and longer range with greater impact energy than any other competing 2.75 inch rocket weapon system.

The granting of the CF5 Freedom Fighter (Northrop) license to Bristol Aerospace by the Canadian Government is another milestone in Bristol's history of conducting Repair and Overhaul to fighter aircraft. Through a number of modifications, the CF5 will serve for another twenty years, with new life and new capabilities, as the advanced lead-in trainer for Canadian CF18 pilots.

From Concept to Completion, a Proven Expertise in the Aerospace Industry



bristol aerospace limited



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PRESIDENT AND CEO: D.H. Race
VICE-PRESIDENT, OPERATIONS: J.G. MacKay
VICE-PRESIDENT, FINANCE: F. van de Water
VICE-PRESIDENT, CORPORATE RELATIONS: F.C. Fraser

The company is one of Canada's premier high-technology companies, with two of its eleven Canadian operating divisions engaged in the aerospace industry, serving customers throughout Canada and around the world.

CAE Electronics Ltd.

C.P. 1800
Saint-Laurent, Quebec
H4L 4X4
TELEPHONE: (514) 341-6780
TELEX: 05-824856 CAE MTL
FAX: (514) 341-7699

PRESIDENT: N.B. Cavadias
VICE-PRESIDENT, TECHNICAL
DEVELOPMENT AND SALES: D.R. Tait
VICE-PRESIDENT INTERNATIONAL
AFFAIRS AND PUBLIC RELATIONS:
R.F. Kemerer

CAE Electronics Ltd. designs and manufactures civil and military flight simulators. The company holds about one-third of the world's commercial jet aircraft flight simulator market.

Commercial jet aircraft types to date include Boeing 727, 737, 747, 757 and 767; McDonnell Douglas DC-8, DC-9, DC-10, MD-80, MD-81, MD-82, MD-87 and MD-88; Lockheed L-1011 TriStar; Fokker F28, Fokker 50 and Fokker 100; Airbus Industrie A300, A310 and A-320; the Canadair Challenger and Citation 500.

Military aircraft flight simulators include the Lockheed C-130 Hercules, CP-140 Aurora and C-5B Galaxy; Panavia Tornado; McDonnell Douglas CF-18 and A-45; Northrop F-5E; Dassault-Breguet/Dornier Alpha Jet; P-3C Orion and the Boeing E-3A (NATO AWACS).

Helicopter simulators include the Boeing Vertol CH-47C; Bell UH-1D; Sikorsky CH-53; Westland Sea King and Sea Lynx; Agusta Bell 205 and the Agusta Bell 212.

Airborne magnetic anomaly detection (MAD) and magnetic compensation equipment are manufactured for the defence forces of Canada, the United States, Great Britain, Australia, Japan and the Netherlands.

The company is currently producing the ADATS training systems for Canada's Low Level Air Defence (LLAD) and is involved in Software Engineering support for the Canadian Armed Forces CF-18 aircraft.

CAE has developed and manufactured Canada's JETS (Joint Enroute/Terminal System) air traffic control system installed at seven major airports.

The company designed and manufactured the hand controllers and display panel used to manipulate the CANADARM aboard NASA's space shuttles.

CAE Electronics employs approximately 3,000 persons, over 50 percent of whom are engineers, scientists, and technicians.

CAE's plant is a fully integrated design, manufacturing and test facility occupying 46,449 m² (500,000 feet²) of floor area.

Northwest Industries Limited

Edmonton International Airport
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T5J 2T2

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TELEX: 037-41574 NORTHWEST EDM

FAX: (403) 955-2181

PRESIDENT:
L.H. Prokop
VICE-PRESIDENT & GENERAL MANAGER:
F.A. Maybee
VICE-PRESIDENT FINANCE &
ADMINISTRATION:
C.H. Fraser

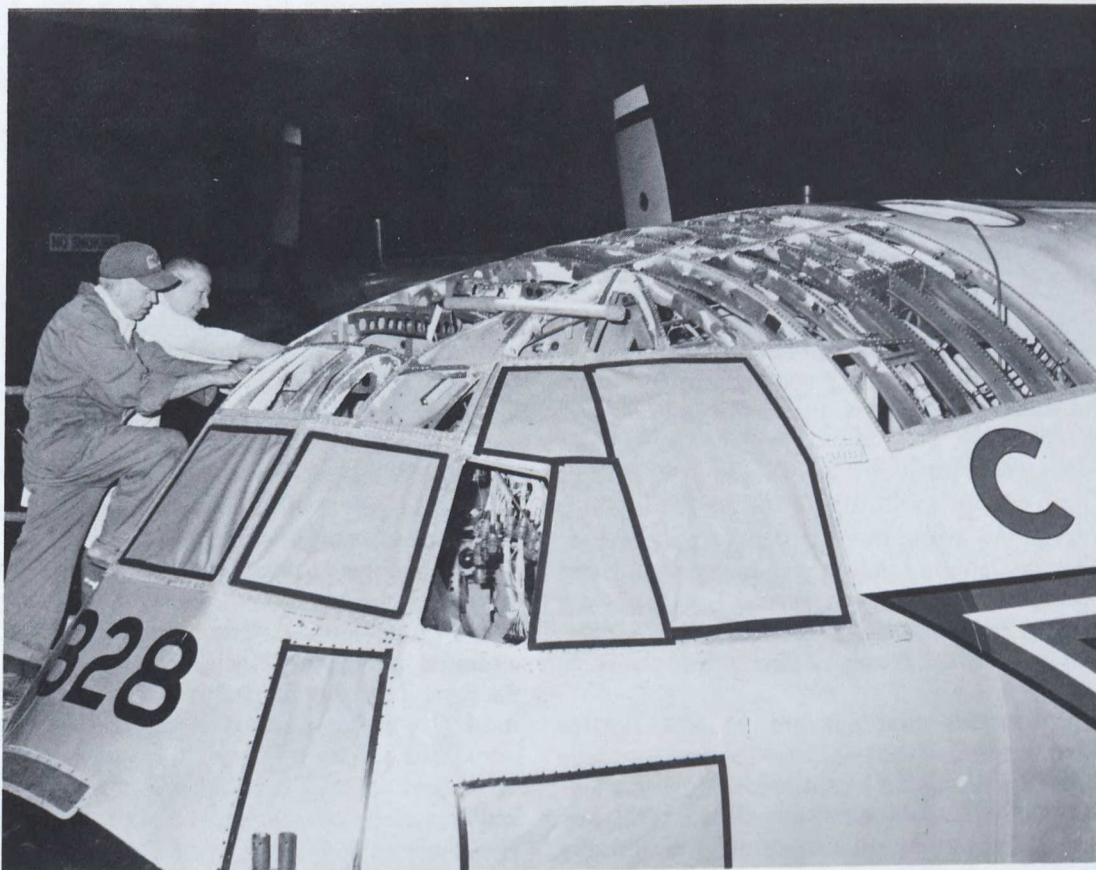
Northwest Industries Limited (NWI) is one of Canada's largest and most experienced maintenance, repair, overhaul and modification centres for military and commercial aircraft. Included in current operations are the Canadian Armed Forces fleets of T-33, CT-114 (Tutor) and C130 aircraft in addition to commercial Hercules transports. The company's large and modern hangars at the Edmonton International Airport provide a total working space of 17,300 m² (190,000 feet²).

NWI provides a comprehensive aircraft maintenance service from minor inspection to major overhaul, including non-destructive testing, airframe and electrical systems life extension and corrosion control, airframe components manufacture and special processing, hydraulic component overhaul, lines and cables manufacture, electrical wire harness fabrications, instrument repair design and installation, and the production of technical publications.

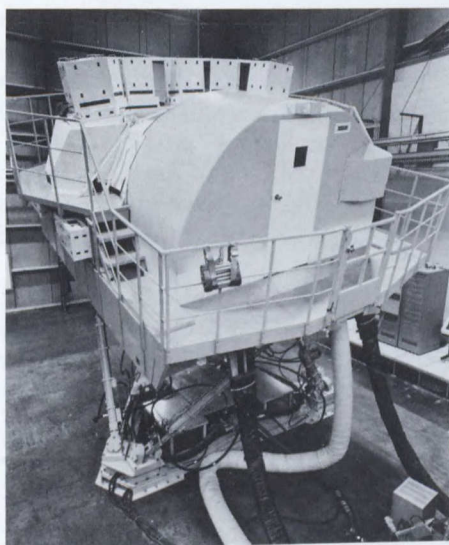
Last year Northwest Industries Limited became the first Canadian company to carry out structural work on the CF-18's and it is a sub-contractor to Canadair on the recently announced maintenance program for the CF-18.

The company's operations are approved by the Canadian Department of National Defence to AQAP-1 level, and a similar level of approval is held with Transport Canada.

Products and Services



EDMONTON -Repairing damaged Canadian Armed Forces C-130 Hercules transport at Northwest Industries Limited.

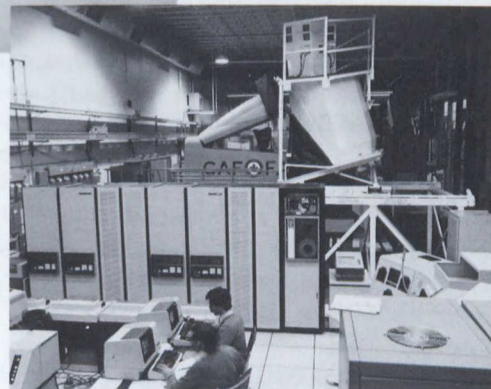


Korean Airlines MD-82 flight simulator manufactured by CAE Electronics Ltd.



EDMONTON - Interior view of the new Northwest Industries Limited maintenance hangar at Edmonton International Airport, with a Falcon jet and Hercules C-130 turbo prop transport on the floor.

One of three CF-18 flight, tactics and mission simulators manufactured by CAE Electronics Ltd.





Cametoid Limited

1449 Hopkins Street
Whitby, Ontario L1N 2C2
TELEPHONE: (416) 666-3400
TELEX: 06-981421

PRESIDENT & CEO: D.G. Newman
TECHNICAL DIRECTOR: R.W. Bertram
PRODUCTION MANAGER: I.G. Lugman
SALES MANAGER: W.M. Roest

Cametoid Limited is a special process facility for the application of high technology coatings for the aerospace and defence industries. It is a privately owned Canadian company.

Cametoid was originally incorporated in 1950 to provide high quality anodizing for the aircraft landing gear components, being manufactured by its former owner, Dowty Canada Limited. For many years after its incorporation, the company served Dowty almost exclusively on components for the CF100 and CF104, the de Havilland STOL family of aircraft and the Avro Arrow.

When Canada's first satellite Alouette I was launched in September 1962, it carried with it antennae that had been gold plated by Cametoid. It was about the same time that Cametoid produced some of the first electroless nickel plating on aluminum commercially available in Canada. The process was mandatory on certain components of the guidance system for the Lockheed CF104 Starfighter.

In 1967, the company was purchased from Dowty by the Newman family of Whitby, Ontario, and today is a wholly owned subsidiary of Newman Aerospace Incorporated. Since then, Cametoid has been expanding its customer base and research capability in vacuum deposition and thin film optical coatings.

In 1972, after ten years of development experience with hard anodizing, Cametoid made available thicker coatings (.004"-.006") by the use of an AC-DC power source for reclaiming worn or mis-machined parts. In 1974 it began the production of Teflon-impregnated hard coatings for increased lubricity, wear resistance and outstanding corrosion resistance. In 1980, in response to customer interest, Cametoid installed equipment for the production of dry film lubricants.

In 1981, Cametoid completed an agreement with McDonnell Aircraft of St. Louis, Missouri for the acquisition of two electronically-controlled vacuum coaters which are used to coat critical high strength components with thin films of aluminum. I.V.D. replaces cadmium plating thus eliminating embrittlement and fatigue problems associated with plating high strength steel.

Most recently, Cametoid has established an optical

coating capability to design, produce and test multi-layer optical coatings. One example is the provision of high-efficiency, anti-reflection coatings required for the emerging infra-red surveillance and tracking technology. This is the first phase of the development of a sophisticated optical capability at Cametoid in coatings and components.

The company operates two plants of 30,000 square feet total floor area at Whitby, Ontario, Canada, just east of Metro Toronto. One plant is dedicated to conventional processing including anodizing, electroplating and dry film lubricants. Recent expansion of this plant has resulted in installation of a large scale automated anodizing line. The second plant contains the optical vacuum coatings division and is the only facility in Canada producing aluminum I.V.D. coatings.

Cametoid holds numerous approvals as a special process facility from industrial and governmental customers including: Air Canada, Boeing, C.G.E., Computing Devices, D.O.C., D.N.D., D.O.T., de Havilland, Dowty, Garrett, Litton, McDonnell Douglas, Pratt & Whitney, and Spar. Cametoid is currently listed in D.N.D. document A-LP-Q06-001/AX-000 Part 2 Section 2, and is under surveillance by CFTSD 305. It has a structured Quality Assurance Program to AQAP 4, and maintains a quality level consistent with CSA-Z-299.2.

Cametoid conducts research and development in high temperature metallurgical coatings, vacuum coatings, optical coatings, electronic coatings, and evaluation/analysis by electron microscopy.

A high quality, specialized centre for conventional, vacuum and optical coating technology, Cametoid has established itself as a unique Canadian centre serving the aerospace, energy, defence, nuclear and transportation industries.

cametoid LIMITED

Selective and Protective Coatings for Aerospace and Electro-Optics



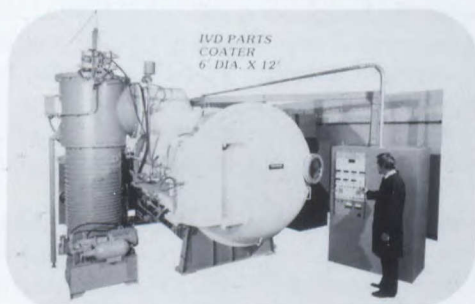
Complete anodizing & electroplating facilities are available for processing to MIL-Spec requirements.

OPTICAL COATINGS



An optical coating capability is available, where coatings are designed, produced, tested and certified to customer requirements.

VACUUM COATINGS



Two vacuum coaters are available for the Ion Vapour Deposition (IVD) of aluminum on critical components. The process is called IVADIZING™ and can be used equally on large structural components and small connectors and fasteners.



Newman Aerospace Inc. the parent company of Cametoid Ltd., has recently acquired Industrial Measurements Ltd. (IML) of Markham, Ontario, and exclusive representation for Shorrock Electronic Systems Inc. of Hanover, Maryland. Together they represent a major diversification of the Newman Group activities.



Industrial Measurements Ltd. (IML) is a Canadian manufacturer of Industrial Alarms and SCADA Systems. The principle product line is the DIGISPONDER SYSTEM consisting of remote terminal units (RTU's) and a central computer station. The system is used for monitoring and controlling economically at any distance via dial telephone, dedicated line, or radio. Typical applications include telecommunication stations, energy generation & distribution stations and municipal water treatment plants.

SHORROCK

Shorrock Electronic Systems Inc. is the U.S. subsidiary of Shorrock plc of the U.K. Shorrock manufactures computerized control & monitoring systems for a broad range of requirements. Control systems are available from compact processor-driven alarm units with card readers and digital keypads to major perimeter security systems for sensitive installations which are in use worldwide.

For further information, contact: Scott McKinnon, Manager IML (416) 474-1247



Canadair Limited

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CHAIRMAN: Laurent Beaudoin
PRESIDENT & CHIEF EXECUTIVE OFFICER: Donald C. Lowe
EXECUTIVE VICE-PRESIDENT: Robert D. Richmond
VICE-PRESIDENT, FINANCE: Paul H. Larose
PRESIDENT & CHIEF EXECUTIVE OFFICER,
CANADAIR CHALLENGER INC.: Roger L. Hazelton

Since its incorporation in 1944, Canadair Limited has produced more than 4,000 military and commercial aircraft, of which 580 were supersonic.

In current production are: the Challenger long-range, advanced technology business jet aircraft; the CL-215 multipurpose amphibian, designed for use in the forest protection role; and a family of unmanned airborne surveillance systems.

Canadair also produces components for other manufacturers' aircraft, including major structural assemblies for the Boeing 767 airliner, the Lockheed C-5B military transport, the Lockheed P-3C long-range patrol aircraft, the McDonnell Douglas F/A-18A Hornet and the Northrop CF-5 and F-5, as well as machined components for the McDonnell Douglas F-15 Eagle. Canadair is also responsible for system engineering support of the Canadian Forces CF-18 aircraft.

A subsidiary of Bombardier Inc., Canadair is the largest airframe manufacturer in Canada and has one of the best equipped machine shops in the world. Three plants are located at Cartierville Airport and an assembly plant is at Dorval International Airport. Total area under cover is 2.7-million square feet (250,830 m²).

Continued research and development projects play an important role in the study of high-technology materials and aerospace techniques.

Canadair products are in service across the world.

Manufacturing facilities include 39 numerically-controlled spindles for machining aluminum alloys, steel, titanium and other aerospace metals. The largest machines are two numerical control five-axis milling machines, each having three triple-spindled gantries and a working table surface of 214.8 feet by 13.5 feet (65.5 m by 4.1 m). Designed and built to Canadair specifications, these machines are capable of repeatable part accuracy within 0.005 inches (0.127 mm). There is also a computer-controlled three-axis profiler with a surface table measuring 98 feet by 66 feet (30 m by 20 m).

Fuselage skins for Challenger and Boeing 767 aircraft are formed in a heat treat/stretch forming facility consisting of a suspended oven, three quench tanks and a 1,000-ton capacity longitudinal stretch former capable of handling aluminum sheets 40 feet by eight

feet (12.2 m by 2.4 m).

Canadair makes extensive and increasing use of sophisticated computer technology throughout the plant from design through manufacturing, with CADAM programs applied directly to numerically controlled machines and to the computer-controlled inspection of machined parts.

Bankers: Banque Nationale du Canada/Canadian National Bank

Manpower as of Mar. 2, 1987

Total Canadair Employees	5,494
Total Salaried Employees	2,593
Total Hourly Employees	2,901

Canadair has three subsidiaries. They are: Canadair Challenger Inc., with offices in Windsor, Connecticut; Challenger Aviation Service GmbH, which is a subsidiary of Canadair Challenger Inc.; and Canadair Services Ltd.

Canadair Challenger Inc. is responsible for marketing and commercial sales of Challenger aircraft in North America, and maintains offices in several major cities in the U.S. Its service division is responsible for the Challenger Service Center near Hartford, Conn.

Challenger Aviation Service GmbH, in conjunction with Dornier GmbH, operates the Challenger Service Center near Munich, Federal Republic of Germany.



CHALLENGER

Challenger 601

CHALLENGERS are high-speed, long-range, wide-bodied aircraft designed for the business and utility jet markets of the 1980s and 1990s.

CHALLENGERS incorporate advanced airfoil technology, high bypass ratio turbofan engines, state-of-the-art systems and the first wide-bodied fuselage to be found on a business aircraft. The current version, the CHALLENGER 601-3A, is equipped with advanced avionics and cockpit displays, and is powered by two General Electric CF34-3A turbofan engines. These engines are flat-rated to maintain their 3,924 kg (8,650 lb.) thrust up to 70°F, improving hot-day field and climb performance over the earlier 601 with CF34-1A engines.

The advanced airfoil is more efficient than traditional wing shapes, reducing drag in cruise and permitting a lighter structure. CHALLENGER systems are designed to the most stringent certification standards for reliability and maintainability.

The wide body provides stretch-out, walk-around room and comfort consistent with the aircraft's range and endurance, while its low noise levels permit unrestricted operation at airfields with strict noise curfews.

Although designed as a business jet, its basic characteristics — the wide body, long range and endurance, abundant AC electrical power reserves, low noise levels — make the CHALLENGER highly suited to many other applications. It is in service as an air ambulance, is performing flight inspection and calibration duties with the Canadian DoT and will be entering service in the electronic support and training role with the Canadian Forces. It is also suited to special passenger and cargo, maritime surveillance, search and rescue, mapping and reconnaissance roles.

By early March 1987, 147 CHALLENGERS had been sold. In addition to those purchased by corporate clients, CHALLENGERS have been sold to a number of Government agencies: West Germany (7), the People's Republic of China (3), Malaysia (2), and Canada (18). CHALLENGERS are in service in North America, Europe, the Middle and Far East, Africa and Australia.

canadair

Aerospecialist for the Eighties

CL-215 MULTI-PURPOSE AMPHIBIAN

For almost 20 years, this rugged twin-engine amphibian aircraft has proven itself as the most efficient firefighting aircraft in the world. It can scoop a load of 5,350 litres (1,176 Imp. gal.) of water in 10 seconds as it skims over the surface at 130 km/hr (80 mph) and drop this load with accuracy on a fire.

It has demonstrated its ability to spray insecticides and oil dispersants and to fight oil fires with the on-board injection of foaming agents into its load.

The CL-215 is used for maritime surveillance and as a utility transport. It can carry up to 26 passengers or 2,805 kg (6,200 lb.) of freight, and is suitable for search and rescue and a variety of military roles.

Now offered with turboprop engines, the CL-215T will have increased productivity, with higher speed and greater payload capability. First deliveries of the CL-215T are expected in early 1990.

By early March 1987, 111 CL-215s had been sold to customers in eight countries and six Canadian provinces.



UNMANNED AIRBORNE SURVEILLANCE SYSTEMS

Twenty-five years of experience in this field has made Canadair the world's leader in the technology of unmanned airborne surveillance systems.

- CORPS level - CL-289 (AN/USD 502)
- DIVISION level - CL-89 (AN/USD 501)
- BRIGADE level - CL-227

The family of surveillance systems is divided into three major categories to meet the needs of specific military applications:

CL-289 (AN/USD-502)

This system, an evolutionary growth from the CL-89, is being developed jointly by Canadair and Dornier GmbH of West Germany, with Société Anonyme de Télécommunications (SAT) of France providing the optronics.

The CL-289 can carry both photographic and infrared linescan sensors (IRLS), with the added feature of real-time IRLS data transmission.

The flight path of both CL-89 and CL-289 is preprogrammed and cannot be interfered with from the ground, nor from outside sources.

In late 1985, the governments of Canada, West Germany and France agreed to proceed jointly with the pre-production phase of the program. Production is expected to commence in July 1987, with first deliveries in 1989.



canadair

Aerospecialist for the Eighties

CL-89 (AN/USD-501)

Historically, the CL-89 was the first of the family.

The CL-89 system uses a reusable surveillance drone carrying photographic or infrared linescan sensors to gather battlefield intelligence. Launched from a mobile zero-length launcher, the drone flies a preprogrammed course, homes to a radio beacon and is recovered on a two-stage parachute system employing inflatable air bags to absorb landing shocks.

The CL-89 is used in Europe by the armed forces of the United Kingdom, the Federal Republic of Germany, Italy and France.

To date, more than 3,000 missions have been flown using this system. Individual drones have made over 40 flights each.



CL-227 SENTINEL UNMANNED AIRBORNE SURVEILLANCE SYSTEM

The CL-227 Sentinel system uses a small, VTOL, remotely-piloted vehicle (RPV). It can take off and land vertically, hover, and cruise in level flight. The CL-227 can operate from a small platform mounted on a truck or ship and requires only a six-man crew.

It can remain airborne for up to four hours and is suitable for real-time TV and thermal-imaging surveillance, offset jamming, decoy, target acquisition, and many other roles, both on land and at sea.

Its small size, low noise levels, and low radar and infrared signatures make it difficult to detect.

Now in full scale development for customer evaluation, the first flight of a Phase 3 vehicle is scheduled for 1987.



canadair

Aerospecialist for the Eighties



Canadian Aircraft Products Ltd.

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TELEX: 04-355526
CABLE: CANAPRO
FAX: 604-278-9821-217

PRESIDENT: D.C. Cameron
MARKETING DIRECTOR: D.C. Cameron
VICE-PRESIDENT, OPERATIONS: R.A. White
DIRECTOR OF ENGINEERING: W.M. Williams

Canadian Aircraft Products Ltd. offers complete design, engineering and fabrication of aircraft structural components in metal and composite materials.

The Company's quality assurance program is approved to Canadian DND 1015, United States MIL-Q-9858A and NATO AQAP-1 standards. The firm's Director of Engineering is a "design approval representative" of Transport Canada which permits in-house approval of new designs and modifications to general aircraft structures and systems.

In addition to aircraft structures, the company has produced lightweight research vessels, structures for submersibles, oceanographic equipment and cyclatron structural components.

Canadian Aircraft Products Ltd. was formed in 1955 to design and build a line of aircraft floats including floats for Cessna and Piper aircraft, the de Havilland DHC-6 Twin Otter and wing tip floats for the Canadair CL-215 water bomber.

The company's activities have expanded over the years to include sub-contract work for prime contractors such as de Havilland Aircraft Canada, McDonnell Douglas Canada, Boeing Canada, Canadair Limited, and North American Rockwell.

Structural components are produced for such aircraft as the:

- de Havilland DHC-6 - floats
- de Havilland DHC-7 - elevators, rudders, airstair doors
- de Havilland DHC-8 - horizontal stabilizer, rudders, elevators and composite fairings and ducting.
- Canadair CL-601 - horizontal stabilizer and elevators
- auxiliary fuel tanks
- Canadair CL-215 - wing tip floats
- Douglas MD-80 - empennage fairing
- Boeing 747 - detail parts and sub-assemblies

Engineering services include computer aided design and engineering, analysis, and certification in both metal and composite materials for both fixed and rotary wing aircraft. This in-house design and engineering capability enables the company to provide a complete service from design concept to production

and certification.

The company is located in Richmond, B.C. a suburb of Vancouver and occupies 75,000 sq. ft. of manufacturing and administration space on 6 acres of land. The plant is comprised of separate facilities for metal and composite manufacturing. All tool design and fabrication is carried out in-house. The plant is equipped with all the standard processes and testing procedures.

Total employment as of March 1987 is 250.

Salaried employees number 50.

Hourly employees number 200.

Sales for the last fiscal year were approximately 14 million.

Canadian Aircraft Products Ltd. is a wholly owned subsidiary of Avcorp Industries Inc. a publicly owned company based in Montreal, Quebec.

Products



MD-80

The empennage fairing for the famous McDonnell Douglas DC9/MD-80 family of aircraft is built by C.A.P. Ltd. for McDonnell Douglas Canada and delivered to their plant at Malton, Ontario.



DASH 7

C.A.P. Ltd. has produced the elevators, rudders and airstair door for the de Havilland Dash 7 STOL airliner since the beginning of the program. The Dash 7 has earned a reputation.



DASH 8

C.A.P. Ltd. has designed, engineered and fabricates several components on de Havilland's latest commuter aircraft the Dash 8. The Richmond, B.C. plant produces the horizontal stabilizer, elevators, rudders and a variety of composite parts including empennage leading edges.



CHALLENGER

Canadair's leading technology Challenger aircraft has horizontal stabilizers and elevators that are designed, engineered and fabricated by C.A.P. Ltd. The company also produces the auxiliary fuel tanks for the aircraft.



TWIN OTTER

The Model 12000 floats were designed and built by C.A.P. Ltd. specifically for the world-famous de Havilland DHC-6 Twin Otter shown here landing in the busy Toronto harbour.



CL 215

Canadair's long running CL-215 program has wing tip floats supplied by C.A.P. Ltd. The floats were designed and engineering by C.A.P. Ltd.



Canadian Astronautics Limited

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FAX: (613) 820-8314

PRESIDENT: James D. Taylor
EXECUTIVE VICE-PRESIDENT,
CORPORATE DEVELOPMENT: Michael A. Stott
EXECUTIVE VICE-PRESIDENT,
ENGINEERING: William E. Cox

Canadian Astronautics Limited (CAL) is a diversified company engaged in developing and manufacturing a wide range of high technology products and providing systems engineering services.

The diverse range of products and services offered include satellite ground stations, airborne synthetic aperture radar, spacecraft subsystems, instrumentation, process control, radar simulators, signal processing and computer systems.

Founded in 1974, CAL's rapidly growing capability is supported by a 53,000-square-foot (4,924 m²) office, laboratory and a 30,000-square-foot (2,787 m²) production facility.

The laboratories, which include a cleanroom for aerospace hardware assembly, are equipped to support analog and digital electronic development, antenna and RF development, and computer facilities for signal processing and process control work. CAL also has access to environmental laboratories, antenna ranges and failure analysis laboratories in the Ottawa area. Furthermore, CAL provides a full capability for Mil Spec drawings, documentation and QA inspection in support of hardware production. A VAX 11/780 computer system and a TEMPEST shielded facility are also available.

Sales in 1985/86 were \$25 million with a staff level of about 280 people, the majority of whom are scientists, multi-disciplinary engineers and technologists. The company is continuing its rapid expansion and anticipates a 25 per cent increase of volume in 1987.

CAL's expertise in signal processing has made the company the leading supplier of SARSAT ground stations. The stations operate with the international search and rescue satellites for emergency location of distressed aircraft and vessels. The company has supplied six stations to Canada, U.S.A. and France and is under contract to provide three more stations to Canada and one to Brazil.

In the radar field, CAL has developed an airborne synthetic aperture radar (SAR) and side looking airborne radar (SLAR) for mapping, ice reconnaissance, geophysical exploration and environmental monitoring applications. In addition, CAL has developed phased array antennas for microwave landing system applications and has capability in thin film microwave

integrated circuit components.

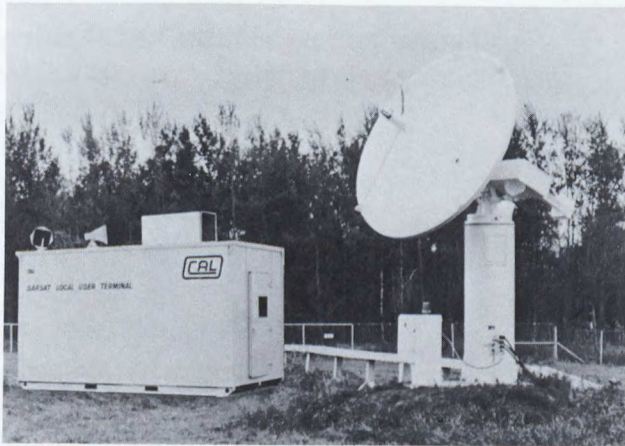
CAL has developed an advanced high reliability spacecraft battery management subsystem (HRBMS) for use with either nickel cadmium or nickel hydrogen cells. The HRBMS permits monitoring and control of each individual battery cell and greatly improves reliability and lifetime while eliminating the need for carrying parallel redundant battery packs.

In other space hardware areas, the company has supplied a high resolution far ultra-violet solid state camera system presently in space aboard the Swedish Viking satellite. CAL is currently supplying a large deployable helical antenna for the U.K. Skynet IV communications satellite and a space shuttle scientific payload to be used for scientific investigations of the ionosphere. CAL also offers a space systems consulting service using the company's multi-disciplinary team of systems engineers. Experience includes communications, spaceborne radar, direct broadcasting, search and rescue, data collection and navigation. The CAL COM-SATMOD software package, which models communications satellites in terms of mass, performance, reliability and cost, is also available for sale.

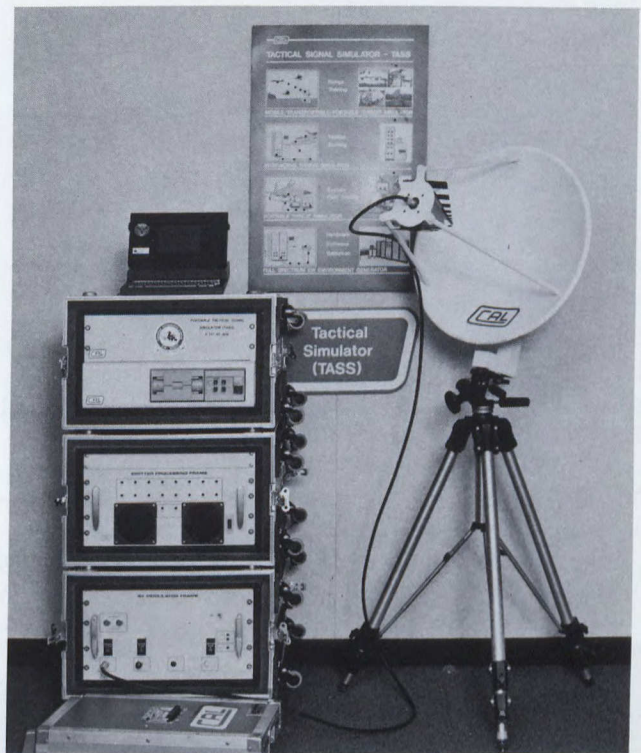
The company has developed a capability in military electronics, specializing in anti-submarine warfare and electronic warfare. Several advanced developments and studies are in progress. Specific product developments include a software programmable sonobuoy processor, a fast switching mm wave source and the TASS threat simulator system. The TASS generates a high density fully programmable radar environment over the range 0.5 to 40 GHz with full DOA capability, programmable platform motions and easy-to-use software. The TASS has been sold to the Canadian Armed Forces, the U.K. Royal Navy, the U.S. Navy and a leading nation in South East Asia.

CAL's capabilities in computers, electronics, mechanics, controls and software have been joined together to supply industrial process control systems. Particularly in the aerospace field, where CAD/CAM and robotics are starting to find increasing applications, CAL is capable of supplying up-to-date and innovative solutions to customers' problems as well as a number of sophisticated specialized products available with off-the-shelf designs.

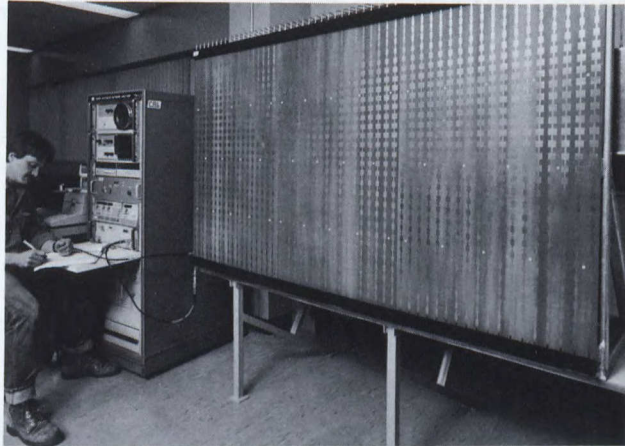
Products and Services



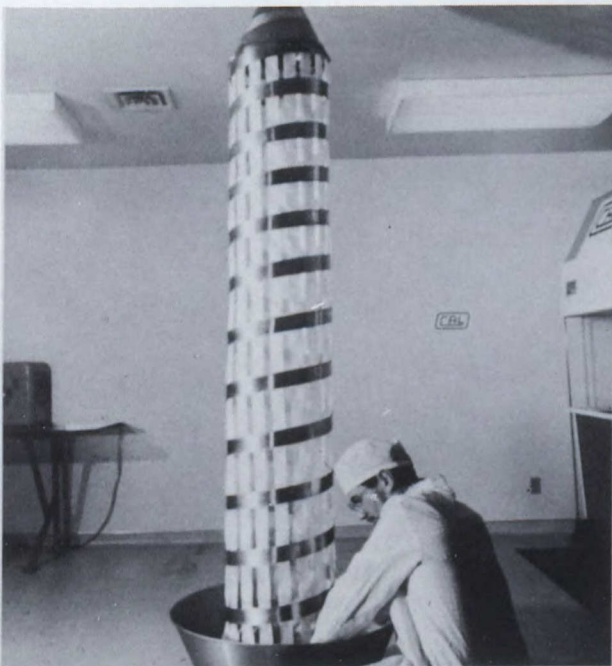
SARSAT Ground Station



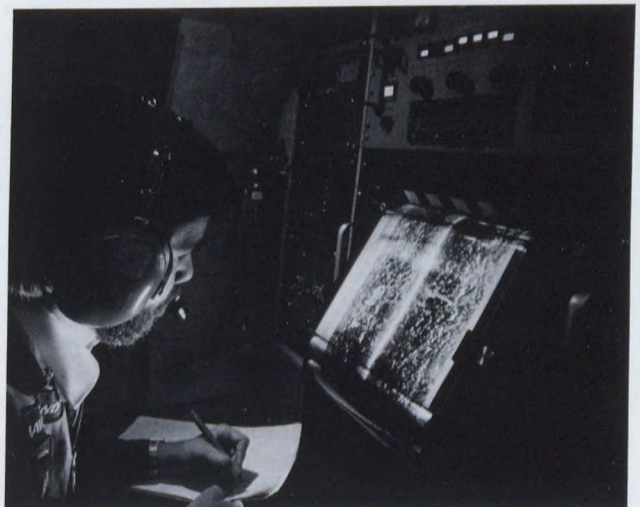
Tactical Signal Simulator (Porta-Tass)



Microwave Landing Systems (MLS) Microstrip Antenna



Skynet Deployable UHF Spaceborne Helical Antenna



Side Looking Airborne Radar (SLAR) Installed in DASH 7



OTTAWA, CANADA



Canadian Marconi Company

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EXECUTIVE VICE-PRESIDENT, ELECTRONICS GROUP:
J.H. Simons
VICE-PRESIDENT, AVIONICS DIVISION:
L. Léveillé
VICE-PRESIDENT, COMPONENTS DIVISION:
D. Rosenthal

Canadian Marconi Company (CMC) is Canada's foremost defence electronics company, with extensive expertise in avionics, specialized components, tactical communications, data communications and radar. Since incorporation in 1903, CMC has become internationally known for excellence and innovation in the design, manufacture, integration and support of complex high technology products. Sales in 1985-86: \$226.6 million. The General Electric Company p.l.c. of Great Britain holds 51% of Canadian Marconi's common stock.

CMC headquarters and main manufacturing plant are in Montreal, as are 2400 of the company's 2800 employees. A second plant in Kanata, Ontario, houses the Radar and DataComm Products Divisions, the Avionics Division's main Technology and Product Development staff and the Division's Nav aids Group, which designs and manufactures ground-based navigation aids (DME, VOR, ILS, MLS).

AVIONICS DIVISION

The Avionics Division has a staff of more than 600 engaged in the design, manufacture, production and support of a wide range of avionics and related products and services. Areas of expertise include navigation systems, display systems, monitoring and control systems, ground-based navigation aids, and systems integration. The Division has extensive facilities in Montreal and Kanata in Canada, and at CMC Electronics locations in the United States, plus a comprehensive network of dealers and representatives throughout the world. Customers include military, para-military, and commercial organizations in over 40 countries, with installed systems on more than 100 aircraft types. This breadth of experience and capability enables the Division to undertake a wide variety of specialized projects and product lines.

Since the late 1950s, the design and production of navigation systems has been a mainstay of the Avionics Division's business. First to implement the FM/CW Doppler technique for navigation, Canadian Marconi now manufactures the sixth generation of these systems, utilizing the latest techniques in electronics and software design. Omega/VLF navigation systems

are also a leading product line, with more than 2,500 sold to airlines, business aircraft operators and military organizations around the world. Recent additions to the range of navigation systems include receivers for the satellite-based Navstar/GPS system, which can give positional accuracy to within 16 metres, and Microwave Landing System receivers that will help make aircraft landings easier and safer.

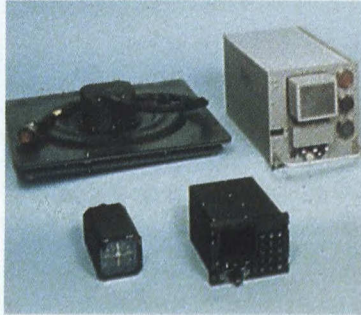
Display systems are another important area of expertise in the Avionics Division. Canadian Marconi solid-state, vertical-scale engine instruments are famous as a standard for reliability and readability, particularly in the demanding environment of military helicopter installations. Now, in addition to the original optoelectronic version of these instruments, Canadian Marconi is producing a new series that uses colour liquid crystal technology to achieve lower weight and cost with even greater reliability. Other state-of-the-art techniques, including TFEL and colour CRT, are being utilized for the displays in both dedicated and multipurpose systems, including the new CMA-882 Avionics Management and CMA-2014 Multipurpose Display Systems.

A range of monitoring and control systems completes the airborne products of the Division. These systems include Flight Advisory Computers, Status Display Systems, and Engine Health Monitors, all designed to decrease cockpit workload and enhance the safety of flying.

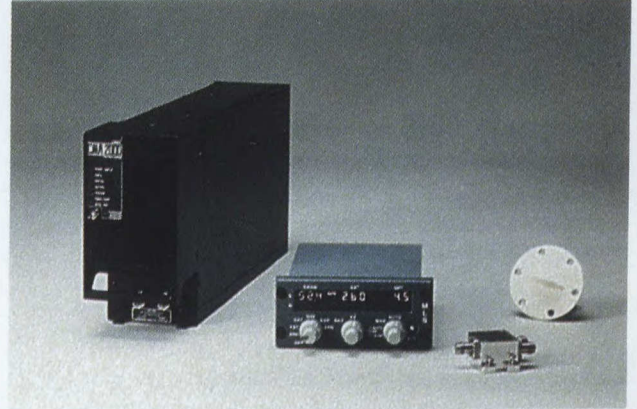
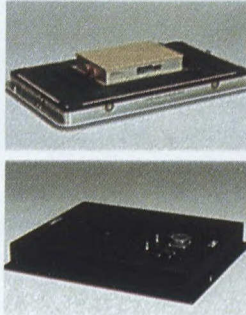
For ground-based navigational applications, Canadian Marconi designs and manufactures ILS, MLS, DVOR, and SVOR systems, as well as providing a comprehensive range of associated support services and equipment. These systems are now in use at more than 100 sites around the world, and the company is particularly well positioned to meet the growing demand for MLS ground equipment.

The Avionics Division is fully equipped for the internal manufacturing, test, repair and overhaul of all its products. It has extensive capabilities for automatic and semi-automatic assembly and test, and is continually upgrading these equipments to remain abreast of current techniques. Other specialized departments ensure that customer needs for documentation and

Products and Services



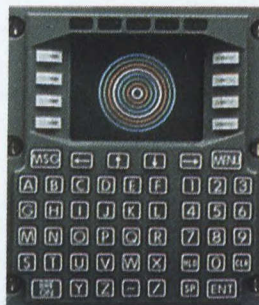
Doppler Navigation Systems



MLS Airborne Receiver System



Helicopter Flight Advisory Computer System

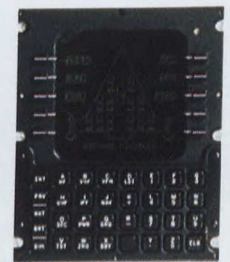


Multifunction Display System

Liquid Crystal Displays



Avionics Management System



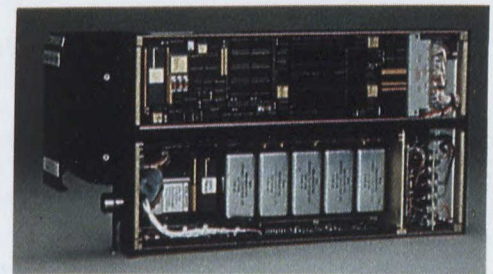
Ground Speed Drift Angle Indicator



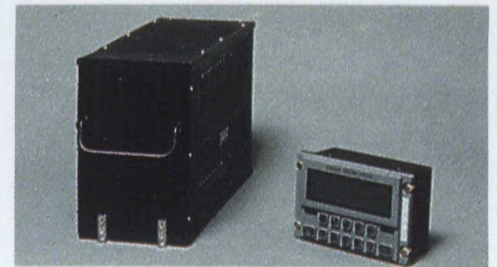
Status Display System



Model 2500 MLS Ground Station



OMEGA/VLF Sensor System



GPS/NAVSTAR Receiver System

CMC
CANADIAN MARCONI COMPANY

Products and Services

training are met in the most cost-effective manner. Quality assurance is also a major concern, and the Division is fully qualified to NATO Requirements AQAP-1 (equivalent to MIL-Q-9858A).

The Avionics Division's strength in the marketplace is the result of many advantages, including the fact that it can draw upon the expertise and production capabilities of other divisions of Canadian Marconi. One of the most important of these is the Components Division, which designs and manufactures many of the highly specialized components required for use in advanced avionics systems.

COMPONENTS DIVISION

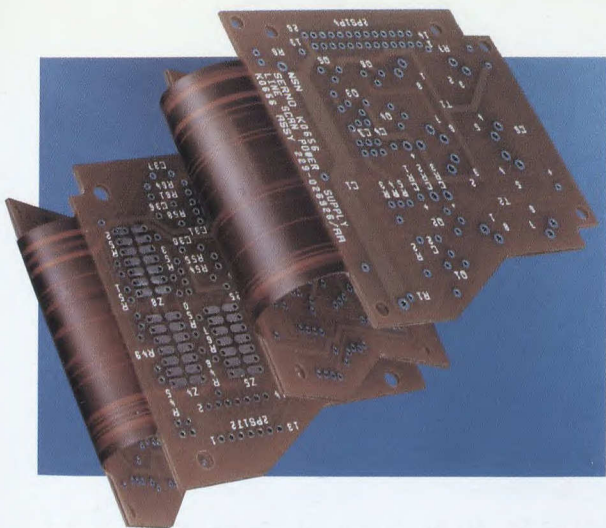
Canadian Marconi is a world leader in the design and manufacture of specialized electronic components for military and high reliability aerospace, communications and radar applications. Components Division products are supplied to many leading North American and European defence and aerospace manufacturers, forming the basis for many of these companies' sophisticated avionics and tactical communications systems. The Division has formed technological partnerships with major international defence contractors.

Areas of expertise include the design and manufacture of:

- printed circuit boards: multilayer (up to 24 layers), metal core boards, rigid flex boards
- hybrid microcircuits: thin- and thick-film, analog and digital
- specialized electronic components: power conversion products, magnetics, components and sub-assemblies
- Night Vision Goggle (NVG) compatible display products: edge-lit panels, tactile keyboards
- complex precision machined metal and plastic injection molded parts

The Components Division relies on advanced technology and highly automated equipment to maintain its prestigious position in the defence electronics market. The Division's MIL-STD-1772 Class 10,000 clean room for hybrid microcircuit production meets stringent military criteria for environmental conditions and manufacturing, and is one of few such facilities in

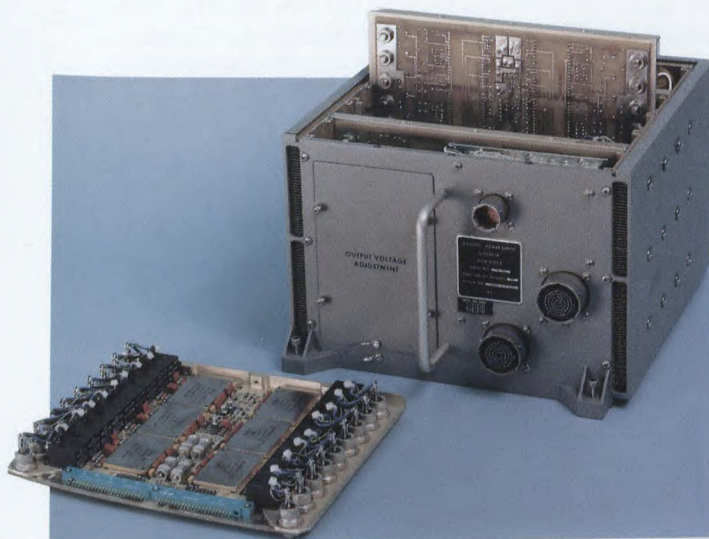
Canada. CMC's newly upgraded printed circuit board facility is one of the largest in the industry, with customers in military and other high reliability markets. CAD artwork generating systems with full digitizing and photoplotting capabilities (including a laser photoplotter) ensure state-of-the-art circuit design and packaging. The Division also has build-to-print and test capability for electronic subsystems and a wide variety of microwave components, including complete antennas.



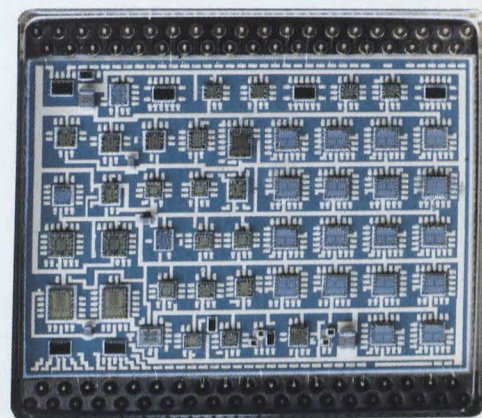
This eight-layer printed circuit board has four rigid sections bonded to the interconnecting flex circuits. It is used on critical aerospace programs where high density and 3-D packaging are requirements.



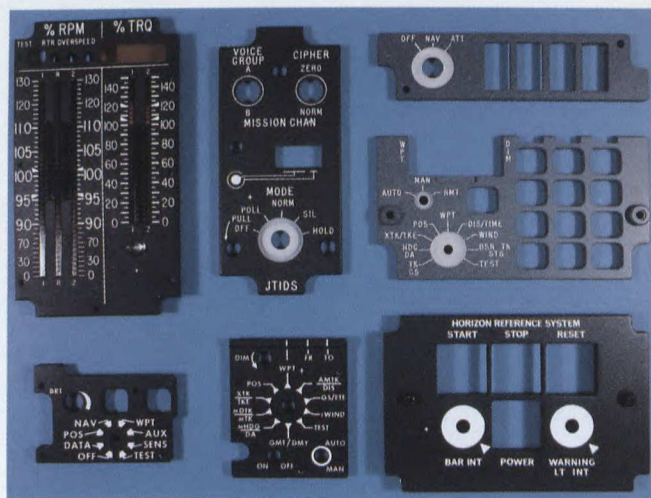
Thin- and thick-film hybrid microcircuits are produced in Canadian Marconi's MIL-STD-1772 Class 10,000 facility. The thick-film hybrid illustrated is typical of CMC's production for major U.S. military programs.



CMC produces panels and keyboards for military avionics and missile control applications. The panel group is an acknowledged international leader in the development and production of night vision goggle (NVG) compatible products, as well as displays and subsystems for a range of high reliability applications.



This power supply was developed by CMC for a strategic U.S. military helicopter program. CMC's expertise in the fields of circuit design and analysis, materials and electronic packaging, thermal design and analysis, and magnetics design uniquely qualifies this product group to respond to a complete range of aerospace industry needs.



CMC
CANADIAN MARCONI COMPANY



Casey Copter Accessories Ltd.

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511 Lepine
Dorval, Quebec
TELEPHONE: (514) 636-6155
TELEX: 05-821574

PRESIDENT: A.J. Casey
VICE-PRESIDENT: M.J. Casey

Casey Copter Accessories Ltd. is a federally incorporated Canadian company founded in 1975 to manufacture aircraft cabin heating systems. Diversification into air conditioning systems was started in 1983 and has resulted in the development of mechanically and electrically driven systems for helicopters and fixed wing aircraft.

In addition, in 1984 Casey commenced manufacturing ground support equipment for the Canadair Challenger and test equipment for General Dynamics. Test equipment for vehicle systems include: electrical breakout boxes and wiring harnesses; instrument external calibration and test units; hydraulic system test and balancing units.

To accommodate the manufacture of its various products, Casey Copter occupies an 8,500 square foot plant and currently employs a staff of eleven.

Casey Copter's products operate as air-to-air heat exchangers to recapture waste heat from gas turbine engines. As the Casey system does not use bleed air or fuel, aircraft performance is not affected. Heater units are currently available for Bell 206, Hughes 500, MBB BO 105, and Augusta 109 helicopters as well as Partenavia Viator, SF600, Bonanza A36 Turbo. The company has been heavily involved in the commercial market, having installed more than 1,600 units on Bell 206's. Recently, military sales have assumed increasing importance.

The company has developed a family of air conditioning systems for both rotary and fixed wing aircraft. Casey's Bell 206L1 and L3 air conditioning system has been designed to provide the required cooling at ground idle so that preflight cabin cooling can be accomplished without excessive noise and fuel burn. Additional forward mounted evaporators are not required to achieve rated performance. The system features the use of an engine driven gearbox to power the compressor, the extensive use of aerospace components, aluminum plate fin heat exchangers and a hot gas bypass system that eliminates compressor cycling. Standard features are a three-speed evaporator fan and electronic temperature control. The complete system is designed in modular form so that, with no previous experience, 100 hour installation can easily be

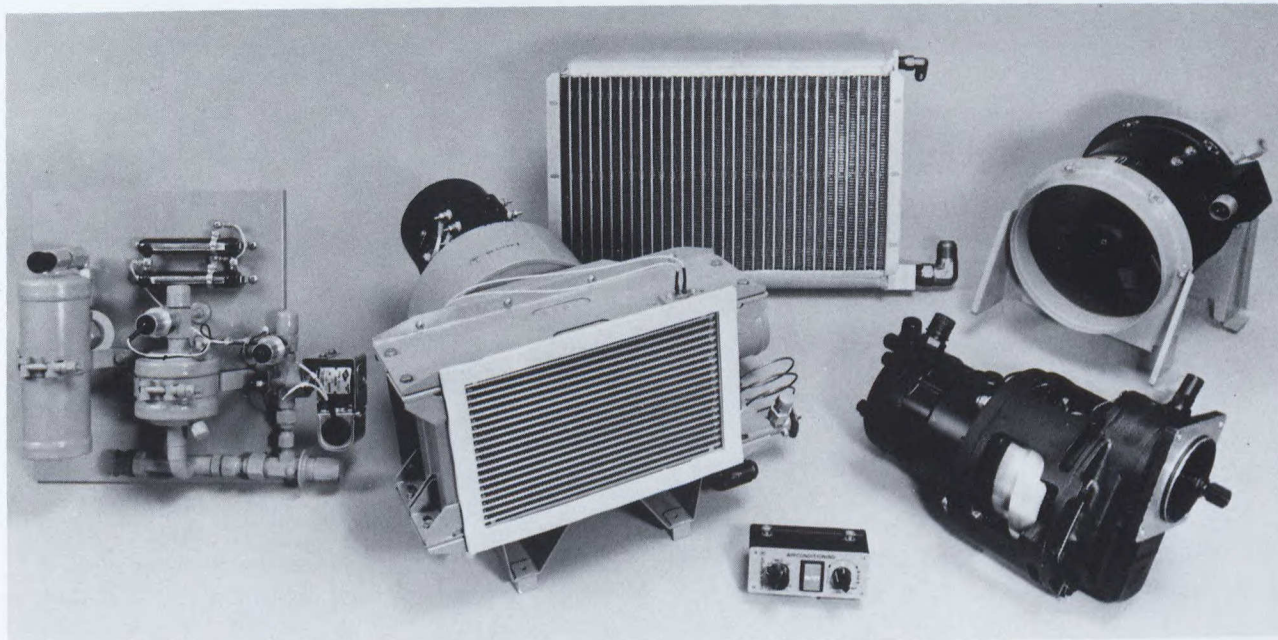
accomplished.

Casey specializes in small production runs and custom manufacturing to customer or MIL specs. The company's quality control manual under Department of Transport Shop Approval meets AQAP4, Bell Helicopter QPS-102. Some current users of helicopters heated by the Casey system include the Royal Canadian Mounted Police, the Canadian Coast Guard, the Finnish Border Guard, the Swedish National Police, and the U.S. Army National Guard. Casey Copters other major clients include Elicotteri Meridionali; Siai Marchetti; Canadair; Partenavia, Naples; the Government of Quebec, Air Services; and the Department of Transport, Flight Services.

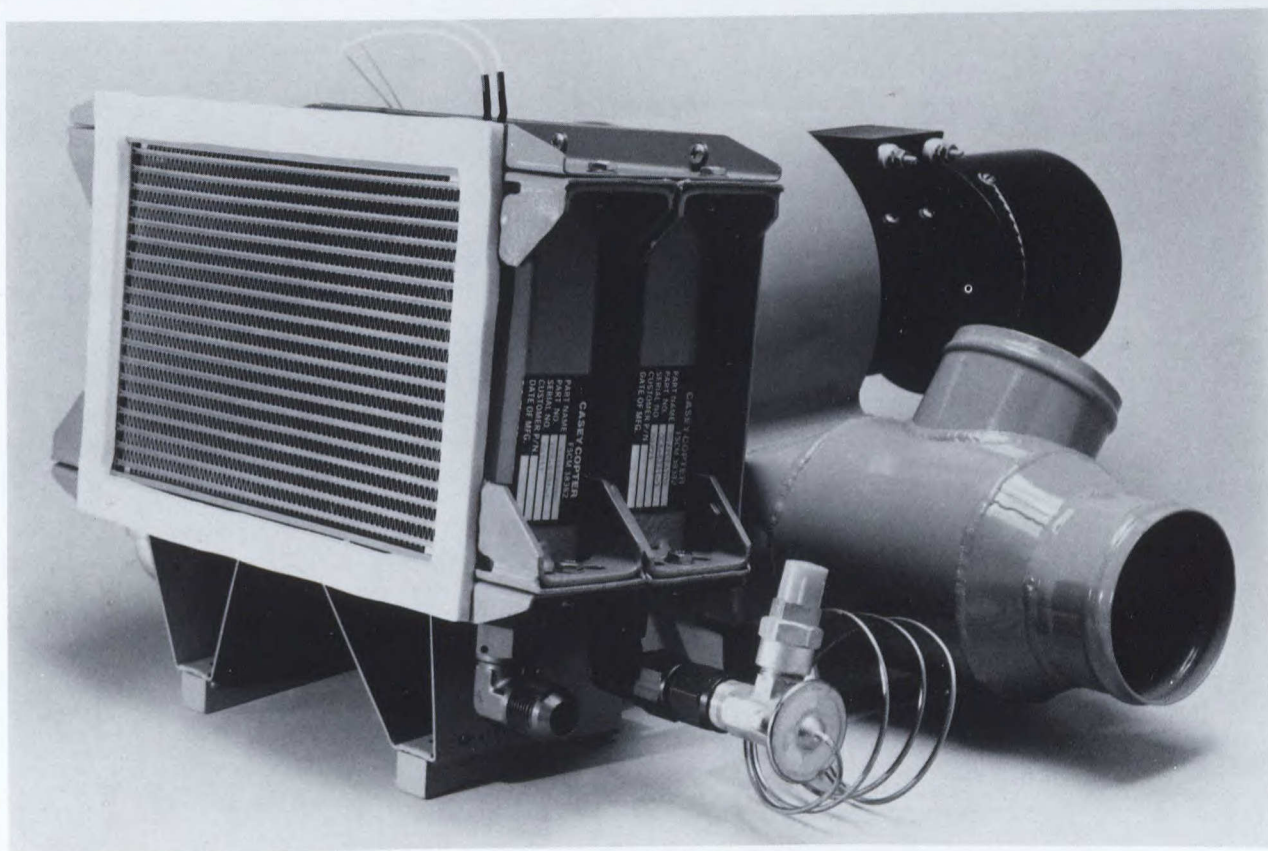


CASEY COPTER

Products and Services



**MAJOR COMPONENTS BELL 206L3 AIRCONDITIONING SYSTEM
REFRIGERATION CONTROL PANEL, EVAPORATOR ASSEMBLY, CONDENSER,
COCKPIT CONTROL PANEL, GEARBOX AND COMPRESSOR, CONDENSER FAN.**



EVAPORATOR ASSEMBLY



Cercast Incorporated

3905 Industrial Blvd.
Montreal-North, Quebec H1H 2Z2
TELEPHONE: (514) 322-2371
TELEX: 05-829500

PRESIDENT: F. Valenta
EXECUTIVE VICE-PRESIDENT: E. Heimbach
GENERAL MANAGER: H. Stoll
SALES INQUIRIES: D. Rupp
QUALITY CONTROL MANAGER: G. Wintgens

Incorporated in 1959, Cercast Inc. is known throughout North America and Europe as one of the leading producers of large aluminum investment castings, utilized mainly in the aerospace field. To service the various geographic areas of Canada, the USA and Europe, Cercast expanded to a total of eight manufacturing facilities. Although these eight plants are independent companies they have the same technology, offering greater flexibility and better service to customers.

Castings up to 48" (1.200 mm) are made in various Al.Si.Mg. alloys such as A356, A357, AS7G03 & 06, LM25 or L99, and are certified to MIL-A-21180 and other European specifications. All inspection is carried out in approved laboratories performing radiography, penetrant inspection and chemistry. Metallurgical laboratories are also available for continuous monitoring of the casting process.

Economical casting designs are the combined efforts of the mechanical designer and the casting producibility engineers.

This company offers a broad spectrum of specialized capabilities in the investment casting fields. Their product, service and capability record includes all of the following features:

- Value engineering.
- Castability of configuration.
- Cold walls and double wall pin fin heat exchanges.
- Size limitations and relationship to wall thickness.
- Design features to improve capability. Wall thickness, ribbing, gussets, openings, card guides, corner and fillet radii, etc.
- Dimensioning of castings. Centerline dimensioning. Effects of dimensioning on machining targeting or machining start.
- Contact (tooling) points and datum reference planes.
- Linear and geometrical tolerances. Optimum dimensioning to minimize tolerances on functional features. True positioning.
- Process and manufacturing tolerances.
- Alloy selection.
- Mechanical properties of alloys, classification and selection.
- Proving of physical properties in castings.
- Pressure tightening of castings.
- Drawing notes and specifications.
- Non-destructive testing (NDT), Radiographic quality and inspection frequency, Penetrant inspection.
- Surface finish and machining allowances.
- Traceability, lot sizes, melt and heat treat lot definitions.
- Inspection plans, fixturing and gauging.
- Casting and tooling costs.
- Tooling modifications, cost relations.
- Lead times for tooling, samples and production.

CERCAST INDUSTRIES

**ALUMINUM INVESTMENT CASTINGS FOR AEROSPACE.
THE ECONOMICAL SOLUTION FOR COMPLEX,
LIGHTWEIGHT STRUCTURAL COMPONENTS.**



The TADS/PNVS (Target Acquisition Designation Sight/Pilot Night Vision Sensor) systems are manufactured by Martin Marietta for the U.S. Army/Hughes Helicopters, Inc. AH-64 APACHE Advanced Attack Helicopter. The AH-64 uses a multitude of aluminum investment castings. The main support casting shown here holds the TADS/PNVS systems and is an excellent example of the flexibility, size, complexity and structural integrity of this investment casting application.

36" (915 mm)

Please send your inquiry to one of the addresses listed below.

CERCAST INC.
3905 INDUSTRIAL BLVD.
MONTREAL NORTH
QUEBEC, CANADA
H1H 2Z2
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TELEX 05-829500

CERCOR INC.
93 MOUNTAINVIEW
ROAD NORTH
GEORGETOWN,
ONTARIO, CANADA
L7G 4T1
TEL.: (416) 877-6936

CERAMET INC.
2175 AVENUE C
BETHLEHEM, PA
18017 U.S.A.
TEL.: (215) 867-5031
TELEX 847324

CERCON Casting Corp.
201 CONSOLIDATED DR.
HILLSBORO, TX 76645
TEL.: (817) 582-3413

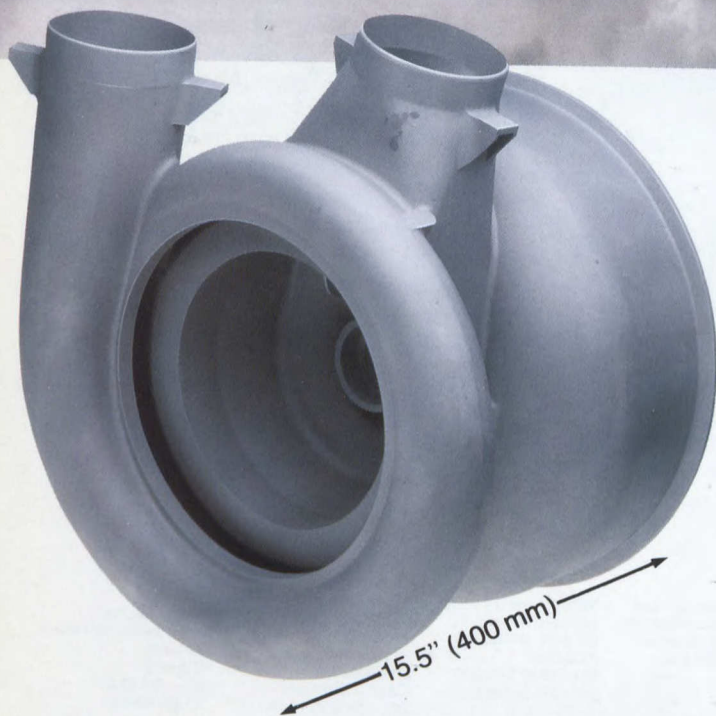
SIGMA Casting Corp.
1011 S. CHARLIE RD.
CITY OF INDUSTRY
CA 91748
TEL.: (213) 965-2457
TWX 910-584-4682

ALFA CERCAST
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APARTADO 478
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TELEAX (943) 701874

CIRAL
2 RUE RACINE
78102 SAINT GERMAIN
EN LAYE
FRANCE
TEL.: 973-08-99
TELEX 698820

CERCAST INDUSTRIES

ALUMINUM INVESTMENT CASTINGS FOR AEROSPACE.
RELIABILITY IN METAL FORMING.



The airconditioning system of the 757/767 aircrafts are manufactured by Airesearch Manufacturing Company of Los Angeles, CA for the Boeing Company of Seattle, WA. The illustrated casting is the compressor housing for this system. Significant features of this investment casting, manufactured in A356 T6 aluminum alloy, are:

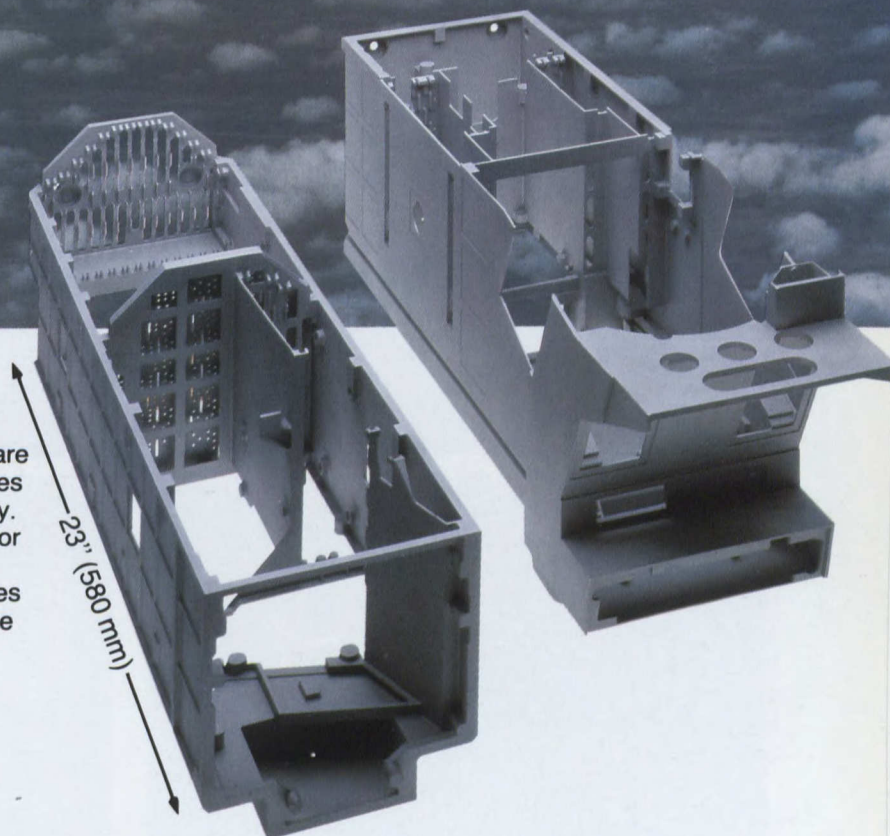
- The relatively thin wall of .09" (2.20 mm).
- The high complexity of the part.
- The use of a mechanical core to form the volute section resulting in better repeatability of each casting.
- The fact that each casting is pressure tested at 120 PSI prior to shipping, shows the mechanical integrity of this design.
- The significant cost savings over other manufacturing methods.

CERCAST INDUSTRIES

ALUMINUM INVESTMENT CASTINGS FOR AEROSPACE
LIGHTWEIGHT VERSATILITY IN METAL FORMING.



Tight specifications and weight limitations of all components are characteristic of the F18 fighter aircraft. The main HUD housing and MDI chassis are both cast in A356 alloy with typical wall thicknesses of .060" (1.5 mm) and 0.50" (1.2 mm) respectively. Other features such as cast card guides, connector openings and openings for air cooling passages make these two housings other excellent examples of the versatility and design freedom offered by the investment casting process.



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Chicopee Manufacturing Limited

975 Wilson Avenue
Kitchener, Ontario
N2C 1J1

TELEPHONE: (519) 893-7575

FACSIMILE: (519) 893-5952

TELEX: 069-55147

PRESIDENT & GENERAL MANAGER: Betty Sims

VICE-PRESIDENT, OPERATIONS & MARKETING:

David Belanger

Chicopee Manufacturing Limited services the aerospace and related industries by providing custom precision machining of medium to large complex components. The firm's particular expertise is in machining titanium, high strength steels, and aluminum alloys to precise tolerances.

The company is located on Wilson Avenue in Kitchener's Industrial Basin one hour from Toronto and easily accessible from the MacDonald-Cartier Freeway (Highway 401). The company has been in business for over 30 years and its current modern facility consists of over 100,000 square feet employing 275 people. Chicopee's customers include most of the leading manufacturers of commercial and military aircraft in North America, for which it machines a wide variety of components for inclusion in airframes, wings, landing gears, and helicopter rotor systems. Its expertise also includes assembly and testing of hydraulic actuators using Skydrol fluid and the machining of parts for other industries including pump impellers, radar tracking components and sophisticated RAST (Recovery Assist Secure Traverse) parts for shipboard landing in rough seas.

Chicopee's concept of state of the art machining is the blending of the most sophisticated machining and support equipment that is available with the skilled craftsmen who are required to achieve the high standards that the company demands be maintained. Computer Numerical Controlled (CNC) equipment includes two five axis gantry type profile milling machines, numerous three axis profile milling machines, three and four axis vertical machining centres, four axis horizontal machining centres, lathes and boring mills as well as a wide range of profile copy mills, standard lathes and boring mills, conventional mills, drills and other supporting equipment.

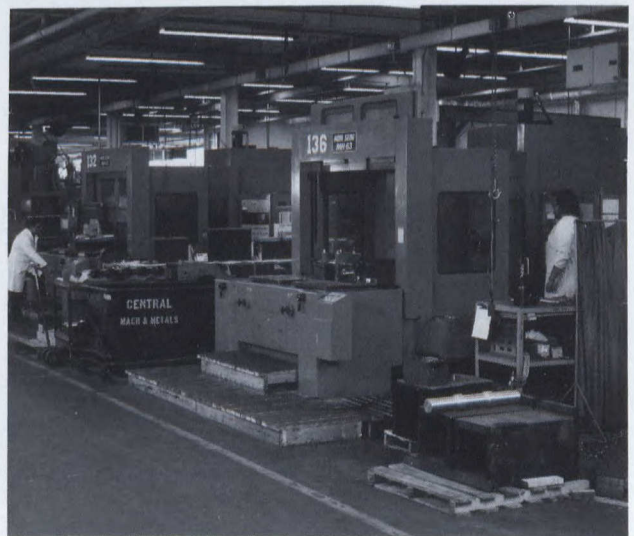
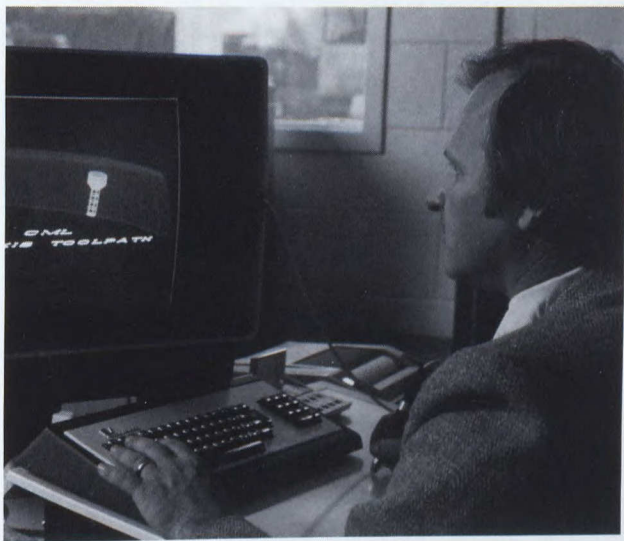
The machine shop is supported by a CAD/CAM system which provides our in-house staff with the capability of providing our wide range of CNC machines with timely part programs increasing flexibility, CNC cutter grinding for increased tool accuracy, and CNC Co-Ordinate Measuring equipment to insure the highest standard of quality control. The company complies to Defence and National Bureau of Standards

specifications, including AQAP-1 (formerly D.N.D. 1015) and MIL-Q-9858A. Quality control procedures call for first-off inspection of every manufacturing operation, as well as 100% final inspection of all critical dimensions. Reverse traceability of all material, parts, and process is guaranteed. To provide greater in-house control of quality the company now provides the NDT capability of Magnetic Particle Inspection, and Fluorescent Penetrant Inspection, as well as the ability to apply some fuel resistant and impact resistant coatings.

The company is wholly Canadian and privately owned with years of experience in complying with the customs requirement of shipping across borders to foreign customers. Decisions are made locally and priorities can be rapidly adjusted to meet customer schedules and emergency situations. Chicopee's team of professionals welcomes the challenges of intelligent problem solving and flexible manufacturing methods. The computerized manufacturing and administrative systems provide exact schedule positions, material inventories and machining procedures. The system is completely integrated to encompass manufacturing planning operation, job lot costing, financial records, procedures and reports.

Chicopee welcomes the opportunity of quoting on any need for custom precision machined products.

Precision Custom Machining





COM DEV Ltd.

155 Sheldon Drive
Cambridge, Ontario
N1R 7H6
TELEPHONE: (519) 622-2300
TELEX: 06-959333
FAX: (519) 622-1691

PRESIDENT: Val O'Donovan
VICE-PRESIDENT: Keith Ainsworth
DIR. BUS. DEVEL.: W. Neil Russell

Based in Cambridge, Ontario, COM DEV is a world leader in **microwave and mm-wave components and subsystems as well as signal processing subsystems for satellite, aerospace and defence systems**. The Company designs, manufactures, integrates and tests to meet critical applications.

COM DEV products include a full range of waveguide components spanning electro-mechanical devices and passive elements. Switches, ferrite components, couplers and filters are standard items. COM DEV's specialty is in the integration of these key technologies to form custom, highly optimized assemblies. Recent innovations include triple-mode filters and contiguous multiplexer combining networks. While the main application of COM DEV's capability is in space systems (the Company is a subcontractor to Hughes, RCA, Ford and Spar; 35 satellites are currently in orbit carrying COM DEV equipment), experience in multiplexing has recently been successfully applied to resolve problems in advanced airborne radars. This design capability is backed by in-house machining, plating and environmental test facilities meeting MIL SPEC and NASA standards.

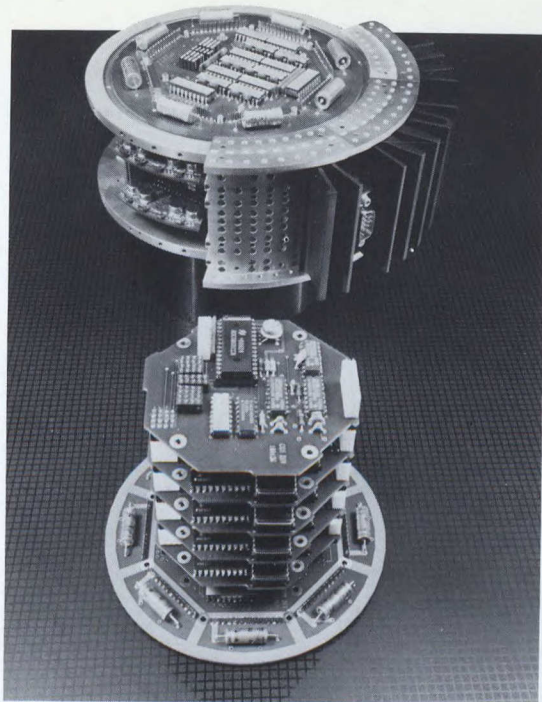
Included in COM DEV's capability is the design of state-of-the-art **antenna subsystems**, incorporating beamforming networks and feed assemblies. The beamforming networks employ proprietary capabilities such as ferrite phase shifters and switches. A 56 segment synthetic aperture array capable of 40 kw peak power is available for airborne or spaceborne use.

COM DEV is also a pioneer in the development of **integrated mm-wave subsystems** for critical applications. A full design capability exists in both active and passive networks up to 110GHz. Development projects concern an extended frequency radar warning receiver and a phase-shifted directional ECM jammer.

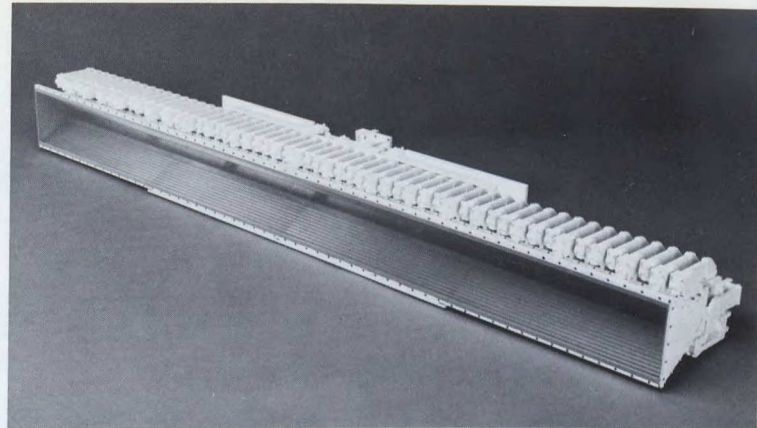
This solid microwave and mm-wave capability is supported by **signal processing**. The design of specialized SAW devices and the use of digital electronics allowed COM DEV to win a world-wide competition to supply radar pulse compression subsystems for the Raytheon Radar Modernization Program (Ramp). SAW devices are also applied to EW to enable intercept of frequency-hopping radios and radars

operating in a dense signal environment.

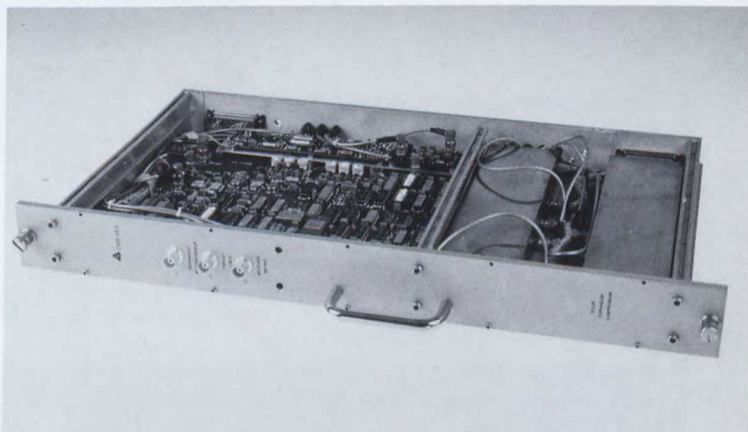
COM DEV can offer an extensive R & D capability in almost any area of microwave and mm-wave technology and is capable of achieving unrivaled performance levels of its subsystems. Specialist skills also exist in the areas of antennas, electronics and signal processing.



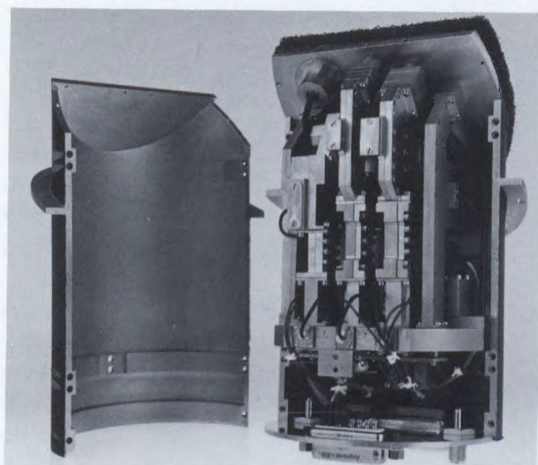
A tightly integrated Ka-Band Circular Phased Array Module.



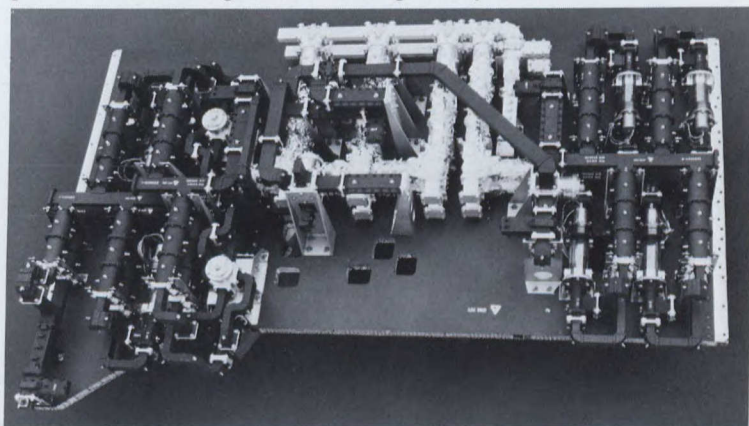
A Synthetic Aperture Radar Antenna for remote sensing application.



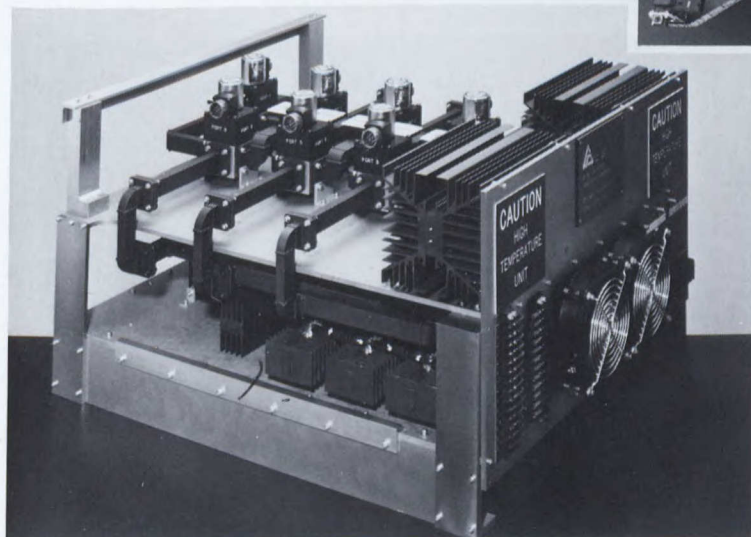
A Surface Acoustic Wave (SAW) enhanced pulse compression Radar Signal Processing Subsystem.



AN EARLY PROTOTYPE "FXR", MM-WAVE FREQUENCY EXTENSION FOR RADAR WARNING RECEIVERS . . .



SAMPLE OF COM DEV SPACE PRODUCTS: Ku-Band input/output multiplexer for G-STAR communications satellite.



SAMPLE OF COM DEV EARTH STATION PRODUCTS: 6-Channel High Power Contiguous Multiplexer for Transportable Earth Stations.





Conair Aviation Ltd.

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TELEX: 04-363529

PRESIDENT: L.G. (Les) Kerr
VICE-PRESIDENT AND GENERAL MANAGER:
K.B. (Barry) Marsden

Conair Aviation Ltd.'s headquarters are located at Abbotsford Airport, Abbotsford, B.C., which lies 40 miles east of Vancouver, B.C. The Abbotsford facility includes three hangars totalling 130,000 square feet which house the company's manufacturing and operations facilities. A second operations and maintenance facility is located at the Edmonton Municipal Airport in Edmonton, Alberta.

Services

Conair Aviation Ltd. is Canada's senior special-aircraft operator, known in Canada and world-wide for its experience in fire fighting services. The company's fleet of 45 fixed wing aircraft is the largest private fleet of firefighting aircraft in the world. Conair's subsidiary company, Frontier Helicopters Ltd., operate a fleet of 25 helicopters. While aerial firefighting is Conair's primary service, the company also provides services for fire detection and fire mapping through thermal sensing, and services for aerial control of oil spills, disease and pests.

Products

Employing state-of-the-art technology and advanced design concepts, Conair's team of engineers and production staff have been responsible for the development of a variety of specialty aviation equipment and systems.

Conair's most recent product is the F27 Firefighter; a highly modified Fokker F27. The Conair F27 Firefighter is the first turboprop aircraft in the world to be dedicated to aerial firefighting.

Other products designed and manufactured by Conair include:

- Major modifications to convert Grumman CS2F Trackers to Conair Firecat airtankers. Thirteen of these firefighting aircraft have been sold to the government of France and one to the government of Saskatchewan.
- Fixed retardant delivery systems, (firefighting systems) for Bell 205 and 212 helicopters and Aerospatiale AS350B (Ecourel) and SA315 (Lama) helicopters. These systems are used in British Columbia, Alberta, Northwest Territories, Yukon Territory, Australia and France.

- Foam injection systems for helicopters, F27 Firefighter aircraft, and CL-215 water-scooping aircraft.
- Helicopter forest fertilizer dispersal equipment.
- Aerial spray systems including low drag booms, spray nozzles and computerized flow control systems for fixed wing and rotary wing aircraft for use in oil spill, pest and disease control. These systems are used in Canada, U.S.A., France, Italy and Saudi Arabia.

Brief Company History

Conair Aviation Ltd., a privately-owned Canadian company, was formed in 1969 when Les Kerr (President) and three other employees acquired the spraying and firefighting operations of a small B.C. operator named Skyway Air Services.

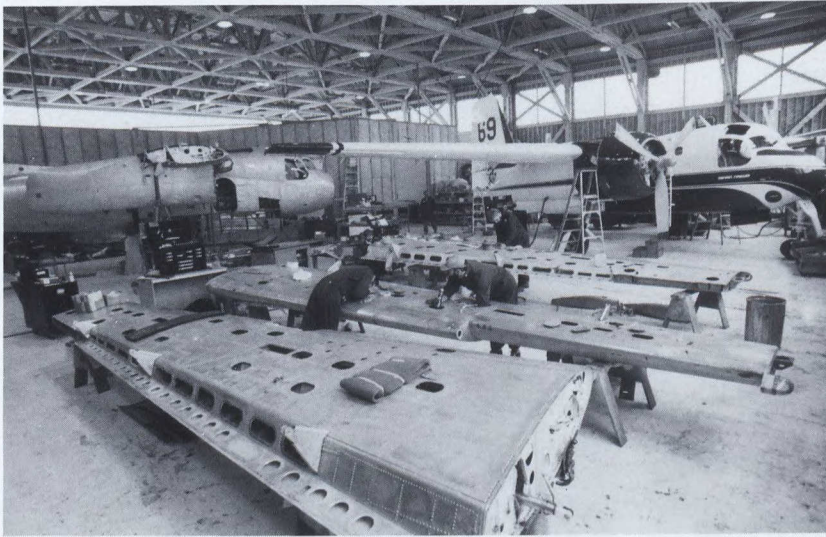
Several members of Conair's present day management were involved in resolving many of the early problems and developing firefighting techniques since the rudimentary beginnings of aerial fire control in British Columbia in 1958.

Personnel

Conair employs over 300 personnel, including:

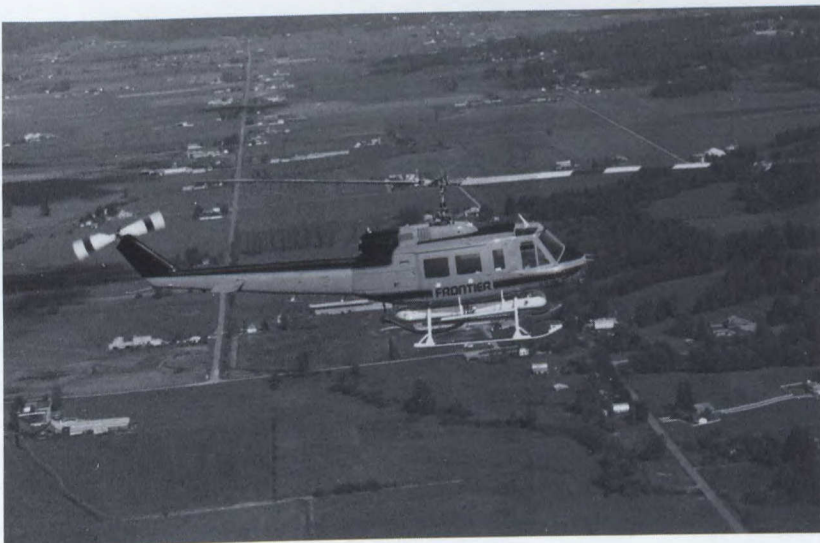
Shop workers	150
Quality control	12
Engineering	12
Administrative	36
Pilots	65
Technical, non-production	28

Products and Services



Conair Aviation Ltd. manufactures products and provides services for aerial firefighting, and aerial control of marine oil spills, disease and pests.

The Conair F27 Firefighter is the first turboprop aircraft in the world to be dedicated to aerial firefighting.



Conair also manufactures fire-fighting systems for Bell 212, Bell 205, Aerospatiale AS350B (Ecuriel) and Aerospatiale SA315 (Lama) helicopters.



The de Havilland Aircraft Company of Canada

Head Office: Downsview, Ontario
M3K 1Y5
TELEPHONE: (416) 633-7310
TELEX: 06-22128

PRESIDENT: Ron Woodard
SENIOR VICE-PRESIDENT, CUSTOMER SERVICES: R.G. McCall
VICE-PRESIDENT, MARKETING AND SALES: T.E. Appleton
VICE-PRESIDENT, CUSTOMER SUPPORT: Joar Gronlund
VICE-PRESIDENT, TECHNICAL MARKETING: G.R. Jackson
VICE-PRESIDENT, FINANCE AND ADMINISTRATION: R.W. Butler
VICE-PRESIDENT, ENGINEERING: M.C.W. Davy
VICE-PRESIDENT, OPERATIONS: Norm Kingsmore
VICE-PRESIDENT, CONTRACTS: J. Sturgeon
VICE-PRESIDENT, PROGRAM MANAGEMENT: R. Wheeler
VICE-PRESIDENT, HUMAN RESOURCES: G. Anderson
VICE-PRESIDENT, GOVERNMENT AFFAIRS: J.I. Davies

de Havilland Canada, now a Boeing company, has a long and proud heritage in Canada under various ownerships.

Today, airplanes designed and built by de Havilland Canada are operating in more than 90 countries developing and improving transportation in both remote areas and sophisticated urban centres. From the early bush airplanes to the sleek regional airliners of today, de Havilland Canada products have set the standards in performance and reliability by which all airplanes in their class are judged.

The company was established in 1928 as a sales and assembly arm for de Havilland Moth airplanes designed and manufactured in England. Known as the de Havilland Aircraft of Canada, Limited, it became a full-fledged manufacturing operation by 1938 for Tiger Moth production and expanded during the war years to build more than 1100 Mosquito fighter/bombers.

The first designed-and-built-in-Canada de Havilland airplane was the DHC-1 Chipmunk introduced in 1946 — a versatile trainer and aerobatic performer that is still a favorite among pilots. It was followed in 1947 by the DHC-2 Beaver, the legendary bush airplane that set the tone for de Havilland Canada products for years to come. It made such an outstanding contribution to the development of transportation in remote and otherwise-inaccessible areas worldwide that it was named one of Canada's top 10 engineering achievements of the century in 1987.

It was followed by the larger DHC-3 Otter and the multi-purpose DHC-4 Caribou, which further developed de Havilland Canada's reputation for rugged short take off and landing (STOL) performance. The DHC-5 Buffalo is a turbine-powered tactical transport designed to carry a larger payload faster and farther than the Caribou, while retaining the impressive STOL characteristics of the smaller DHC-4.

Next came the Twin Otter (DHC-6) which has been equally at home as a bush plane, firebomber, multi-purpose military aircraft and as a platform for geophysical surveys and maritime patrol work. But its most significant role was developed in the marketplace — as a 19-passenger commuter aircraft for small regional airlines. It performs equally well in the Arctic, equatorial Africa and the Himalayan mountains, and played a large role in ushering in the era of regional airlines as we know them today.

The success of the Twin Otter prompted the development of the Dash 7, a unique 50-passenger pressurized turboprop airliner. It has such impressive low-noise and STOL performance that it is the only airliner in the world that can currently operate without performance restrictions at the London City Airport (Docklands STOLport) scheduled to begin operations in October, 1987. It also has proven capability as a military transport and patrol aircraft.

The state-of-the-art Dash 8 entered service in late 1984 and has attained such success in the market that it has already spawned one derivative product and several variants and further derivatives are under consideration.

The Series 100, a pressurized, air-conditioned 37/40-passenger aircraft has found great popularity in the regional market in North America, the Caribbean, Europe and the Pacific Rim area. The stretched 50/56-passenger Series 300 will enter service with airlines in the latter part of 1988.

de Havilland Canada was purchased from the Canadian government by Boeing in January, 1986, and currently employs 5,400 people.



Dash 8 Series 300

Passenger Seats	50/56
Pressurization	5.5 psi
Maximum Cruise Speed at 15,000 ft	285 kt
Powerplant	2 x PW123 Turboprop
Range (50 passengers, standard tanks)	900nm
FAR 25 (ISA, SL)	
Take off field length	3,675 ft (1,120m)
Landing field length	3,640 ft (1,109m)



Twin Otter

Passenger Seats	20
Maximum Cruise Speed at 10,000 ft	182 kt
Powerplant	2 x PT6A-27 Turboprop
Range (Standard tanks)	620nm
(ISA, SL)	
Take off field length	1,500 ft
Landing field length	1,500 ft



Dash 8 Series 100

Passenger Seats	36/40
Pressurization	5.5 psi
Maximum Cruise Speed at 15,000 ft	265 kt
Powerplant	2 x PW120A Turboprop
Range (36 passengers, standard tanks)	1,085nm
FAR 25 (ISA, SL)	
Take off field length	3,150 ft (960m)
Landing field length	2,980 ft (908m)



Dash 7 Series 150

Passenger Seats	50/54
Pressurization	4.26 psi
Maximum Cruise Speed at 10,000 ft	228 kt
Powerplant	4 x PT6A-50 Turboprop
Range (50 passengers, standard tanks)	1,100nm
FAR 25 (ISA, SL)	
Take off field length	3,000 ft (914m)
Landing field length	3,150 ft (960m)



Buffalo (Transport)

Payload	18,000 lb
Passenger Seats	48
Maximum Cruise Speed at 10,000 ft	250 kt
Range	1,700nm
Powerplant	2 x CT64-820-4 Turboprop
Take off field length	2,875 ft (876m)
Landing field length	2,010 ft (613m)



Devtek Corporation

1410 Birchmount Road
Scarborough, Ontario
M1P 2E7
TELEPHONE: (416) 752-4006
TELEX: 065-2612
TELECOPIER: 416-752-4838

PRESIDENT: H. Hofmann
VICE-PRESIDENT FINANCE: M. Kingsburgh
VICE-PRESIDENT OPERATIONS: J. Renner
VICE-PRESIDENT PRECISION COMPONENTS DIVISION:
R. Woodgate
DIRECTOR OF MARKETING: H. Trevor Pawson

Devtek Corporation designs and manufactures systems, subsystems, and components for the aerospace, defence and electronics markets.

Devtek is a Canadian owned corporation employing more than 1200 people throughout North America. Encompassing eleven manufacturing centres, Devtek's facilities are staffed with engineers and skilled craftsmen who employ the latest high technology to develop and manufacture high quality products to meet the increasingly sophisticated requirements of Devtek's customers.

By achieving excellence through specialization, Devtek has earned a reputation as a leader in developing innovative technologies and products for selected markets. Furthermore, the broad spectrum of Devtek's products, which range from outer-space satellite components to undersea detection devices, is evidence of the diversity of engineering skills and manufacturing capabilities.

DEVTEK CAPABILITIES

Antisubmarine Warfare Systems: developing, designing, engineering, manufacturing and testing of antisubmarine warfare, ocean data and communications systems. Areas of application include sonobuoys, towed arrays, satellite transmitters, remote automatic weather stations, and HF communications equipment.

Military Weapon Systems and Components: developing, designing, engineering, manufacturing, testing, repair and overhaul of military weapons systems and components. Sole supplier of C-7 rifle and C-8 carbine to the Canadian Forces.

Stabilized Platform Systems: designing, engineering, manufacturing and testing of stabilized platforms utilized toward supporting electronic and optical systems in commercial and military guidance and tracking systems. World mandate on stabilized platform for the ADATS (Air Defence Anti-Tank System) electro-optical module.

Hydraulic Actuation Systems: design, engineering, manufacturing, testing, repair and overhaul of hydraulic actuation systems used in flight controls and other aircraft actuation systems. Sub-contract match grinding and EDM machining for close tolerance pro-

duction of hydraulic actuator valves.

Aircraft Components and Assemblies: manufacture, assembly, and testing of critical tolerance components of 300M and other high tensile alloys used in aircraft structural components, aircraft landing gear, hydraulic assemblies and helicopter rotor hubs, for commercial and military aircraft.

Aircraft Engine Components and Assemblies: prototype and production manufacturing, fabrication and assembly of large complex rotating components such as disks, hubs, cases, seals and rings for high performance military and commercial aircraft engines.

Ultra-precision Communication and Space System Components: applications include gyroscope components, phased array radar system power dividers, satellite/space shuttle components and components of exotic materials including pure beryllium, titanium, hastelloy and high nickel based alloys. Sole supplier of grapple fixtures for the remote manipulation system of NASA's space shuttle.

Aircraft Heat Exchangers and Electronic Enclosures: design, engineering, manufacturing, and testing of complex aluminum chassis assemblies and heat exchangers. Fabrication technologies include dip-brazing, vacuum brazing, epoxy bonding, welding and mechanical fastening.

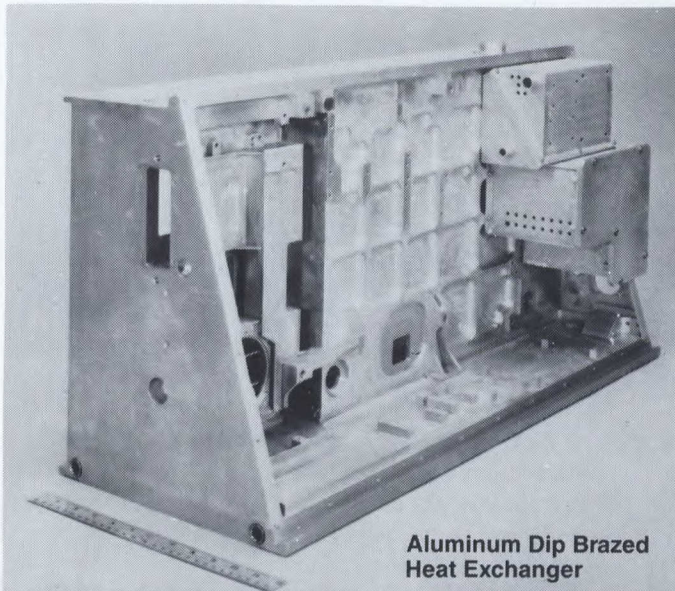
Electronic Cabinetry: precision sheet metal components and assemblies for use in electronic cabinets, weldments, consoles and chassis. Supplier of electronic cabinetry meeting NATO Navy standards for protection against shock, vibration and electronic interference.

All products and services are to the appropriate requirements of AQAP-1, AQAP-4, MIL-Q-9858A, MIL-I-45208.

DEVTEK COMPANIES

Dexter Tool Co.
Diemaco (1984) Inc.
General Manufacturing Inc.
Grantech Mfg.
Hermes Electronics Ltd.
Hochelaga Aerospace Inc.
Magna Electronics
Magna Precision Products
West Heights Mfg.
Verral Metal Fabricators

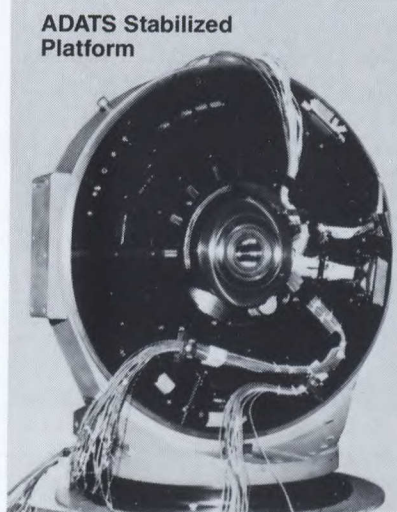
Products



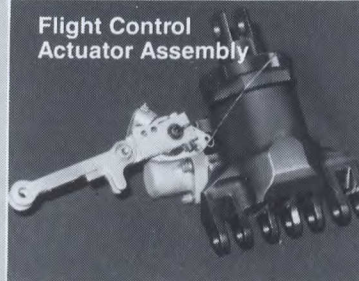
Aluminum Dip Brazed Heat Exchanger



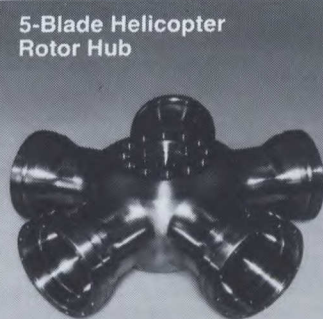
Jet Engine Diffuser Case



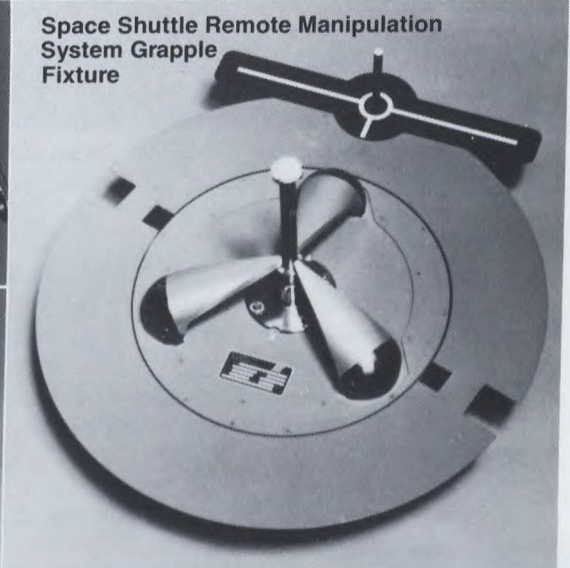
ADATS Stabilized Platform



Flight Control Actuator Assembly



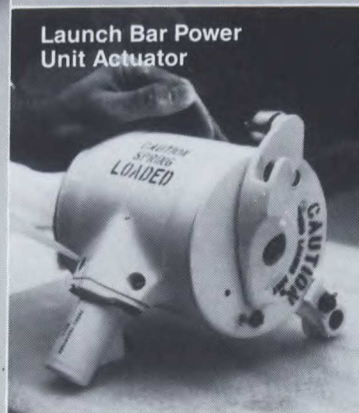
5-Blade Helicopter Rotor Hub



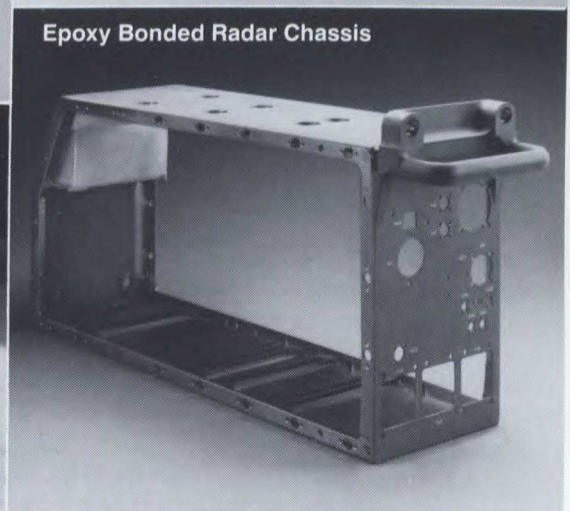
Space Shuttle Remote Manipulation System Grapple Fixture



Executive Jet Main Landing Gear Post



Launch Bar Power Unit Actuator



Epoxy Bonded Radar Chassis



Diemaster Tool Inc.

160 Watline Avenue East
Mississauga, Ontario
L4Z 1R1
TELEPHONE: (416) 890-1144
TELEX: 06-961274
FAX: (416) 890-1950

PRESIDENT AND CEO: George M. Yui
DIRECTOR OF OPERATIONS: Boris Shkolnikov
SALES MANAGER: D.J. (Don) Easson

Structured into three distinct divisions, Diemaster Tool Inc. is a privately owned Canadian company dedicated to the manufacturing of precision products for the aerospace, defence, electronics and general industrial markets of North America. Carefully planned growth and diversification strategies over the past fifteen years have led to a broad range of versatile skills and capability that has become recognized within a broad customer base.

Precision Machining Division

This division performs a wide range of critical machining operations for most configurations including bars, cast or forged pieces. CNC Milling, Lathe, and EDM jobs, Jig Boring and Grinding, Spline Cutting and Thread grinding are typical capabilities within the Precision Machining Division.

Stamping Division

With press capacities up to 500 tons, the Stamping Division of Diemaster Tool Inc. excels in a wide range of critical work. Drawn components are also produced for numerous North American customers. Secondary operations such as Riveting, Spot Welding and Staking for sub-assemblies are all performed by the Stamping Division.

Tooling Division

Interfacing with both the Stamping and Precision Machining Divisions of Diemaster Tool Inc., the Tooling division builds Dies, Jigs, Fixtures, Gauges, Molds and Special Purpose Machines. The engineering design team's excellence is attributed to decades of combined experience.

Quality Assurance

To meet the ever increasing demands of quality improvement a state-of-the-art Leitz Co-ordinate Measuring Machine (CMM) has recently been added. The digitized computerization feature of the CMM enables measurements within millionths of an inch. It can also perform direct data transfer by duplication programming of complex geometry. The company conforms to QA standards: MIL-I 45208A, AQAP-4 and CSA Z.299.3.

CAD/CAM

An important development recently is the computerized integrated manufacturing system, operating

from a powerful central mainframe, incorporating CAD/CAM, JIT production scheduling and MIS to streamline operations. The facility permits direct Electronic Data Interchange (EDI) where the customer's system is compatible. The company's forward looking policies provide for continual upgrading and software development to increase service to the customer.

Welding

A well equipped facility allows Diemaster Tool Inc. to perform most welding operations using arc and gas or TIG and MIG methods, all to Canadian Welding Bureau Standards.

To be introduced in mid '87, ELECTRON BEAM WELDING is a new capability for Diemaster Tool Inc. allowing specialized service to customers with requirements for joining critical components where joint integrity is crucial.

Customers

For one of the company's major product lines, Gas Turbine Engine Shafts, a proprietary internal grinding technique is used to control shaft geometry beyond industry standards for improved balance where length/bore ratios range to 10:1.

The company supplies both low and high pressure shafts for Avco Lycoming's AGT 1500 Gas Turbine Engines used in the Abrams M1 Tank, as well as the Compressor Shaft for the T-55 Gas Turbine Engines used for Chinook Troop Helicopters. Critical planetary Gear Carrier Housings and Propeller Shafts are produced for the T-53 Engine in Huey helicopters.

Critical components manufactured are: Valve Bodies, Missile Parts, Radar and Electronics Housings, Space Arm Parts, Infrared Counter Measure Components, Turbine Engine and Electro-optical parts. The company also builds precision Lay-Up Molds and mandrels for composites and plastics.

Diemaster's clientel includes:

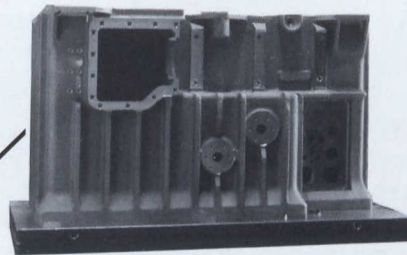
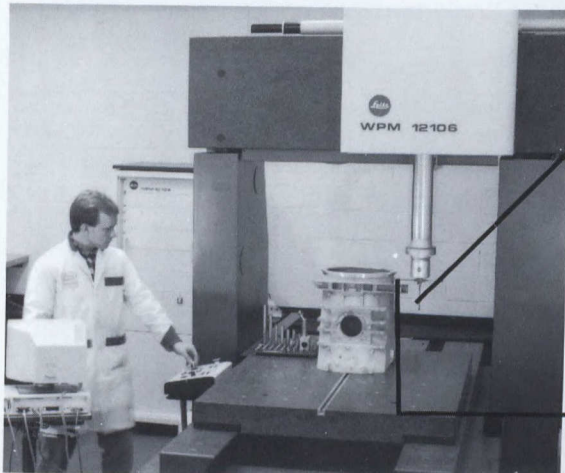
AVCO	PRATT & WHITNEY
BOEING	RAYTHEON
GARRETT	ROCKWELL INT'L
GENERAL ELECTRIC	SANDERS
LEAR SIEGLER	SPAR
MENASCO	TRW

The versatility of Diemaster Tool Inc. makes it the ideal source for critical precision components and tooling.

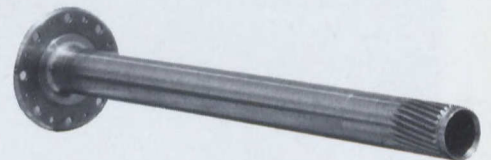
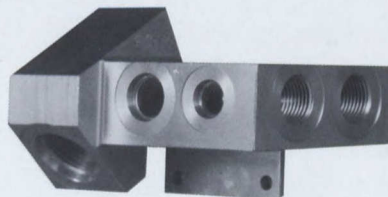
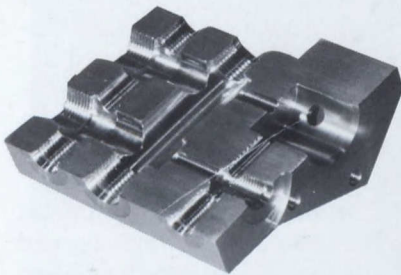
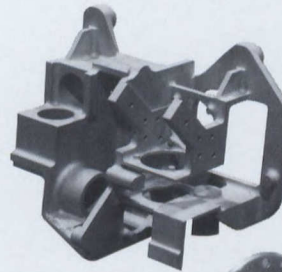
Products and Services



CRITICAL PARTS MANUFACTURING



A state-of-the-art LEITZ Co-ordinate Measuring Machine with digitized computerization is used to meet the highest quality control requirements of precision machined components.



Underwater valves featuring bores with two micro-inch surface texture specifications are machined on a high production basis.

Gas turbine shafts and engine components. Material: Inconel 718.

The company welcomes the opportunity to quote on any customer requirement.

diemaster tool inc.



Dowty Canada Limited

574 Monarch Avenue
Ajax, Ontario
L1S 2G8
TELEPHONE: (416) 683-3100
TELEX: 06-981295
FAX: (416) 686-2914

SUBSIDIARY

Dowty Canada Electronics Limited
774 Rye Street
Peterborough, Ontario
K9J 6W9
TELEPHONE: (705) 743-6903
TELEX: 06-962830
FAX: (705) 745-1394

Dowty Canada Limited has a longstanding reputation as a supplier of state-of-the-art aircraft landing gear and industrial and marine hydraulic systems. The Company has developed a total capability in microprocessor-controlled hybrid actuation systems by integrating the technologies of the Electronics subsidiary.

The Dowty Canada companies are located just east of Metropolitan Toronto. Their modern, well-equipped facilities of approximately 19,000 square metres (200,000 square feet) employ about 400 people.

Dowty Canada is a member of the Dowty North American Aerospace Division a part of the Dowty Group, based in Cheltenham, England. The Group is an international supplier of aerospace, defense, mining and industrial equipment.

COMMERCIAL & MILITARY LANDING GEARS

Current Landing Gear programs include main landing gear for the Bell-Boeing V-22 Osprey and the Kaman Aerospace SH-2F (LAMPS MKI) Helicopter, Main and the nose landing gear and steer-by-wire nosewheel steering systems, for the de Havilland Dash 8 Series 100 and 300 and the Canadair CL-601 also outrigger landing gear for the McDonnell Douglas USMC AV-88.

MARINE & LAND SYSTEMS

Dowty Canada designs and manufactures lightweight capstans for the Bell Aerospace U.S. Navy Aircushion Landing Craft (LCAC). Also, the hydraulic power pack and constant tension winch for the Indal Technologies Helicopter Recovery Assist, Securing and Traversing (RAST) System.

As a member of the Oerlikon Aerospace Low Level Air Defence System (LLADS) team, Dowty will manufacture and support electrohydraulic and hydro-mechanical turret control and actuation equipment and also the argon gas system.

Other equipment being offered to this industry are hydrojet propulsion systems for amphibious vehicles, damping and stabilizing equipment, liquid spring units

PRESIDENT: Mr. G.C. Kingston

V.P. AND GENERAL MANAGER: Mr. R.C. Wright

V.P. AEROSPACE DIVISION: Mr. C.R. Holmes

REGIONAL MARKETING MANAGER: Mr. J.A. Jones

V.P. AND GENERAL MANAGER:

Mr. J. McAllister

for recoil applications and equipment health monitoring systems.

ELECTRONIC SYSTEMS

Dowty Canada Electronics design and manufacture the microprocessor based control units in the Dowty Canada developed hydraulic/hydropneumatic ground steering systems used on CL-601, Dash 8 and Gulfstream G-IV aircraft and the landing gear control unit for the Bell Boeing V-22 Osprey. They have also developed equipment health monitoring units and a brake control system for rapid transit vehicles.

DESIGN, DEVELOPMENT AND TEST

Dowty Canada maintains an extensive design capability, augmented by an integrated CAD/CAM system and specialized analytical modelling software.

The development and certification test facilities at Dowty Canada are equipped with a Honeywell H-TMS 300 Test Management System and a Cyber II Load Control and Data Acquisition System.

In anticipation of next-generation aerospace technology needs, Dowty Canada maintains ongoing research and development programs.

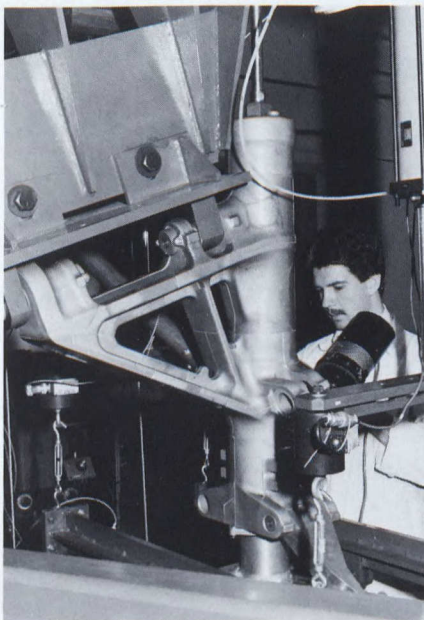
PRODUCTION AND PRODUCT SUPPORT

State-of-the-art CNC manufacturing equipment ensures cost-effective production of the sophisticated components produced by Dowty Canada. In addition to CAD/CAM, Dowty has implemented a Distributive Numerical Control Machining System. The Dowty Canada companies are operated in accordance with Canadian and U.S. military and commercial standards meeting Department of National Defence AQAP-1 and MIL-Q-9858A, Department of Transport and Civil Aviation Authority requirements.

Local and international product support services are available to Dowty Canada customers and equipment operators through the support services of the Dowty Aerospace Division.

Products and Services

Photostress Testing
of Landing Gear Model



Computer aided Design, Test, Manufacturing and
Quality Control.



CNC Flexible Machining Cell



Emhiser Research Limited

110 Bowes Street
Parry Sound, Ontario P2A 2L7
TELEPHONE: (705) 746-4268
FAX: (705) 746-4414

PRESIDENT: Lloyd L. Lautzenhiser
VICE-PRESIDENT: Ronald R. Bocox

Emhiser Research Limited is the Canadian member of a group of companies with other operations in the United States.

Emhiser produces a full line of airborne and ground based telemetry items including TM, beacon, video transmitters and receivers; PCM, PAM, and PDM encoders and decoders; VCO's and discriminators; encryption and decryption devices; power amplifiers; and other signal conditioning equipment.

The Parry Sound, Ontario facility is a complete operation with both R & D and production capabilities. In addition to telemetry, the company has extensive capabilities in the electro-hydraulic control field with production contracts with several North American agricultural and industrial OEM's. Emhiser and its sister company in Indiana hold several patents in this area.

Emhiser's major telemetry customers include U.S. Air Force, Navy, Marines, and Army, NASA, Defence Research Establishment Suffield, Rockwell, Bendix, Magnavox, Sandaire, and others.

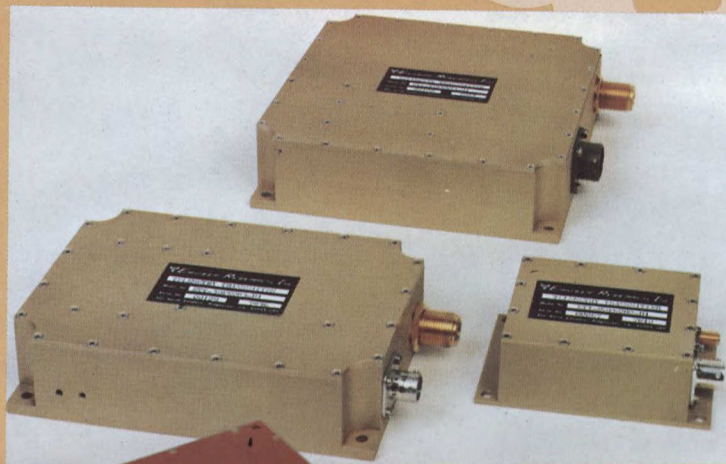
The Canadian facility, opened in April, 1983, has completed numerous R & D projects which include a phase modulated synthesized UHF transmitter for use with the GOES satellite system and a DC coupled phase locked telemetry/video L-band transmitter.

U.S. operations are located at:
Emhiser Research Inc.
986 Spice Island Drive
Sparks, Nevada U.S.A. 89431
Phone: (702) 358-1311
Fax: (702) 358-1092

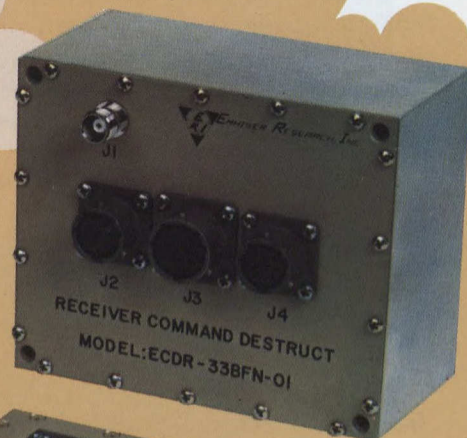
Canadian World Product Mandate.

Mil-spec
telemetry equipment for
airborne and ground based
systems

TELEMETRY
AND VIDEO TRANSMITTERS
& RECEIVERS



COMMAND DESTRUCT
COMMAND AND
CONTROL RECEIVERS



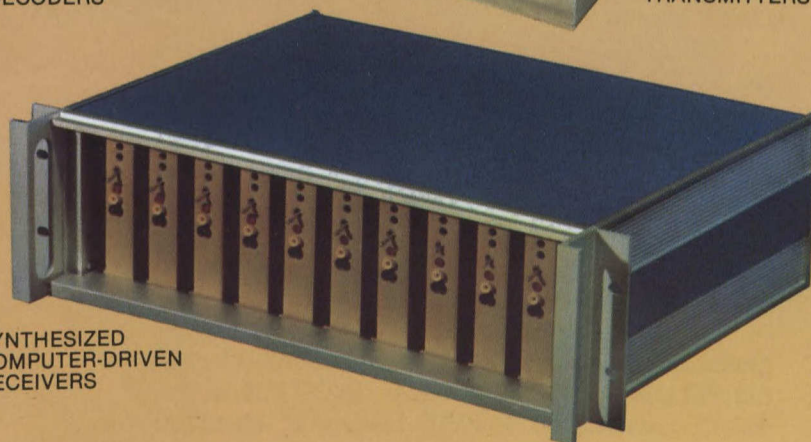
LOCATOR
BEACON
TRANSMITTERS



P.C.M. ENCODERS
AND DECODERS



SYNTHESIZED
COMPUTER-DRIVEN
RECEIVERS





Fell-Fab International Inc.

2343 Barton Street East
Hamilton, Ontario L8H 7L2

(416) 560-9230
FROM TORONTO 825-0597
TELEX: 061-8673
CABLES: Fell Fab Hamilton

FELL-FAB INTERNATIONAL INC. of Hamilton, Canada is an APPROVED SUPPLIER for the manufacture of satellite hardware produced by Spar Aerospace Limited, a major Canadian Aerospace Company. FELL-FAB's Hamilton facility boasts a well equipped Clean Room and support area, which is environmentally controlled to virtually eliminate any airborne or other contaminants. Trained personnel, supervised by Engineering Staff, utilize the latest in equipment and techniques to perform all facets of the manufacturing processes, working to rigid quality standards established by the high technology aerospace industry.

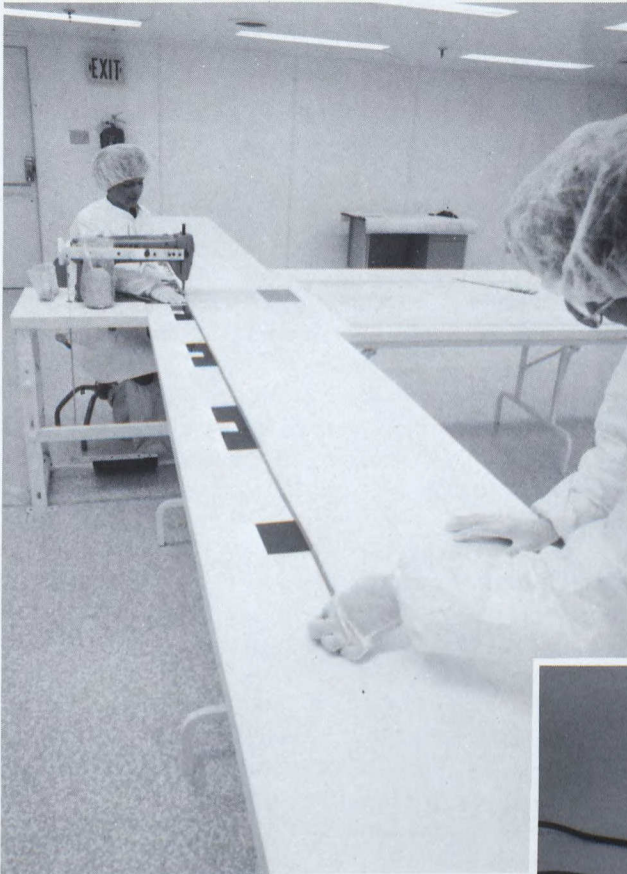
At present FELL-FAB is involved with three major contracts for Spar Aerospace Limited, a sub-contractor to the European Space Agency's L-SAT Satellite, part of the "Olympus Commercial Communications Satellite Program". All contracts involve the production of major components, critical for the functioning of the L-SAT Satellite. Included in these contracts are Flight Interleaves, Solar Cell Shipping Blankets and Thermal Insulation Blankets. Flight Interleaves are necessary for the protection during launch of solar cell panels deployed on the L-SAT Satellite. Shipping Blankets are produced for the purpose of protecting the solar cells during transport to Europe. FELL-FAB's latest project involves the entire production of Thermal Insulation Blankets to protect the deployment mechanism of the L-SAT Satellite Solar Array.

FELL-FAB is a major supplier of textile products for the aviation, aerospace, communications, environmental control, and transportation industries. The company's continuing product research and development has led to significant breakthroughs in fabric applications. Commitment to quality and excellence ensures that the company's quality assurance conforms to NATO, military, aviation and aerospace specifications and equivalent standards.

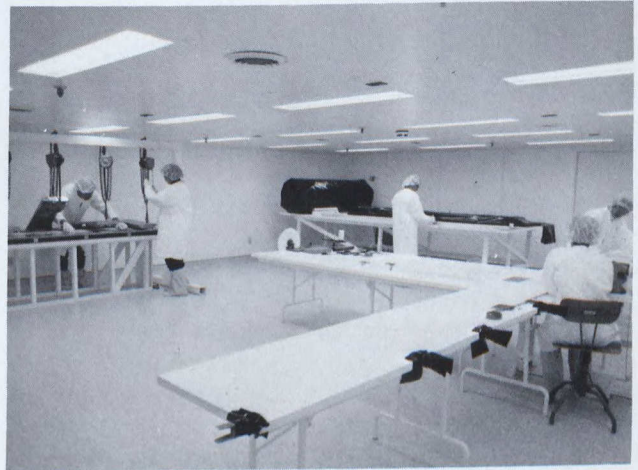
For more information about our Aerospace Programs and products requiring Environmental Control, call FELL-FAB INTERNATIONAL INC., Phone (416) 560-9230 or write P.O. Box 3303, Station "C", Hamilton, Ontario, Canada L8H 7L6. Telex 061-8673.

Products and Services

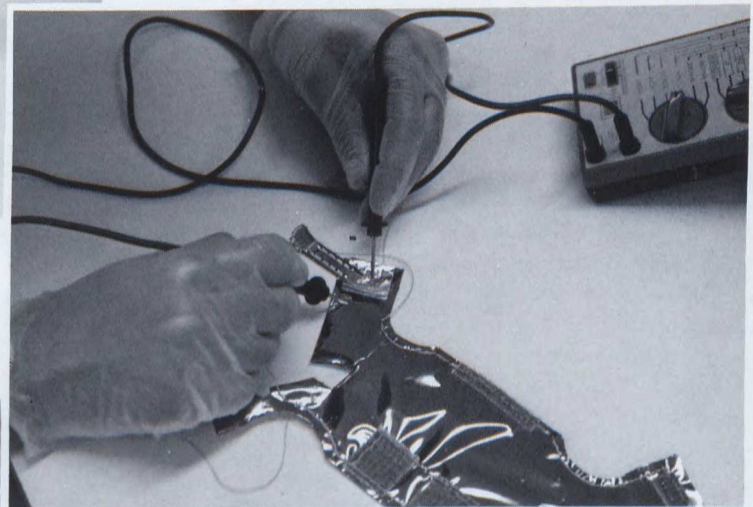
Clean room production of multi-layer insulation for Aerospace



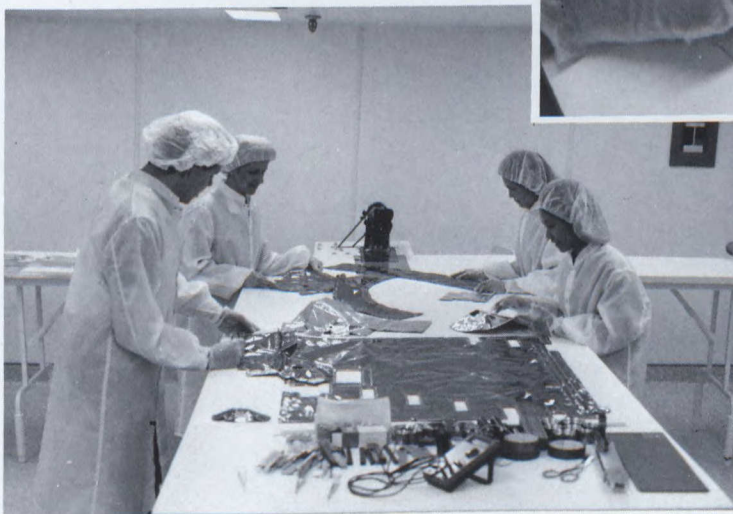
ASSEMBLY



CUTTING



TESTING



ASSEMBLY



Field Aviation Company Limited

Pearson International Airport
P.O. Box 6023, A.M.F.
Toronto, Ontario L5P 1B9
TELEPHONE: (416) 676-1540
TELEX: 06-968530
FAX: (416) 676-9951

PRESIDENT: G.D. Teele
VICE-PRESIDENT, SALES: J.B. Hayter
MANAGER, GOVERNMENT AND
INDUSTRY RELATIONS: C.H. Wilkinson
VICE-PRESIDENT, ENGINEERING: J.K. Hawkshaw
VICE-PRESIDENT, PRODUCTION: S.E. Wagstaff

Field Aviation Company Limited is a leading Canadian aviation sales, service and support organization first established in Canada in 1947. Field provides a complete range of specialized services to the general, commercial and military aviation community in Canada and abroad.

A member of the Hunting Group of Companies, Field Aviation consists of three wholly owned subsidiary management companies in Toronto and Calgary: Field Aviation East Ltd., Field Aviation West Ltd. and Field Aviation Sales Ltd.

Field Aviation East Ltd., located at Pearson International Airport, Toronto, provides a broad range of fixed base services for general aviation including aircraft service, maintenance, inspection and space leasing. Field East owns and operates a modern Esso Avitat and provides a full range of on-line service functions for tenant-based and itinerant aircraft.

Field East has a Department of National Defence contract at Canadian Forces Base Trenton/Mountainview. This contract provides for the on-site employment of maintenance technicians engaged in a support function at the base's aircraft maintenance development unit.

The company's Engineering Department headquarters are situated at Toronto. This highly innovative group has earned international recognition in the field of specialized aeronautical engineering applications and airframe conversions. The department maintains a high level of expertise in the field of aerial firebombing system design manufacture and installation, and the integration of aerial remote sensing systems into functional airborne platforms, plus varied aircraft outfitting for individual specialized purposes. Aerospace grade computer analysis used in support of internally designed systems is available for outside contracting.

Field Aviation West Ltd. is the largest of the company's operations and is located at Calgary International Airport. It is an approved facility under criteria established by the Ministry of Transport and Department of National Defence.

Field West specializes in the repair, overhaul and modification of both fixed wing aircraft and helicopters. Its services are supported by a variety of departments

including hydraulic, electrical, avionics, sheet metal, welding, maintenance and inspection. A modern refinishing centre adjacent to the main hangar houses an aircraft paint centre which can accommodate aircraft up to and including the Boeing 737. In addition to exterior painting Field West specializes in complete aircraft interior refurbishments and a separate facility is dedicated entirely to aircraft seat manufacturing operations.

Field West is quickly establishing itself as a prominent commuter aircraft repair and overhaul centre, where the company carries out ongoing modification programs on behalf of several established commuter airframe manufacturers.

Salvage and reclamation of damaged aircraft is an integral part of Field West's overall activities and a complete array of airframe tooling and repair jigs is maintained to support this endeavour.

Field West maintains storage facilities for tenant based aircraft, and supplies on-line service capability to these and itinerant aircraft through its Esso Avitat.

Field Aviation Sales Ltd. is the aircraft marketing arm of the company. With headquarters in Toronto, Field Sales maintains offices in Calgary and Ottawa. Field Sales has been the exclusive Canadian distributor for the Beech Aircraft Corporation for more than 30 years and, in addition to the sale of new aircraft, is active in the sale of pre-owned business and commercial aircraft on an international level.

Field sales can provide spares purchasing and material management for international organizations.

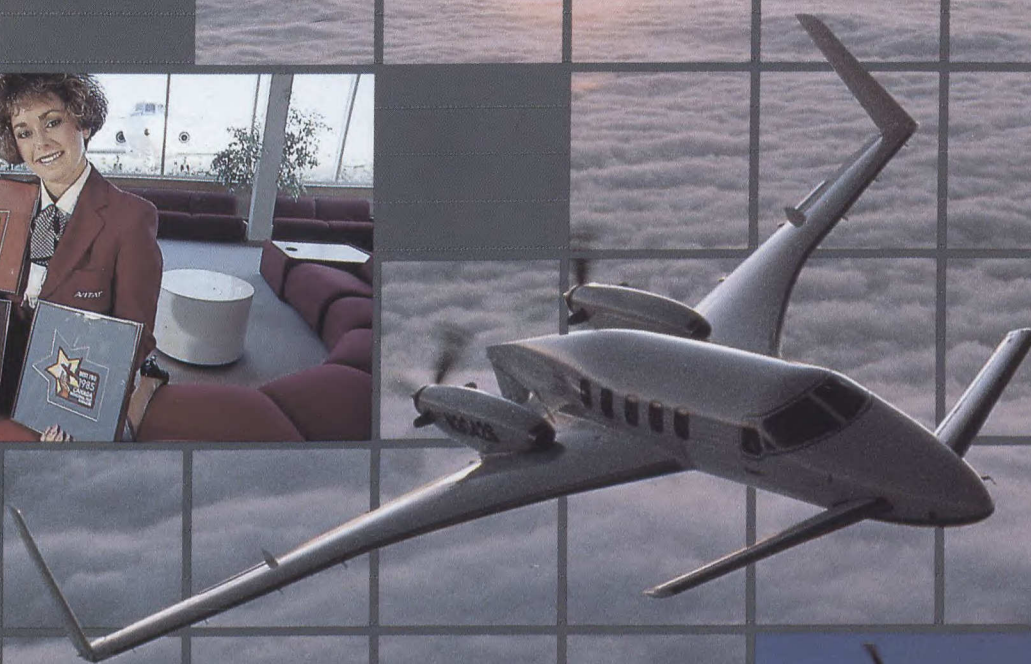
Field Aviation maintains an office in Ottawa that provides an important liaison amongst the various federal government departments and agencies with which the company conducts business.

Field Aviation East Ltd.
P.O. Box 6023, A.M.F.
Toronto, Ontario L5P 1B9
Telephone: (416) 676-1540

Field Aviation Sales Ltd.
P.O. Box 6023, A.M.F.
Toronto, Ontario L5P 1B9
Telephone: (416) 676-1540

Field Aviation West Ltd.
Box 3186, Station "B"
Calgary, Alberta T2M 4L7
Telephone: (403) 275-2111

Field Aviation Company Limited
275 Slater Street
Ottawa, Ontario K1P 5H9
Telephone: (613) 236-9577



W

e've just turned 40 and we're proud of it! Since 1947, Field Aviation has been serving the general, commercial and military aviation communities in Canada and overseas and we've developed into a recognized leader in many significant areas.

- ☐ Major airframe overhaul and repair
- ☐ Specialized aeronautical engineering modifications and conversions
- ☐ Aircraft seat design and



manufacture, aircraft painting and interior completions
☐ Exclusive Canadian Beechcraft Distributor

- ☐ Award winning F.B.O. service

F

ield's Toronto and Calgary facilities have the solution.

ASK FIELD ... YOUR SINGLE SOURCE SOLUTION WITH THE EXPERTISE YOU CAN COUNT ON.

Single Source Solution

FIELD'S 40TH
SINCE 1947

FIELD SALES LTD.
 FIELD EAST LTD.
 FIELD WEST LTD.
 FIELD AVIATION COMPANY LIMITED
 P.O. Box 6023, A.M.F.
 Pearson International Airport
 Toronto, Ontario L5P 1B9
 Telephone: (416) 676-1540
 Telex: 06-968530 FAX: (416) 676-1143



Fleet Industries

A Fleet Aerospace Company
P.O. Box 400, Gilmore Road
Fort Erie, Ontario, L2A 5N3
TELEPHONE: (416) 871-2100
TELEX: 061-5165
FAX: (416) 871-2722
Head Office
Fleet Aerospace Corporation
P.O. Box 1506
St. Catharines, Ontario L2R 7J9
TELEPHONE: (416) 684-9477

FLEET AEROSPACE CORPORATION

PRESIDENT: A.G. Dragone

FLEET INDUSTRIES

PRESIDENT AND GENERAL MANAGER: J.S. Butyniec

VICE-PRESIDENT, MARKETING: H.B. MacRitchie

Fleet Industries manufactures major components for the prime Canadian and United States manufacturers of commercial and military aircraft, helicopters, satellites, and radar and sonar systems.

Fleet was established in Canada in 1930 to design and manufacture aircraft for the world's civilian, transport and military markets. Between 1930 and 1950, almost 4,000 complete aircraft were built at Fleet and flown from the company's 2,400-foot (732-metre) on-property runway.

Today, the company concentrates its efforts on the production of major components. Fleet has enclosed facilities of approximately 500,000 square feet (46,450 square metres), and about 800 employees. Assembly and test methods meet the latest requirements of both civil and military authorities in Canada and the United States.

Fleet produces quality products, on schedule and at competitive prices, for both commercial and defence requirements.

Fleet Industries products include:

Aircraft

Boeing	707 Fin and Rudder 727 Aft Engine Fairing 747 SP Wing-to-Body Fairing Structure Boeing E3A TF33 Engine Nacelles 757 APU Doors A6 Flaperons
Canadair	Challenger CL600 Rudder Assembly
de Havilland	DHC-5 Bonded Components DHC-6 Bonded Components DHC-7 Bonded Components and Engine Nacelles DHC-7 Wing Leading Edges, Ailerons DHC-8 Bonded Wing and Fuselage Panels Aft Engine Nacelles, Inbd/Outbd Flaps/Spoilers
Grumman	A6 Inboard and Outboard Flaps Bonded Honeycomb Assemblies
Lockheed	L-1011 Main Landing Gear Doors Aft Dorsal Structure Aft Engine Cowlings CP140/P3C Flight Station

MBB Helicopter B0105LS Tailboom Assembly, Bonded
Canada Limited Honeycomb Panels

McDonnell Douglas Corporation A4E Speed Brakes and Flaps
F18A Graphite Avionics Doors
DC-9 Flaps and Ailerons (Canada)
DC-10/MD-11 Flap Vanes, Spoilers & Access Doors

PTC Aerospace Composite Seat Subassemblies for Commuter and DC-9/727 Aircraft

Sikorsky Aircraft Black Hawk UH60A Medevac Kits
Blade Subassemblies

Radar

General Electric ASR Welded Antennas

Hughes Aircraft F18 Radar Rack Assemblies
Co. Radar Systems Group

ITT Gilfillan Falcon Reflector

Lockheed Electronics Gun Fire Control System Antennas and Cabinets

Raytheon Phased Array Antennas "Pave Paws" & "Cobra Judy"

Sperry Gun Fire Control System Antenna and Cabinet

Satellite

Hughes Aircraft Solar Panel Substrates, Anik C, SBS, NASA, Company
Anik D, GOES/GMS, Westar/Palapa B, Leasat, AT&T, Brasilsat

Spar Aerospace Bonded Panels/Structures, Anik C, SBS, Anik D, Westar; Spun & Despun Structures Brasilsat

Sonar

Department of Supply and Services Retractable Fixed Hull-Mounted, Towed Bodies, VDS Systems and Faired Tow Cables. Repair and Overhaul.

EDO Corp. Transducer Structure

General Electric Heat Exchangers

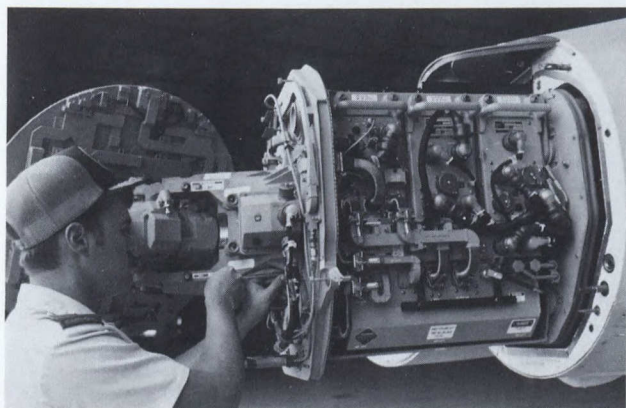
Gould Inc. Sonar Handling Drum, Shipboard Cabinets
Defense Electronics Div.

Westinghouse Canada Limited Retractable Fixed Hull-Mounted, Towed Bodies, VDS Systems and Faired Tow Cables.

Raytheon Variable Depth Sonar (VDS) Hoist System
1164/1167

Fleet Industries, where technology and tomorrow meet.

Products



BOEING

Fleet Industries provides the vertical fin and rudder for the E3A AWACS aircraft. Other Boeing programs have included 727 aft engine fairing and auxiliary power unit doors for the 757 aircraft.

de HAVILLAND DASH 8

Fleet Industries produces bonded components for de Havilland DHC-5-6-7-8, and Dash 7 engine nacelles, leading edges and ailerons. Dash 8 Aft engine nacelle, inbd/outbd flaps.



LOCKHEED

Fleet Industries manufactures the flight stations for the Canadian Armed Forces CP-140 Aurora long-range patrol aircraft, shown here and US Navy P3C.

McDONNELL DOUGLAS

Fleet Industries manufactures the flaps and ailerons for the popular DC-9/MD-80 series of airplanes and the flap vanes, spoilers and access doors for the DC-10/MD-11 series.



F18

Fleet Industries manufactures F18 advanced composites technology graphite avionics doors.

MBB HELICOPTER CANADA LTD.

B0105LS bonded honeycomb panels and tail-boom assembly.

SIKORSKY AIRCRAFT

Fleet Industries manufactures the Medevac kits and composite blade subassemblies for the UH60A Black Hawk helicopter, S76 and CH53.



HUGHES AIRCRAFT

Over 45 sets of advanced composites solar panel substrates have been delivered to date. Fleet also manufactures the radar rack for the F18 aircraft.





Garrett Canada

255 Attwell Drive
Rexdale, Ontario
M9W 6L7
TELEPHONE: (416) 675-1411
TELEX: 06-989142

PRESIDENT: W.C. Tate
SALES & MARKETING MANAGER: C.F. Fauquier

With its diverse range of products, and strong commitment to meet the challenges of a dynamic and progressive industry, Garrett Canada has established a technology base second to none. Backed up by one quarter of a million square feet of modern design, manufacturing, testing and support facilities, the company markets the following:

- Electronic Environmental Control Systems
- Communications Systems
- Hybrid Microcircuits
- Display Systems
- Peripheral Vision Display Systems
- Advanced Systems/Special Projects
- Customer Support Service

Garrett Canada is a division of Allied-Signal Canada Inc. Garrett's marketing efforts are supported in the field by The Garrett Corporation's sales and service organization with offices in most major cities throughout the world. The company now has six plants in Rexdale, Ontario housing more than 1000 people, 30 per cent of which are engineering or engineering-support staff.

Recently, the engineering facilities have expanded significantly and marketing efforts have yielded important accomplishments in all of the company's product lines.

Garrett Canada:

- exported approximately 80 per cent of its total sales of \$105 million in 1986;
- is leading a study of the ICECS (Integrated Closed-Loop Environmental Control System) concept for future aircraft;
- developed an Electro Impulse De-Icing system for such aircraft as Boeing's 7J7;
- obtained Canadian government approval to offer a "test house service" within the Canadian Industrial TEMPEST program. This facility is staffed to perform TEMPEST testing for equipment accreditation based on compliance with national or NATO government standards;
- has been certified to Military Standard 1772. At this time of writing fewer than 20 of North America's hybrid microcircuit manufacturers have been certified to this new and more stringent standard which is

mandatory for all manufacturers of military hybrids supplied to the United States Government and their subcontractors;

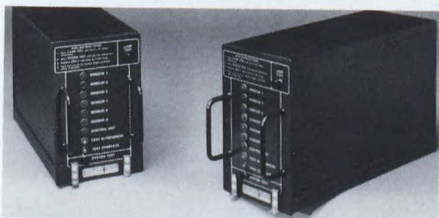
- has been selected as the Canadian prime contractor for ASRAAM. The company's responsibility includes the design and development of the missile fin control actuation systems;
- introduced a new concept in flight instrumentation. The Peripheral Vision Display (PVD) system is intended to reduce the loss of life and aircraft resulting from spatial disorientation suffered by pilots.

Garrett is actively engaged in the research and development of control systems, RF communications, analog and digital circuit design, and display technology.

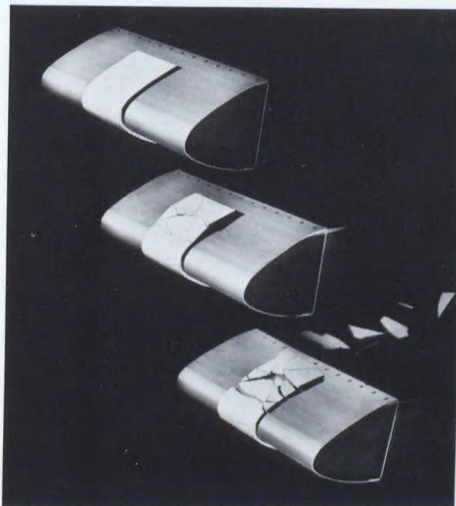
Environmental and EMI qualification testing to military aerospace standards is performed in the company's government-approved test facility. A single standard quality control system that conforms to NATO AQAP-1 and MIL-Q-9858 is employed.

Products and Services

F-18 TEMPERATURE CONTROL SYSTEM



757/767 WINDOW HEAT CONTROLS



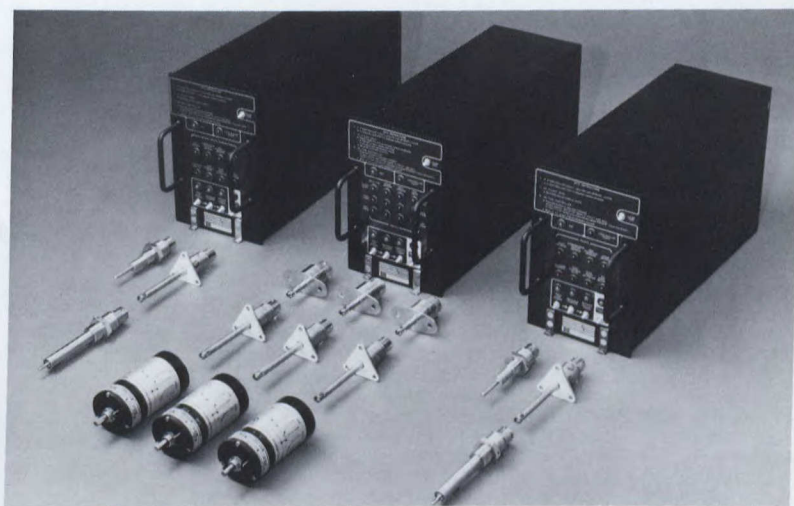
ELECTRO IMPULSE DE-ICING SYSTEM, GARRETT'S DEMONSTRATION UNIT



ELECTRONIC CONTROLS FOR PERSONAL COOLING VEST

ELECTRONIC ENVIRONMENTAL CONTROL SYSTEMS

These electronic controls are a major subsystem of the Garrett environmental control systems that fly on the majority of commercial and military aircraft in the western world. They are used in cabin, cockpit and compartment air-conditioning systems; wing anti-ice temperature control systems; window heat control systems and some liquid or air coolant systems. Garrett's systems are used on commercial and military aircraft of all major manufacturers, including McDonnell Douglas, Boeing, Hughes, Lear, and others. The activity in this product line in 1986 occurred principally for the receipt of orders and deliveries of the electronic controls for such commercial aircraft as the Douglas MD-80 aircraft and Boeing 737, 747, 757 & 767 aircraft; military aircraft orders and deliveries for the F-14, F-15, F-16, F-18, & C141. This business was chiefly follow-on of existing hardware, though in some systems equipment was ordered for new models of existing aircraft. Additionally, orders were received for two new aircraft — the Boeing Bell V-22 and the M.D. C-17A military transport.



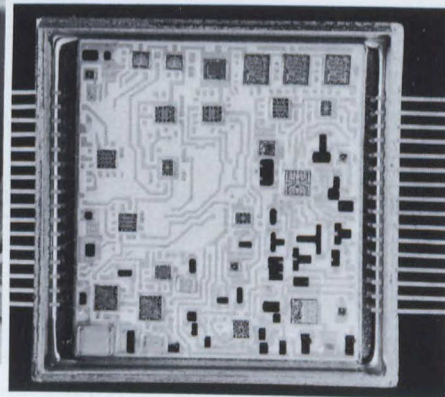
757/767 TEMPERATURE CONTROL SYSTEMS

CUSTOM THICK AND THIN FILM HYBRID MICROCIRCUITS

Garrett's microcircuits are produced in a fully integrated facility with a dedicated engineering, sales and production staff. The facility, equipped with specialized manufacturing equipment, is now certified to Military Standard 1772 — Manufacturer Certification and Line Certification of Fabrication processes. Hybrids manufactured by Garrett Canada are used in missile guidance, inertial navigation and radar systems and other electronic equipment for a variety of military and commercial aircraft, as well as in United States Government electronic security systems.



AUTOMATIC DIE ATTACH



MULTI-LAYER THICK FILM HYBRID MICROCIRCUIT

Products and Services

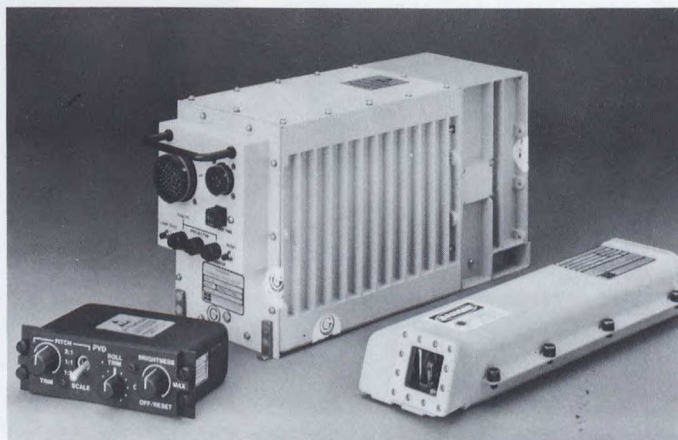
PERIPHERAL VISION DISPLAY SYSTEM

The Peripheral Vision Display is a new and unique flight system designed to reduce the number of accidents due to spatial disorientation. It also improves pilot control when flying in adverse weather and under conditions of high cockpit workload. A laser produced line of light representing the earth's horizon and moving relative to the aircraft's altitude is projected across the instrument panel. This line keeps the pilot constantly aware of the aircraft's altitude through his peripheral vision.

The system is currently being manufactured for a fleet of classified USAF aircraft. It is undergoing evaluations by the U.S. Air Force and Navy, the Canadian Forces and the United Kingdom's military.

Current equipment consists of:

- Control Panel
- Processor
- Projector Head



PERIPHERAL VISION DISPLAY SYSTEM

COMMUNICATIONS SYSTEMS

Emergency systems, air traffic control radios and military communications projects at Garrett Canada have developed complementary technical capabilities in the following areas:

- Digital Signal Processing
- VHF Design and Development
- Shielding and EMC
- VHF Antennas
- COMSEC
- TEMPEST

PRODUCTS

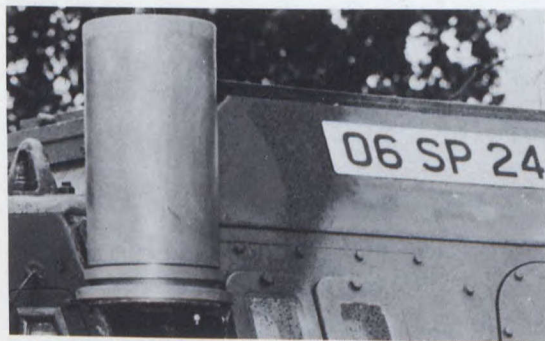
Emergency locator transmitters developed by Garrett Canada are used throughout the world in military and commercial applications. These low-power transmitters automatically provide an emergency homing signal to assist searchers in locating aircraft in distress.

Personal Locator Beacons and Survival Radio Sets are products that permit two-way voice communication with search aircraft in addition to providing an emergency homing signal.

VHF/AM single channel transmitters and receivers have been developed for use in air traffic control towers for ground-to-air communications.

The Instrument Landing System (ILS) Test Sets are ground-based microprocessor-controlled radio receivers that precisely measure the signal characteristics radiated from instrument landing systems providing assurance that they are operating within prescribed tolerances.

Low Profile Tactical Antennas have been designed as an alternative to the conventional 3-metre whip vehicular antenna. The antenna's low profile and robust construction reduces a vehicle's visual signature and enhances its battlefield survivability. It also provides the user with exceptionally reduced life cycle costs when compared to whip antennas.

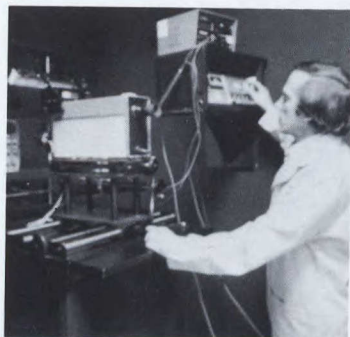


LOW PROFILE ANTENNA

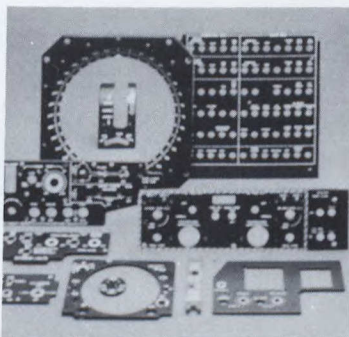


PORTABLE SIGNAL ANALYZER WILL BE USED FOR GROUND INSPECTION, CALIBRATION, ALIGNMENT AND TROUBLE SHOOTING OF ILS INSTALLATIONS ACROSS CANADA. INSET: ILS SIGNAL ANALYZER.

Products and Services



PRECISE TESTING OF CHROMAT-
ICITY AND LUMINESCENCE



TYPICAL PANELS MANUFACTURED

ILLUMINATED INFORMATION PANELS

Garrett now produces Types IV, V and VI illuminated information panels and accessories for use on ground, airborne, and marine-based equipment for the following:

- communications;
- pressure and other environmental control systems;
- navigational aids and radar systems.

All panels and accessories are manufactured to MIL-P-7788, MIL-L-27160, MIL-C-25050, MS33558 and NVG (Night Vision Goggle) compatibility requirements.



ASRAAM ON F-16 WING-TIP AND
UNDERWING STATIONS

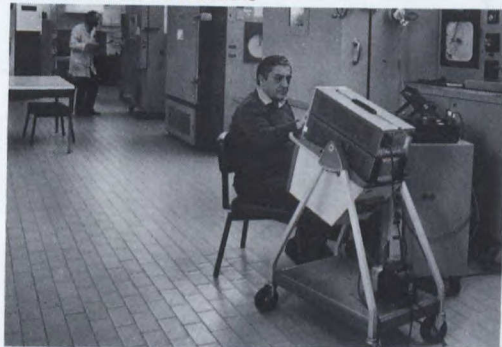
ADVANCED SYSTEMS/SPECIAL PROJECTS

The 30 years of experience accumulated by Garrett in the design, development and manufacture of a wide range of aerospace and aerospace-related products creates a sound base for the production of major state-of-the-art defence and communications systems.

The advanced systems capability provided by Garrett involves the company in a number of collaborative NATO programs. These are carried out from R&D and design, through systems integration, to complete life cycle support and world-wide marketing.

Garrett Canada is currently involved in the design, development and feasibility of control actuation systems, power supplies, weapons computers and specialized test equipment for several NATO programs.

The company is the Canadian national lead contractor for ASRAAM, with a mandate to design and develop the missile's fin control actuation system. Garrett is also a member of the multi-national teams conducting the feasibility studies for NATO's LOCPOD (Low Cost Powered Off-Boresight Dispenser) and SRARM (Short Range Anti-Radiation Missile) systems.



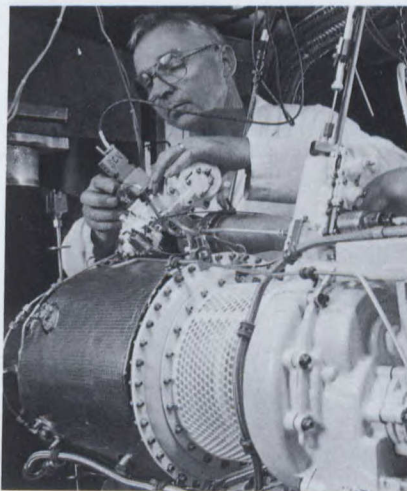
ENVIRONMENTAL TESTING FACILITY

REPAIR & OVERHAUL/CUSTOMER SUPPORT

In 1953, Garrett Canada became the Canadian customer support base for all Garrett's aerospace products. Since then, its customer support capabilities have grown steadily, in keeping with the increased sophistication and expanding sales of Garrett equipment. In 1977, Garrett Canada's customer support group moved into a new 34,000 square foot facility on Marmac Drive in Rexdale, Ontario.

Garrett Canada's customer support/repair and overhaul facility is unique in Canada. It has the capability to simulate severe environmental conditions required to test airborne air conditioning rotating machinery and high temperature valves. These facilities are also equipped to overhaul gas turbine auxiliary power units, actuators, starters, central air data computers, and other aircraft systems. Garrett Canada provides Third Level Support for several high technology systems installed on the CF-18 fighter aircraft.

GARRETT CANADA PROVIDES CANADIAN SUPPORT FOR THE AUXILIARY POWER UNIT (RIGHT), WING FOLD ACTUATION, AIR CONDITIONING, CABIN PRESSURE, AND WING LEADING EDGE SYSTEMS FOR THE CF-18.





General Systems Research Inc. (GSR)

Corporate Offices
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Edmonton, Alberta, Canada T5G 2Z4
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TELEFAX: (403) 451-1795

CONTACT:

VICE PRESIDENT, CORPORATE MARKETING AND DEVELOPMENT: Glen W. Lavold

DIRECTOR OF MANUFACTURING: Ted Zscherpel

MANAGER, CONTRACTS: Gary Gibson (403) 451-9000

General Systems Research Inc. is an Alberta based high technology company engaged in the design, development and production of automated laser imaging and lasercutting systems. GSR also manufactures components, under contract to the scientific community and the aerospace industry. The GSR manufacturing division is an established aerospace component supplier experienced in precision machining and metal fabrication, aluminum anodizing, fiber composite fabrication and electronic and electro-mechanical assembly. The Company produces as a sub-tier contractor, aircraft components for the Canadian Government Department of National Defence, machined parts for the Boeing Commercial Aircraft Company, the Spar Aerospace remote manipulator arm of the NASA Space Shuttle and missile components for the Oerlikon Low Level Air Defence System.

PRODUCTS, SERVICES, SPECIALITIES:

- Aerospace Technologies Division: Manufacture advanced aerospace components utilizing precision machining, composite fabrication, anodizing, aluminum dip-brazing, and electro-mechanical assembly for components used primarily in aircraft and defence related industries.

- Laser Technologies Division - developing, manufacturing and marketing of computer controlled laser systems for automated materials processing utilizing high power laser beams to cut a wide range of materials such as textiles, composite plastics, metals and other industrial roll and flat stock products.

SPECIALIZED EQUIPMENT:

Western Canada's largest sulphuric acid-based aluminum anodizing line; an aluminum salt bath heat treatment furnace; an aluminum dip-brazing oven; a 100-ton hammer for forming aluminum structural panels; a 96" x 300" precision 3-axis computer-controlled milling machine; a 2,800 ton hydraulic sheet metal press; a composite curing oven for metal-epoxy bonding; mold casting equipment for reinforced plastic fabrication of complex shapes.

MAJOR CLIENTS:

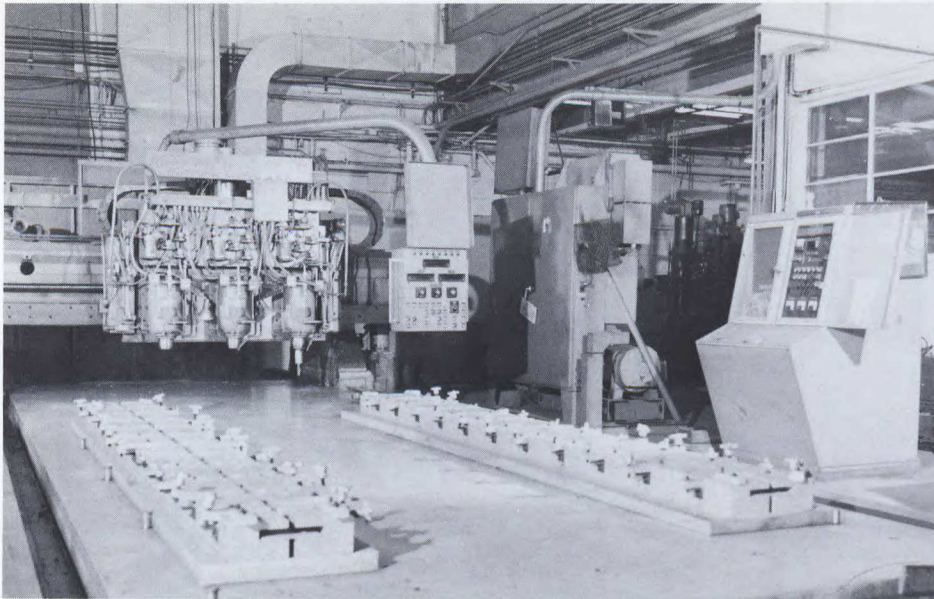
Oerlikon Aerospace Inc., Boeing Company, Northwest Industries Ltd., General Motors of Canada.

EMPLOYEES:

108

SALES:

\$5 Million



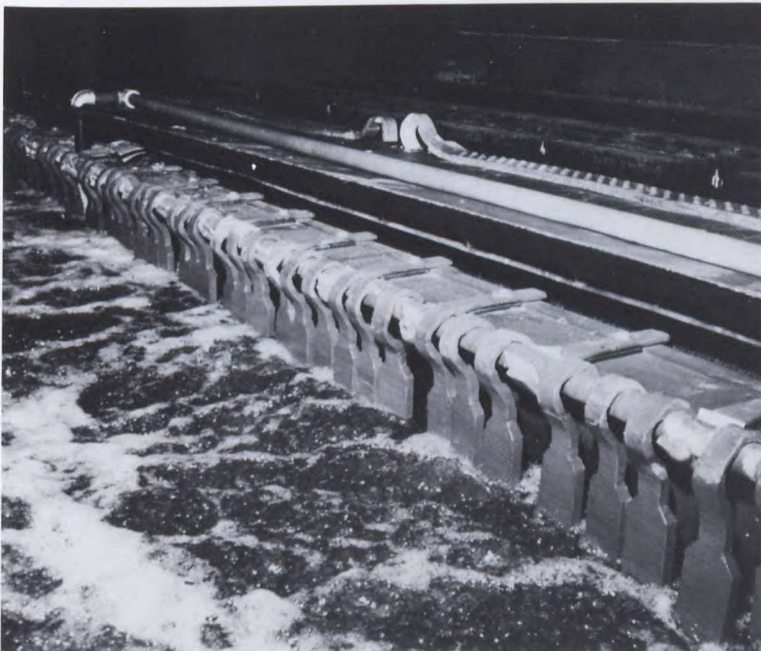
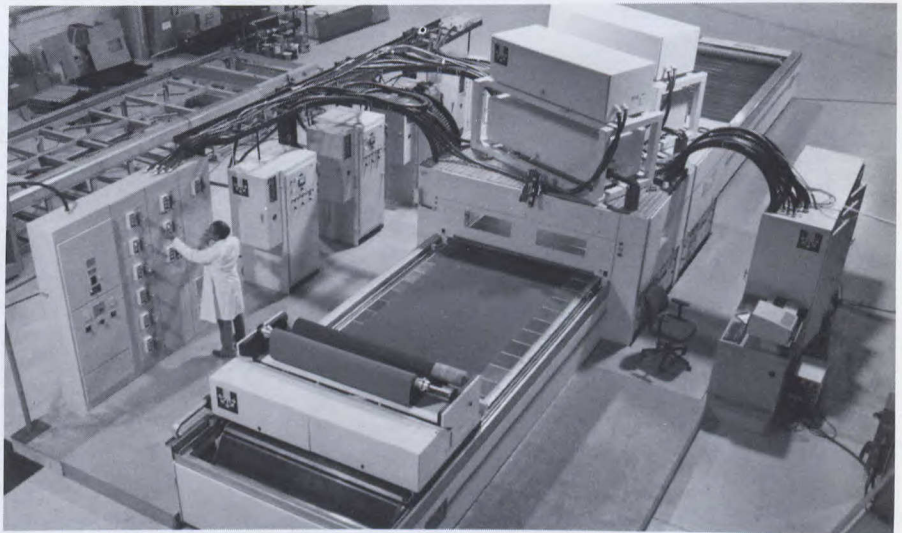
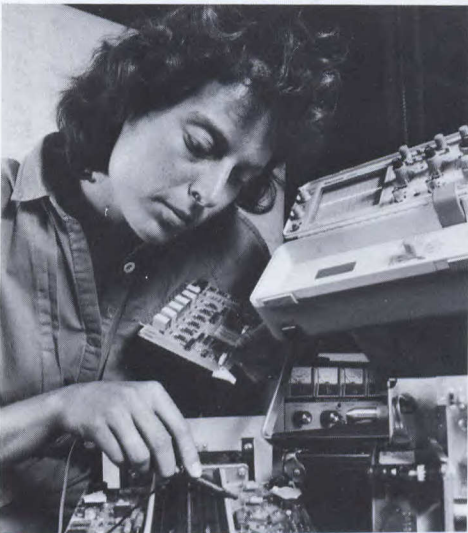
Top: 3-axis NC milling machine.
X axis 300", Y axis 96" and Z axis 8"

Centre Left: Full research and development facilities for Electronic and electro-mechanical assembly

Centre Right: The MC400 laser cutting system for the continuous cutting of textiles and composites.

Bottom Left: Anodizing tanks with a length of 21', a width of 2' and a 5' depth.

Bottom Right: A 2800 ton rubber pad hydroform press with a 72" X 72" capacity.





Haley Industries Limited

Haley, Ontario
K0J 2Y0
TELEPHONE: (613) 432-8841
TELEX: 053-3920

CHAIRMAN OF THE BOARD: Brian W. Barr
PRESIDENT & CHIEF EXECUTIVE OFFICER: Greg J. Kedrosky
SENIOR VICE-PRESIDENT, MARKETING: Harvey W. Murray
VICE-PRESIDENT, FINANCE: Archibald M. Macaskill

Haley Industries Limited specializes in the casting of complex aluminum and magnesium gearbox and transmission housings for the international aerospace industry. These castings include constant-speed drive housings, auxiliary power unit housings, main propulsion engine gearbox housings and main transmission and tail rotor gearbox housings for the helicopter field. Casting of internal oil passageways required by these housings is by a sand pipe core process developed by Haley. Many of these housings have several metres of small diameter internal passageways cast into the part; however, the overall production spectrum at Haley ranges from small, relatively simple designs through to ultra-complex designed castings.

The company's on-going research and development program is aimed at improving production processes wherever opportunities for upgrading exist. Over the past few years Haley has successfully developed a number of new processes which have helped to maintain its enviable position in the forefront of light metal alloy foundry technology.

One of their major R and D efforts, an advanced technology castings system for aluminum alloys has been in a production mode for 18 months and has proven to be very successful.

This new casting process which is completely microprocessor controlled enables Haley to produce sand castings with superior mechanical properties, excellent radiographic quality and thinner walls.

This process, known as bottom pouring has also given the foundry an entrée into other areas of the aerospace industry, particularly for requirements of cast structural components and fuel and oil pump type castings.

Present R and D projects include the low pressure, bottom pouring of magnesium and an ultra-sonic inspection device used to achieve dimensional integrity during the placement of the various complex sand cores in the sand mould.

The company has recently completed a major expansion program, substantially improving both the layout of the foundry and its production capacity. The layout of the foundry was re-designed, state-of-the-art production foundry equipment installed, and produc-

tion operations upgraded with microprocessors and mini-computers. The result of the new design concept is a foundry capable of approximately 50 percent more production achieved with our 57,000 sq. ft. addition.

Haley has a well-equipped patternmaking department to provide technical back-up to the customer and the foundry, in all phases of pattern design and construction. The firm also provides a complete dimensional inspection capability of the highest calibre.

Haley pours a complete range of premium and regular quality aluminum and magnesium alloys to international aerospace specifications.

The processing department containing fettling systems, surface-cleaning systems, zygo systems and articulating routers ensure smooth product flow.

To reduce the workload in the conventional X-ray department, a computer-controlled five-axis manipulation fluoroscopic unit is extensively used as an in process inspection tool.

Continuing its emphasis on communication and coordination between customers, sales and production staff, Haley has further enhanced its computer systems in both the production control and sales areas. The complete information base now available to Haley's key personnel provides the company's line management and customers with timely and accurate data.

During 1984 Haley acquired Presto Casting Company of Phoenix, Arizona. Presto produces light alloy castings similar to those produced by Haley but generally of a less complex design which can be produced at a lower cost. Programs are being implemented at Presto that will take advantage of Haley technology in the areas of production, quality control and method engineering.

A publicly-owned company, Haley's sales figure for fiscal 1986 amounted to \$44 million. It employs 450 persons, including 28 engineers.





Halifax Aerotech Business Park

Halifax County Industrial Commission
2750 Dutch Village Rd.
P.O. Box 300, Armdale
Nova Scotia, B3L 4K3
TELEPHONE: (902) 453-7777

EXECUTIVE DIRECTOR: Lorne A. Denny

Move to Nova Scotia

Immediately adjacent to the Halifax International Airport (a Department of Transport category II airport) is a unique 2000-acre (808 hectare), high technology business park developed to accommodate companies serving the aerospace industry. Companies wishing to locate here may avail themselves of the federal and provincial funding programs currently in existence.

Centrally Located

Halifax International is the first airport on the eastern seaboard to be encountered by continental European flights. It has direct connecting flights to all major airports across North America through daily service by two international airlines and one regional airline. Halifax harbor is ice-free all year round and its two container facilities are equipped to handle a significant increase in traffic. Offshore oil and gas discoveries have thrust Halifax into the center of an energy rich area.

High Technology Park Services

The campus-like setting of the Aerospace Technology Business Park may afford direct access by your aircraft. An on-site research center will augment your own technical needs while the proposed freeport area will facilitate arrival and the assembly of goods in transit and departure of goods not intended for import.

Atlantic Style

Beset with scudding sails of yachts, the surging wakes of power cruisers. Beaches, coves, rivers, lakes . . . swimming, water-skiing, winter skiing, canoeing, camping, fishing, scuba diving. The restless sea . . . the changeable Atlantic. Blue and sparkling, busy with tankers, container ships, trawlers and coastal freighters. Only minutes away from home or office.

. . . **The Good Life** . . .

Quality of Life

Gracious living . . . comfortable homes, luxurious apartments, summer cottages, chalets, or even your very own island! Churches, schools, shopping malls, interesting things to see and do . . . live theater, sym-

phony concerts, top entertainers, engrossing museums, restful parks, art galleries, antique shops, restored properties of historical significance . . . and much, much more. Enjoy yourself among friendly folks! Something for everyone

. . . **The Good Life** . . .

Education/Research and Development

The Halifax County area is well-endowed with notable universities (Dalhousie), world-class research establishments (Bedford Institute of Oceanography, Nova Scotia Research Foundation), diversified industries, and specialized business parks (High Technology Business Park). In addition, vocational training schools provide specialized trades training. The region boasts well educated management potential and a stable, adaptable work force, all part of

. . . **The Good Life** . . .

Offshore Resource Development

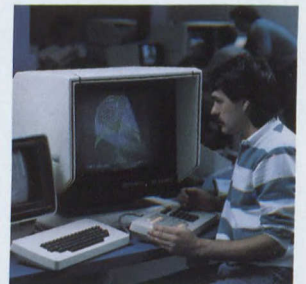
Development of state-of-the-art manufacturing technology in the region is already adding new impetus to activity in the Halifax County area, creating a new hub of activity in this important industrial field. Businesses and activities ranging from laboratories to aerospace manufacturing, and from electronics to specially-built ships will all find a new focus in this central part of Atlantic Canada. These new businesses, new opportunities, new people and new ranges of human resources will all complement the present balance in the region, and build, expand and advance

. . . **The Good Life** . . .

Inquiries Invited

Please address your inquiries to: Halifax County Industrial Commission and we will send you a complete prospectus.

HIGH TECH TOP GUNS



A move to Halifax County's **AeroTech Business Park** puts the top guns of Canada's foremost automated manufacturing centre right at your doorstep. The Park is a high technology complex serving the aerospace and related industries. Located here is the most sophisticated computer integrated manufacturing facility in North America.

The Nova Scotia Department of Vocational and Technical Training has established an Automated Manufacturing Centre housed in

the Nova Scotia Institute of Technology. Students are taught state of the art skills that will fill your labour requirements well into the 21st century.

To be the best in an age of automation, these people are trained to be highly responsive and perform maneuvers far exceeding present norms. Your search for a highly skilled workforce groomed to meet the needs of new technology, business and manufacturing are over. We've got it.

Dynamic Forward Motion

For specifics contact:

Lorne A. Denny, Executive Director,
Halifax County Industrial Commission,
2750 Dutch Village Road, Box 300, Armdale,
Nova Scotia, Canada, B3L 4K3, 1-902-453-7777



AeroTech
business park



Havlik Technologies Incorporated

695 Bishop Street
Cambridge, Ontario
N3H 4V2

TELEPHONE: (519) 653-5774

(416) 364-6208 (Toronto line)

FAX: (519) 653-5774

(416) 364-6208

TELEX: 069-59364

PRESIDENT AND CEO: David M. Gee
VICE-PRESIDENT: B. Paul Astbury

Havlik Technologies Inc. provides machining, metal processing, assembly, and non-destructive testing services to the aerospace, defense, and precision engineering industries through its operating divisions and subsidiaries, **Williams Machines**, **Material Processing**, and **Vis-U-Ray Testing Limited**.

Williams Machines provides precision machining services for medium to large aluminum, titanium and high strength steel components. Williams is also a custom fabricator and assembler of special machinery, complex robotics and custom materials handling equipment. Large scale welding and metal forming facilities are in place, as well as the personnel and physical plant for the assembly, testing and trial of complex electrical, hydraulic and computer controls and sub-systems.

Material Processing offers a full range of metal processing and inspection services to military and commercial specifications. Services include: anodizing, heat treating, cadmium plating, abrasive blasting, shot peening, spray painting and non-destructive testing services. Material Processing has set industry standards for excellent quality, minimal reject rates, rapid product turnaround, and excellent pricing on short run processing.

Vis-U-Ray Testing Limited operates the largest non-destructive testing facility of its kind in Canada, providing full radiography, ultrasonic, penetrant, magnetic particle, and eddy current inspection services.

All three operations have fully independent quality assurance and inspection organizations and offer absolute material and process traceability. With one of the highest experience levels in the industry, senior staff can assist clients with problem solving in all areas of equipment capability, component fabrication and design, and metal processing. The integrated machinery, metal treatment, and non-destructive testing operations assure maximum product turnaround, part traceability and minimal transportation and handling costs.

Havlik Technologies is a member of the Derlan Industries' group of companies. Derlan is a publicly held Canadian corporation with interests in a wide range of industrial sectors. Utilizing its strong capital base, Derlan acquired Williams Machines and Material Processing in 1985, and Vis-U-Ray Testing in 1986, and

is providing the necessary resources for expansion and modernization. Williams Machines has served the aerospace industry for 68 years, Material Processing for 23 years, and Vis-U-Ray Testing for 18 years.

Williams Machines Division

695 Bishop Street
P.O. Box 3430
Cambridge, Ontario
N3H 4V2
(519) 653-5774
(416) 364-6208
Divisional Manager:
Ed Benik

Material Processing Division

695 Bishop Street
P.O. Box 3430
Cambridge, Ontario
N3H 4V2
(519) 653-5774
(416) 364-6208
Divisional Manager:
Sandy Sykes

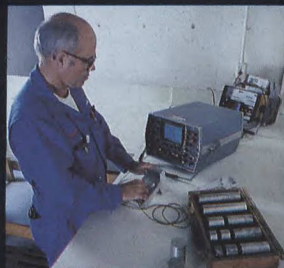
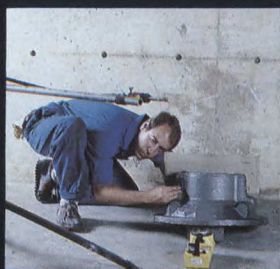
Vis-U-Ray Testing Limited

320 Sheldon Drive
Cambridge, Ontario
N1T 1A9
(519) 653-5774
(416) 364-6208
General Manager:
B. Paul Astbury

VIS-U-RAY

A SUBSIDIARY OF HAVLIK
TECHNOLOGIES INC.

Vis-U-Ray provides non-destructive testing and research, and development facilities for the aerospace and defence production industries.



Specializing in radiography, ultrasonics, penetrant, magnetic particle and eddy current testing.

Vis-U-Ray operates the largest independent commercial non-destructive test facility of its kind in Canada with fully trained, and highly qualified technicians.



WILLIAMS MACHINES DIVISION

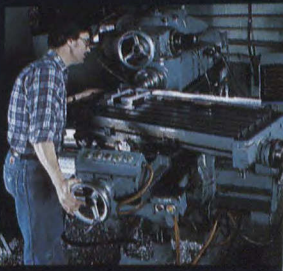
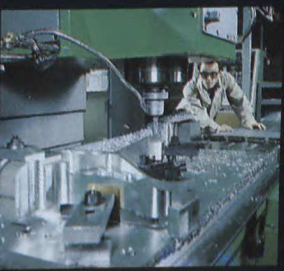
For more than 60 years, Williams has specialized in high tolerance machining of medium to large scale aluminum, titanium, and high strength steel components.



Williams holds numerous approvals including: Babcock & Wilcox, Canadair, de Havilland, Fleet Industries, Lockheed California, McDonnell Douglas; and Spar Aerospace.

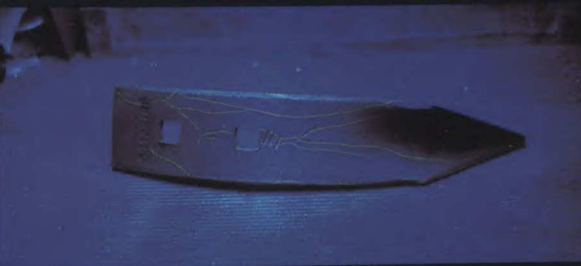


Williams Machines' equipment includes: profilers, precision drilling equipment, vertical and horizontal machining centres and boring mills, lathes, grinders, planer mills.



MATERIAL PROCESSING DIVISION

MATERIAL PROCESSING provides the final touch of quality, specializing in high technology coatings, heat treating and non-destructive testing services.



Type I, II, III Anodizing
Type I & II Cadmium Plating
Chemical Conversion
Manganese Phosphate Coating
Passivation of Stainless Steel



Aluminum Heat Treating
Shot Peening
Abrasive Blast
Spray Painting
Dry Film Lubrication



Nital Etch Inspection
Penetrant Inspection
Magnaflux Inspection



A DERIAN
COMPANY



Hawker Siddeley Canada Inc. Orenda Division

3160 Derry Rd. East
Mississauga, Ontario
Correspondence: Box 6001
Toronto A.M.F. Ontario L5P 1B3
TELEPHONE: (416) 677-3250
TELEX: 06-968727 CABLE: ORENDA
TELECOPIER: (416) 678-1538

GENERAL MANAGER: R.J. Munro
DIRECTOR OF FINANCE: R.P. Simpson
DIRECTOR OF MARKETING: C.M. Hinds

Orenda Division has been the leading manufacturing and overhaul centre of Canadian Forces' high performance gas turbines since 1946. More recently, Orenda has built up a significant subcontract manufacturing activity producing high quality components for such customers as Pratt & Whitney Aircraft, General Electric, Pratt and Whitney Canada, Rolls-Royce, Avco-Lycoming, Lucas Aerospace, McDonnell-Douglas and others.

Orenda employs approximately 700 people at its modern, climate-controlled facility — located close to Toronto's International Airport — where it utilizes some 450,000 square feet (41,805 m²). The comprehensive manufacturing and overhaul capabilities are complemented by extensive and experienced supporting activities such as design engineering, manufacturing and process engineering, government-qualified laboratories (materials, instruments, electronic, mechanical, accessories), computerized data processing and a modern graphics department.

Repair and overhaul activities currently encompass the J85 engines for the CT114 Tutor Trainer and CF-5 Freedom Fighter, and the F404-GE-400 for the CF-18 Hornet. Orenda provides not only engine overhaul but also extensive component repair, spare parts manufacture and supply, and comprehensive technical support both 'in-house' and in the field. All repair and overhaul activities are undertaken with strict compliance to Department of National Defence specifications and quality standards.

Orenda developed Canada's first jet engine, the "Chinook", which ran in March, 1948. The design of the engine was taken over by Orenda from Turbo-Research Ltd., a Canadian government-owned company.

The work done on the "Chinook" led to the 7,500-lb.-thrust "Orenda" jet engine of which more than 3,800 were built between 1952 and 1958 to power CF-100 and F-86 Sabre jet aircraft for the air forces of Canada, Belgium, Colombia, South Africa and West Germany.

Aero engine design at Orenda peaked in the mid-1950s with the development of the 26,000-lb.-thrust "Iroquois" for the Avro Arrow supersonic fighter.

With cancellation of the Arrow program in 1959,

skills and facilities were channelled to the design and development of the "OT" series of industrial gas turbines and the manufacture of the General Electric J79 and J85 jet aircraft engines.

During a 13-year period from 1961 to 1974, Orenda built 478 J79s for the F-104 "Starfighter" aircraft and about 840 J85s for the Canadian Forces "Tutor" and CF-5/NF-5 versions of the Northrop F-5 interceptor.

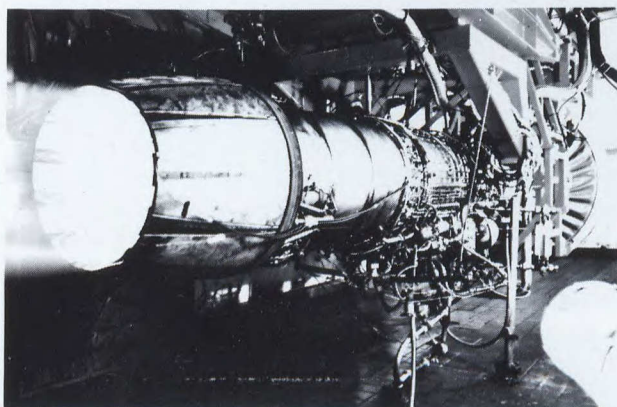
Component manufacture under subcontract involves a wide variety of machining and fabrication techniques encompassing small parts for engines such as the Pratt & Whitney PW100 Series to large parts for commercial engines such as the Rolls-Royce RB211 or Pratt & Whitney JT9D. An extensive range of equipment — from manually operated to fully NC machines to modern welding and heat-treatment facilities — provides capabilities to manufacture components in aluminum, magnesium, titanium, alloy steels and current generation high temperature metals. Orenda is a fully-qualified supplier to all major gas turbine manufacturers and is fully conversant with their stringent quality and process standards.

Orenda also undertakes commercial engineering programs for many customers with a diverse range of requirements. This includes such developments as highly-specialized gauging equipment for the in-reactor examination of tubes in nuclear plants, a special machine for welding reactor tubes in situ, the design of rigs for testing state-of-the-art gas turbine seals and bearings, environmental testing of equipment and the provision of a wide range of metallurgical and mechanical testing services.

Through the 1960s and into the current decade, Orenda's activities have included the design, development and production of: the Lance Missile Lightweight Launcher for the U.S. Army, a series of industrial gas turbines, specialized tubular components for CANDU nuclear reactors and the development of capabilities as a sub-contractor in the aerospace field.

Aircraft Gas Turbines

- Manufacture, assembly and test of complete engines. In excess of 5000 Orenda, J79 and J85 produced.
- Repair and overhaul of complete engines. Fully integrated capability including component overhaul, parts manufacture, laboratory services, engineering services. 31,000 square feet (2 900 square metres) of overhaul space and a 30,000 square foot (2 800 square metre) test cell complex capable of handling 30,000 lb. (13 600 Kg) thrust class engines.



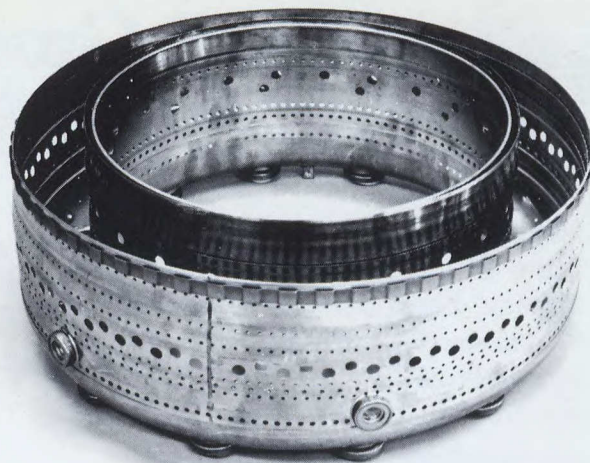
F404 Engine on Test.

Sub-Contract Manufacturing

- A full range of machining and fabricating equipment, including many CNC machines, with capacity up to 12 feet (3.6 metres) diameter. Typical parts manufactured include:
 - Compressor Stator Assemblies (F100, TF33, JT9D)
 - Gas Generators (PT6)
 - Turbine Nozzles (J85, T53, ALF502)
 - Exhaust Ducts, Cones and Cases (TF30, PT6, J52, JT8D)
 - Combustion Liners (JT15D, JT8D)
 - Compressor Cases (J79)
 - Front Frame (F404)
 - Turbine Cases (PW100, 570)



Compressor Stator Assembly — TF33 Engine.



Combustion Liner — JT15D Engine.

Industrial Gas Turbines

- Repair and overhaul, and supply of spares for Orenda produced units.

Other

- Engineering Department to support manufacture, overhaul and customers.
- Quality Control Department approved to MIL-Q-9858A, DND 1015A and D.O.T. (for aerospace).
- Graphics Department providing a comprehensive service to industry, specializing in Annual Reports, full colour advertising brochures and technical manuals.

Customers

- include governments
aerospace industry
oil and gas industry
utilities

Plant

- 400,000 square feet (37,300 square metres) with road, rail and air transport.



ORENDA DIVISION

BOX 6001, TORONTO A.M.F., ONTARIO L5P 1B3



I.M.P. Group Ltd. - Aerospace Divisions

Head Office

Suite 400, 2651 Dutch Village Road
Halifax, Nova Scotia B3L 4T1

TELEPHONE: (902) 873-2250 Ext. 277

TELEX: 019-22504

FAX: (902) 873-2249

MARKETING DIRECTOR: H.L. Conner

History:

IMP Group Limited was formed in 1967 and purchased the assets of a group of Nova Scotia companies which had manufactured foundry and steel fabricated products since 1865. IMP interests diversified to include the merchandising and manufacturing of commercial fishing gear and related industrial marine products. In the early 1970's IMP acquired a major aircraft repair and overhaul company located in Halifax, Nova Scotia, and has diversified its Aerospace facilities and capabilities to include the following operating divisions:

- Aerospace Manufacturing
- Aerospace Engineering
- Aerospace Repair and Overhaul
- Aerospace Material
- General Aviation Services and FBO Network
- Foundry
- High Precision Machining and Steel Fabrication
- Tool and Plastics
- Marine
- Hotel Properties

Capability:

IMP Group's capabilities are described in the divisions listed:

AEROSPACE MANUFACTURING DIVISION — Manufactures electronic wiring assemblies for various aircraft and electronics industries. Aerospace metal components are also manufactured. Manufacture and design of automatic test equipment for electronic wiring assemblies as well as licenced helicopter airframe components for Sikorsky.

AEROSPACE ENGINEERING SERVICES DIVISION — Provides systems integration and software services including repair schemes, corrosion control, weight and balance, modification development, systems installation design, aeronautical engineering, aircraft maintenance, stress analyses, fatigue studies, structural design, electrical and avionics engineering, systems interface design, electromagnetic compatibility testing, systems ground and flight testing, configuration and modification program control, and maintenance of technical publications for military aircraft.

AIRCRAFT REPAIR AND OVERHAUL DIVISION — As the major fixed and rotary wing maintenance facility

in eastern Canada, it offers repair and overhaul programs for military and commercial aircraft, as well as a full range of equipment modification and aircraft painting. IMP is presently designing and installing PT6 Turbine Engines in the Grumman S-2 Tracker aircraft for the export market.

GENERAL AVIATION SERVICES DIVISION — Offers aircraft servicing maintenance, hangerage, crew and passenger lounges for large and small commercial aircraft. This division supports a fleet of twin engine turbo prop and piston engine aircraft for charter anywhere in Canada and the U.S. IMP operates a network of 8 FBO's throughout eastern Canada, providing a full range of first class line services.

FOUNDRY DIVISION — Equipped to produce cast iron, steel and alloy castings up to 2 tons with both cupola and electric induction furnaces.

MACHINE SHOP DIVISION — A precision machining center utilizing state-of-the-art numerically controlled equipment capable of supporting the aerospace and other high technological industries.

TOOL AND PLASTICS DIVISION — Manufactures molded plastic parts using the injection molding technique. Product line ranges from medical products and oil field pipe thread protectors to fishing floats and childrens' toys.

RESEARCH AND DEVELOPMENT DIVISION — The primary function is to identify and develop new products and processes related to the continued expansion of the IMP Group and the technical excellence of its products.

Average Work Force: 1,400

Gross Sales:

IMP Group Ltd.	over \$100 M
Aerospace Manufacturing Division	\$ 6 M
Aerospace Repair & Overhaul Division	\$50 M

Plant Size:

Aerospace and Aviation (7 hangars)	150,000 sq. ft.
Steel Fabrication and Machining	15,000 sq. ft.

Experience: IMP Group's aerospace clients include the U.S. Navy (P3 aircraft), Canadian Department of National Defence — CH124, CP121, CP140, Canadair, USAF, and McDonnell Douglas Canada. IMP will have a significant role in the N.S.A. program.

Products and Services



Heavy Repair and Overhaul maintenance of CH124A Sea King Helicopter



IMP Aerospace Repair and Overhaul hangar 70,000 sq. ft. — Halifax International Airport



Depot level maintenance — CP121 Tracker Aircraft, Halifax, Nova Scotia



IMP Aerospace Manufacturing Plant and new generation automatic test equipment designed and manufactured by IMP for use on electronic wire assemblies and electronic systems



Indal Technologies Inc.

3570 Hawkestone Road
Mississauga, Ontario L5C 2V8
TELEPHONE: (416) 275-5300
TELEX: 06-961482
TELECOPIER: (416) 273-7004

PRESIDENT AND CHIEF EXECUTIVE OFFICER:
G.R. Rutledge
VICE-PRESIDENT, BUSINESS DEVELOPMENT:
R.E. Marcille
DIRECTOR, AIRCRAFT-MARINE SYSTEMS:
L.T. Zbitnew
DIRECTOR, NEW BUSINESS DEVELOPMENT:
F. Davenport

Indal Technologies is a diversified Canadian company which designs and manufactures a wide variety of mechanical, electro-mechanical, hydraulic and structural systems. It is the world's leading supplier of specialized landing assist and protection systems for helicopters operating from ships and in heavy sea and poor weather conditions, day or night. Over 90 of its renowned recovery assist, securing and traversing (RAST) systems, based on a system developed for the Canadian Navy in the 1960s, have been sold to the U.S. Navy as a key element of the Light Airborne Multi-Purpose System (LAMPS) MK III program. RAST will also be installed on the Canadian Navy's six City class patrol frigates, and other units have been sold to the navies of Australia, Spain, Japan and India. Indal Technologies also offers the latest in shipborne helicopter recovery systems called ASIST, Aircraft Ship Integrated Secure and Traverse. This system allows helicopter pilots to make free-deck landings in sea state five conditions and is expected to revolutionize shipborne helicopter operations in the decades to come.

The company also developed the telescopic hangar concept for the protection of helicopters operating from small ships with limited deck space. It also designs and builds specialized door systems for all types of hangars and other shipboard enclosed spaces. Indal Technologies has built almost 200 helicopter hangars and almost 400 doors. Along with the specially constructed lightweight flight decks, helicopter refueling system and aviation lighting packages also supplied by the company, the helicopter landing assist systems, helicopter hangars and hangar doors combine to create a fully-integrated system of total helicopter recovery, maintenance and protection that is unequalled in the world today.

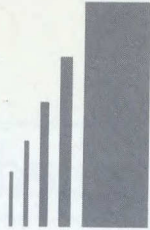
Thirty-five years' experience in designing and fabricating structural aluminum and stainless steel has also placed Indal Technologies at the forefront of this specialized field of technology. The company enjoys the reputation of being an acknowledged expert in this field and is fully certified by the Canadian Welding Bureau.

The company employs more than 325 highly-skilled people at its modern 15,000 sq. m. (162,000 sq. ft.) facility in Mississauga, Ontario. It maintains a

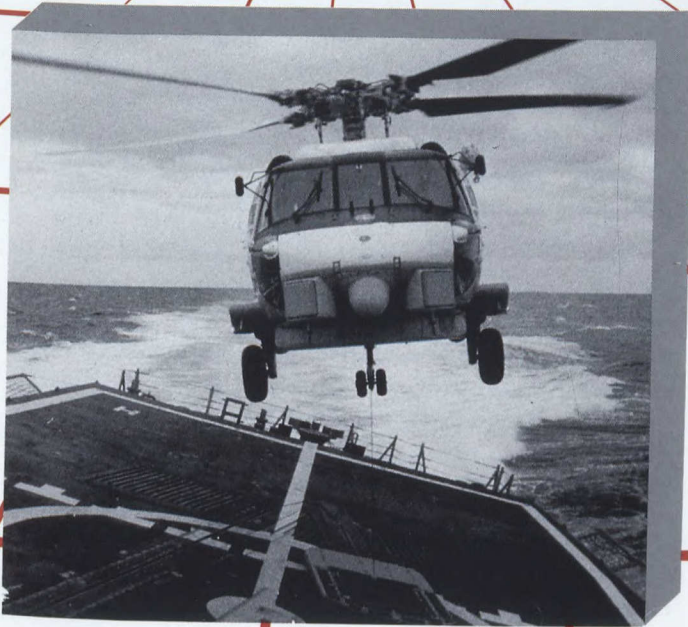
large engineering department, staffed by professional engineers of many disciplines supported by design draftpersons proficient in related fields as well as computer aided design facilities. A fully validated program management and cost and schedule control system has been developed which, with the appropriate quality assurance programs (up to AQAP-1 or equivalent), make Indal Technologies well placed to take on major contracts.

This impressive array of capabilities has provided the company with some interesting opportunities with foreign contractors undertaking work on Canadian government contracts. The company actively solicits offset contracts for work on major Canadian defence or other Government acquisition projects. This includes activities ranging from licensed or sub-contract manufacturing and system integration to assistance in meeting integrated logistics support (ILS) requirements and other indirect industrial benefit work. Initiatives in this area have resulted in such contracts as the manufacture of decoy launchers for the City class patrol frigates, to be supplied as part of Plessey Aerospace's (U.K.) Shield defence system.

Indal Technologies was originally incorporated in 1951 under the name of Dominion Aluminum Fabricating Limited. In 1968, the company became a member of the Toronto-based Indal Group of companies, and changed its name in 1977 to DAF Indal Ltd., and then to Indal Technologies Inc. in 1985. Its parent company, Indal Limited, is a diversified industrial organization with more than 30 operating subsidiaries and divisions in Canada and the United States. Founded in 1964 as a small extruder of aluminum and producer of cold roll formed metal products, Indal Limited now employs more than 7,500 people at over 60 locations in North America. Indal Group sales in 1986 were more than \$1 billion.



INDAL TECHNOLOGIES



EXPERIENCE AND INNOVATION

At Indal Technologies, our products and satisfied customers are witness to our ability to design and supply advanced technological solutions to very real and complex problems. From the design and manufacture of fully-integrated, sophisticated shipborne helicopter support systems for maritime and defence applications, to a wide range of commercial products for the energy, mining, construction, public works and pulp and paper industries, Indal Technologies has proven time and again that experience and innovation are the ingredients of success.

For more than 35 years, Indal Technologies has set standards in the design and fabrication of aluminum and stainless steel products and the manufacture of complex systems and structural forms. Its computer-aided design, program management, scheduling, cost control and integrated logistics support expertise has enabled Indal Technologies to undertake major programs for international government agencies, including those of Canada, the United States, Japan, Australia, India, Argentina and Spain. Innovation through engineering and manufacturing excellence: That is Indal Technologies.



**INDAL
TECHNOLOGIES**

INDAL TECHNOLOGIES INC., 3570 Hawkestone Road, Mississauga, Ontario, Canada L5C 2V8 Tel: (416) 275-5300 Tlx: 06-961482

THE INDAL GROUP OF COMPANIES



Innotech Aviation Enterprises Limited

Montreal International Airport
Dorval, Quebec
H4Y 1A6

TELEPHONE: (514) 636-8484

TELEX: 05-821856

FAX: Head Office (514) 636-8887

CHAIRMAN & PRESIDENT: Victor R. Bennett

SENIOR VICE-PRESIDENT, TECHNICAL OPERATIONS:

W.R. Price

VICE-PRESIDENT, MODIFICATION & COMPLETIONS DIVISION:

E. Albert

VICE-PRESIDENT, CONTRACT SERVICES & FLIGHT

OPERATIONS: Thomas F. Colahan

VICE-PRESIDENT, AIRCRAFT SALES: Stewart W. Irvine

VICE-PRESIDENT, FINANCE: Emile Kopalek

VICE-PRESIDENT, GOVERNMENT MARKETING & RELATIONS: Douglas M. McGregor

VICE-PRESIDENT, AIRCRAFT MAINTENANCE DIVISION: Kenneth Dandy

PUBLIC RELATIONS MANAGER: James R.O. McIntyre

Innotech Aviation Enterprises Limited is Canada's largest general aviation sales, modification, interior completion and service organization.

The company is involved in all aspects of private, business military and commercial aviation and has facilities in six major Canadian and American cities.

More than 40 per cent of Innotech's business is for export, giving the company wide experience working to the standards of aviation administrations around the world.

The company specializes in turbojets and large turboprops; design and engineering for major structural modifications and custom completion work; aircraft management services for business and government clients; major overhaul and repair on airframes and engines; custom interior completions for business jets charters; avionics systems design and integration; and distribution and sales supporting more than 60 major aircraft and component manufacturers.

Innotech's **Custom Interior Completion Department** has accomplished more than 150 aircraft interior designs and installations in business jets and turboprops.

Major overhaul, repair and airframe modifications are carried out in Montreal and in Vancouver. Innotech craftsmen and modifications specialists have the ability to perform "one-of-a-kind" interiors, as well as a specialized manufacturing capability.

Avionics system design and integration includes both normally-available equipment for business/airline aircraft, and sophisticated military installations of high technology equipment, together with the airframe structural modifications to accommodate such installations.

Military work including Electronic warfare installations have been carried out for the Royal Norwegian Air Force, Canadian Forces, government of Kenya and the Royal Canadian Mounted Police.

Airline interiors and modifications have been performed for Nordair, Seaboard World Airways, Air

Canada, Quebecair and Air Illinois. In addition, more than 115 privately-owned business aircraft have visited Innotech for customer interiors.

Innotech's **Quality Assurance Department** oversees each item the company builds or installs, while the Inspection Department — having worked to the standards of aviation administrations throughout the world — ensures compliance with all applicable regulations. Ancillary service includes non-destructive testing, aircraft modification and consulting.

Aircraft management services encompass flight operations, administration, maintenance, scheduling and cost forecasting for single aircraft or small fleets. These services are available both in Canada and to overseas clients.

The **Aircraft Sales Division** specializes in business aircraft. Innotech is the exclusive Canadian Distributor for the British Aerospace HS-125, and Israel Aircraft Industry's Westwind business jets. Innotech is also the exclusive North American distributor of the Corporate DASH 8, the 36-passenger turboprop built by de Havilland Canada.

Innotech employs over 450 people and generates approximately \$60 million in revenues annually.

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Ottawa, Ontario K1G 3N3
Tel: (613) 521-4073
Telex: 05-33183

Toronto
Hangar 7
2450 Derry Road East
Mississauga, Ontario L5S 1B2
Tel: (416) 673-2222
Telex: 06-983579

Calgary
505 Palmer Road N.E.
Calgary, Alberta
T2E 7G4
Tel: (403) 250-1810

Toronto
Aircraft Sales Division
Airway Centre
5955 Airport Road, Suite 522
Toronto, Ontario L4V 1T1
Tel: (416) 673-0800
Telex: 06-968787

Burlington, Vermont
P.O. Box 2326
1150 Airport Drive
South Burlington, Vermont
05401 U.S.A.
Tel: (802) 658-2200
Telex: 62-952992

Products and Services



Custom Completion, Modification and Service Centre

Innotech's custom completion centre in Montreal can handle five business jets simultaneously in one section of its 65,000 square-foot facility. The department has accomplished more than 150 interior designs and installations and has equipment to handle any type of aircraft. Innotech can engineer and certificate any prototype installation — mechanical, structural or avionic. Work has been done on military, airline, corporate and government aircraft. The service base is fully equipped to maintain and repair many aircraft types: G-I; G-II; Falcon; Citation; Jetstar; HS-125; Westwind; Challenger; DASH 8.

High-Quality Interior Completions

From bare shell to business office, Innotech creates highest quality hand-crafted business jet interiors for clients around the world. This luxurious decor was installed in a Challenger from Canadair. As well, Innotech has designed the interiors of more than 80 HS-125s. Full interiors are accomplished in an average of 20 weeks, depending on aircraft size. Innotech presently has completed more than 36 Canadair Challenger business jets. The company also has an exclusive agreement with the de Havilland Aircraft of Canada to design and install all non-standard interiors for the DASH 7 turboprop airliner and all Corporate DASH 8's, for which Innotech also holds exclusive sales rights in the U.S.A. and Canada.



Technical and Engineering Services

Innotech Aviation's Montreal and Vancouver facilities handle all sizes of aircraft for major structural modifications, avionics installations and interior completions. Here, major work is being done in Montreal on HS-125s for civilian clients. Military modifications and system design and installation have also been carried out for the Royal Norwegian Air Force, Royal Malaysian Air Force, Government of Kenya and the Royal Canadian Mounted Police. Innotech capability extends to Bell and Aerospatiale helicopter rebuild and maintenance, aircraft service overhaul, particularly business jets and turboprops, and engine maintenance, overhaul, repair and exchange.



Major Engine Repair

Innotech's Vancouver and Montreal works are factory-authorized repair and inspection stations for Garrett and Pratt & Whitney powerplants for business aircraft. More than 100 engines per year are processed to the highest standards. Complete product support, backed by extensive inventories and 24-hour service are mainstays of Innotech's solid reputation as one of North America's leading aviation companies.





International Fasteners

21 Constellation Court
Rexdale, Ontario M9W 1K4
TELEPHONE: (416) 674-0770
TELEX: 06-989595
TWX: 610-4922358
FAX: (416) 674-5804

PRESIDENT & GENERAL MANAGER:
S.D. (Doug) Woollings
VICE-PRESIDENT, SALES & MARKETING:
N.D. (Norm) Whittaker
OPERATIONS MANAGER: W. (Bill) Buck

International Fasteners Limited, Canada's major distributor to the OEM aerospace industry, maintains extensive inventory of new, traceable aerospace products in its 30,000-square-foot warehouse, located near Toronto's Pearson International Airport. There are seven important things to know about this firm, an employer of 75 people.

- Interfast maintains the largest inventory of aerospace precision fasteners in Canada;
- Interfast serves the international market;
- The company stocks totally traceable products to meet the stringent demands of its major customers;
- Interfast has branch offices, located in Vancouver, Montreal and Rexdale, Ontario;
- The order desks are staffed by experienced people who, with the help of computerization, can give the customer 24-hour turnaround on all stock fasteners;
- The firm is an approved supplier to the entire aerospace industry in Canada;
- The engineering sales applications group are specialists in their field.

Interfast is the source in Canada for fasteners, with the product, the people and the experience to support world needs. The firm has been serving a structure from OEMs to airlines to general aviation since 1966.

As a manufacturers' representative and authorized stocking distributor, International Fasteners specializes in specific major product areas: aircraft structural and electronic component fastening systems; automated production line drilling and riveting equipment with associated accessories.

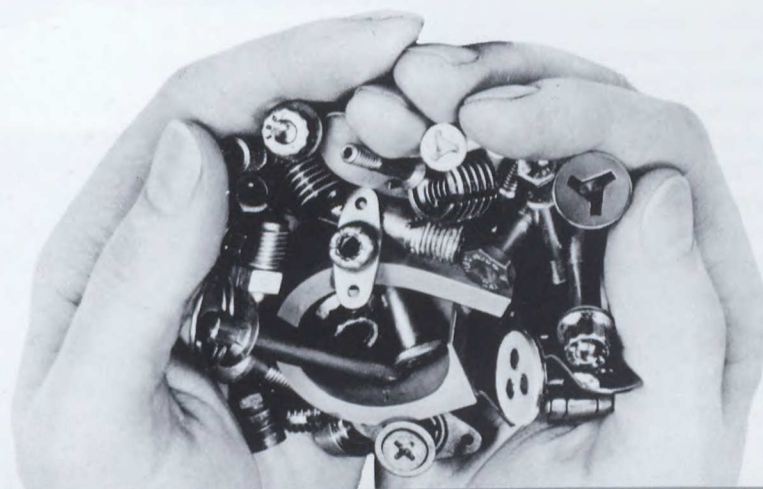
Interfast has supplied fasteners and systems to all aerospace and electronics related companies, including McDonnell Douglas, Lockheed, Boeing, Canadair, de Havilland Canada, Pratt & Whitney Canada, Litton Systems Canada, IBM, Garrett Manufacturing, and many others.

INTERNATIONAL FASTENERS

CANADA'S MAJOR STOCKING DISTRIBUTOR OF TRACEABLE AIRCRAFT AND AEROSPACE RELATED HARDWARE

Contact any one of our experienced order desk personnel
by telephone, Telex, Twx, or Fax for quick response to inventory status.

HI-LOKS — TAPER-LOKS & TOOLING — SOLID RIVETS
BLIND RIVETS — INSERTS — AIRCRAFT BOLTS
MIL. SPEC STANDARDS
MS — NAS — NATO STOCK NUMBERS
BAC, McDONNELL DOUGLAS AND DeHAVILLAND STANDARDS
AVIONICS WIRE & CABLE



SERVING YOU FROM THREE LOCATIONS . . .



INTERFAST
INC.
INTERNATIONAL FASTENERS

VANCOUVER

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Port Moody, British Columbia
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TELEX: 05-822742
FAX: (514) 683-1871



Invar Manufacturing Ltd.

1 Parry Drive
Batawa, Ontario K0K 1E0
TELEPHONE: (613) 398-6106
TELEX: 06-62255
TELECOPIER: (613) 966-7932

VICE-PRESIDENT AND GENERAL MANAGER:
Brian R. Riden
GENERAL SALES MANAGER: J. Maurice Mainville
REGIONAL SALES MANAGER: Cam E. Nardocchio

Invar Manufacturing Ltd. is one of Canada's leading contract batch manufacturing operations, recognized for its Precision Machined Products and Systems.

The scope of the company's capabilities completely encompasses fabrication, machining and assembly — from the initial purchase and pre-fabrication of raw materials and components to the final assembly and testing of the manufactured parts.

Our production facilities incorporate an advanced CAD/CAM Applicon Equinox 7000 system together with a complete range of NC/CNC machining centres with DNC transfer capabilities. Accordingly, we can perform sophisticated multi-axis work involving design transferring and 3-D sculptured surfaces. All programming is performed on-site by our own staff, promoting the necessary liaison between industrial engineering personnel and the actual production line. Designed tolerances are stored in the computer's data-base, ensuring an optimum degree of accuracy and a consistently superior product.

Invar Manufacturing Ltd. specializes in manufacturing an extensive line of components for wings and landing gears as well as hydraulic assemblies. With well over 25 years experience in the Aerospace Industry, the company has manufactured components for such aircrafts as DC9, MD80, DC10, KC10, CF104 & CF105.

Complementing its involvement in the Aerospace Industry, Invar Manufacturing Ltd. also manufactures a wide array of complex components, hydraulic cylinders, accumulators, actuators, power assist assemblies, power gear boxes, and systems for the Commercial, Military and Nuclear Energy markets. With manufacturing facilities in excess of 200,000 square feet (18,580 M) Invar Manufacturing Ltd. utilizes the most advanced NC/CNC machine tools available, including high concentration of four & five axis machining centres. In many cases the machining centres are duplicated in order to minimize interruptions in production and scheduling.

Testing facilities for Hydraulic applications include bench and special fixture testing units with pressure capacities of up to 10,000 P.S.I. Our facilities are controlled to meet a level cleanliness of 200 - MIL-STD-1264A and all components undergo a regulated

quality control inspection. Qualified inspection personnel monitor every system from receipt of order through to shipment of finished components. Invar Manufacturing Ltd. has an established quality control programme approved to AQAP1 and CSA Z299.2 standards.

In addition, the company's quality assurance programme adheres to the requirements of Canadian Government specification DND 1015 and U.S. Government specification MIL-Q-9858A.

Non-destructive testing (MPI and LPI) is further carried out by CGSB certified operators to accepted Military, Aircraft and Nuclear Energy standard.

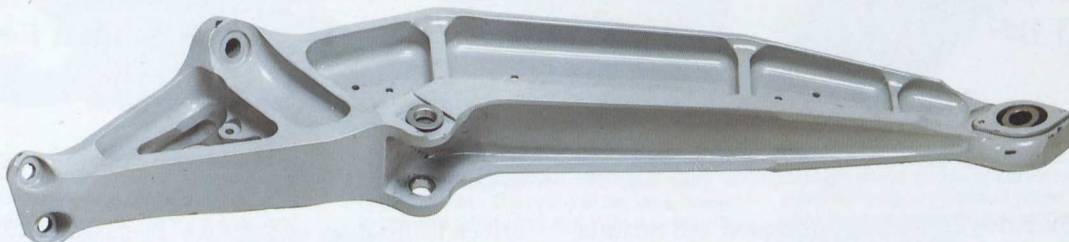
Invar's computerized manufacturing and administrative systems provide exact schedule positions, material inventories and machining procedures. The systems are completely integrated to encompass manufacturing outlines, job costings, procedures and reports.

Invar welcomes your inquiries and extends an invitation to visit our production facilities.

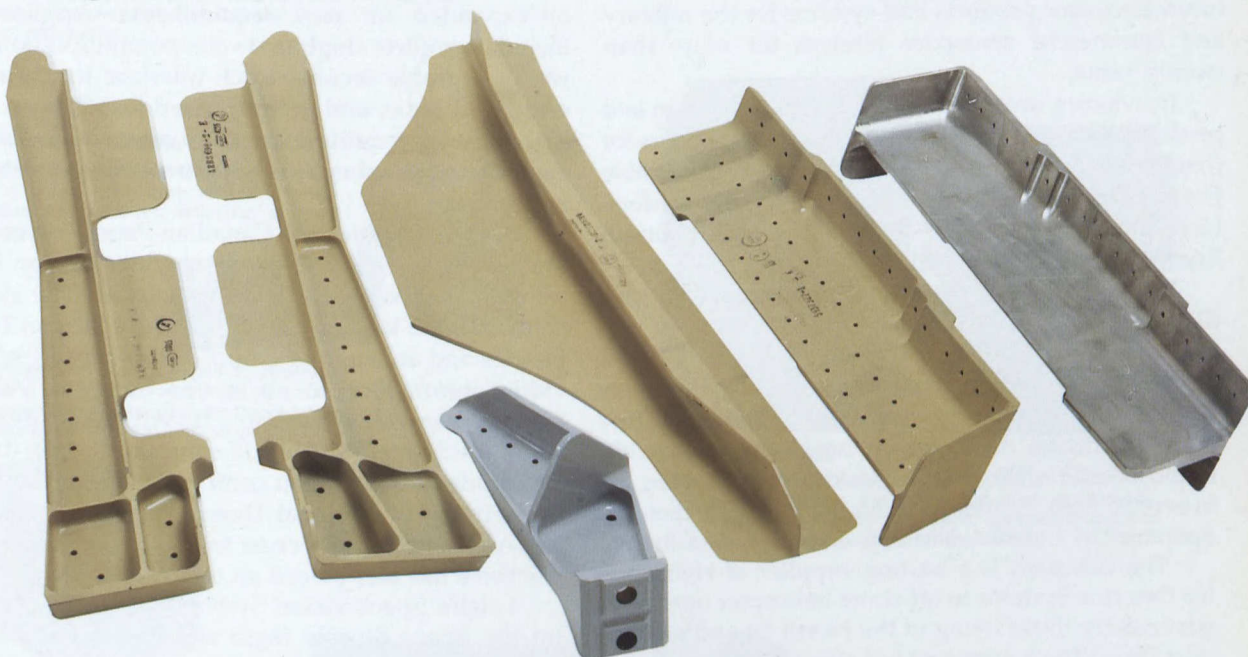
Precision Machined Products and Systems

A leading Canadian contract batch manufacturer, we have the facilities, the resources and the capabilities to attend to your every precision machining specification. The flexibility of our organization, supported by a highly technical work force, has earned us an enviable record of dependability. We welcome your inquiries and extend a welcome invitation to visit our facilities.

1.



2.



3.

1. Flap fitting for the DC9, MD80 aircraft
2. Various wing components programmed on our CAD/CAM system
3. Component parts for jet fighters

Invar Manufacturing Ltd.
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Batawa, Ontario
Canada K0K 1E0
Telephone (613) 398-6106
Telex 06-62255
Cable Address "Invar" Tren
Fax (613) 966-7932



Leigh Instruments Limited

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TELEPHONE: (613) 820-9720
TELEX: 053-4129

PRESIDENT & CEO:
Barry S. Flower
VICE-PRESIDENT MARKETING:
Michael Rowlands

Leigh Instruments Limited has designed and manufactured electronic products and systems for the military and commercial aerospace markets for more than twenty years.

In avionics, areas of expertise are in the design and production of: deployable Crash Position Indicators for fixed wing and rotary wing aircraft, crash-survivable Flight Data Recorders, Cockpit Voice Recorders, Helicopter Ice Detection Systems, Mechanical Strain Recorders and Illuminated Panels.

The company's deployable crash position indicator/flight recorder system has been designed for high performance, combat aircraft applications. Latest data acquisition and solid state recorder developments employ a modular design concept which can interface with the digital data bus on new military aircraft. Deployable Crash Position Indicators for helicopters are in service with numerous military and civil helicopter operators in Canada, Norway, Denmark and Brazil.

The company is a leading supplier of Helicopter Ice Detector Systems to off-shore helicopter operators, particularly those flying in the North Sea oil exploration areas. The equipment is a standard option on the Super Puma helicopter. In addition, Leigh has developed an advanced system that will provide a more comprehensive assessment of icing conditions encountered in helicopter flight. The system monitors the helicopter's performance, assesses the degradation caused by the prevailing icing conditions, and displays clear and concise information that assists in corrective action.

The Mechanical Strain Recorder is an automated and reliable means of gathering accurate strain data history from every aircraft in an entire fleet. The self-powered device is standard equipment on the USAF and NATO F-16 A/B aircraft programs. A micro-processor-based, desk-top Data Transcriber Unit converts data collected by the Mechanical Strain Recorder into strain history that can be analyzed to predict safe operational fatigue life of aircraft.

Leigh has been selected to provide two systems for the Canadian Patrol Frigate Program. The Shipboard Integrated Interior Communication System (SHINCOM*) is a secure, digital, voice communication system. SHINCOM's modular design and software

driven technology enables it to be easily reconfigured, or expanded for new requirements. Applications include complete shipboard voice communication networks, a single secure switch interface to plain and encrypted radio, and ground-based installations with high security requirements. Derivatives of the system can be used in submarines, ice-breakers and airborne applications.

Also selected for the Canadian Patrol Frigate Program, Leigh's TACAN system provides beacon identification and navigation data to aircraft. The system comprises a 3 kW AN/URN-26 TACAN Beacon Transponder and an antenna group, and is capable of providing information to up to one hundred TACAN-equipped aircraft at the same time. Leigh's advanced 5 KW solid state TACAN will enter production during 1987 under a \$30 million contract from the Canadian Department of National Defence to replace existing TACAN beacons from coast to coast. The Norwegian Air Force has also placed an order for these beacons.

Leigh's Space Vision System will be in operation on the Space Shuttle flight shortly after flights are resumed. Based on real-time photogrammetric calculations, the system is designed to assist the space shuttle's remote manipulator arm in locating, targeting, handling and moving payloads in space. Other applications include use by the military, industry and in hostile and hazardous environments.

The company manufactures two major avionics subsystems under licence for Canada's CF-18 aircraft; the Stores Management System and Communications System Control Set. Leigh also designs and manufactures quartz crystals, crystal filters, crystal oscillators, ovens and frequency synthesizers for use in communication and navigation equipment, and high performance glass to metal hermetic seals.

*DND Trademark

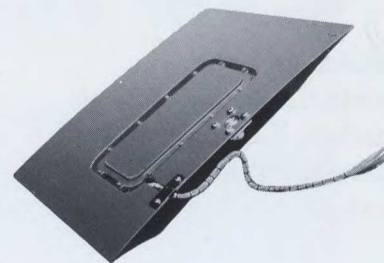
Deployable, locatable Flight Data Recorders



Deployable airfoils carry a radio beacon that transmits on international distress frequencies to help locate downed aircraft. The airfoils, which are survivable on land and water, can incorporate a flight data recorder to ensure recovery of vital incident or accident information.



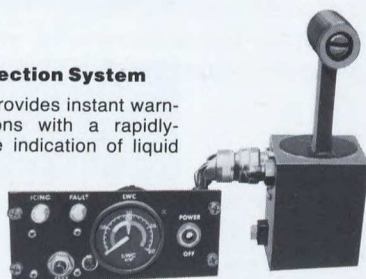
A deployable, locator system designed for helicopter applications can also carry a flight recorder. The unit is of low drag design to prevent rapid wind drift from a crash site at sea.



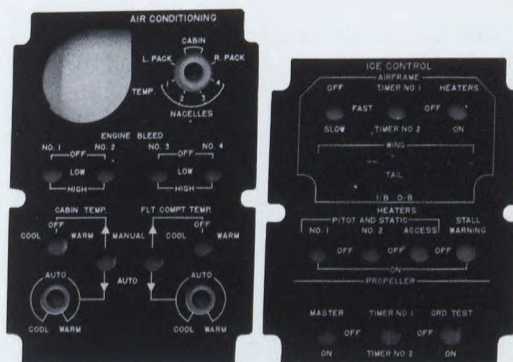
This airfoil is designed to be deployed through either an electrical or pyrotechnic crash sensing or release system. The solid state flight recorder has a predicted MTBF in excess of 10,000 hours.

Helicopter Ice Detection System

Leigh's Ice Detector provides instant warning of icing conditions with a rapidly-updated and accurate indication of liquid water content.



An advanced system also monitors the helicopter's performance and displays a comprehensive assessment of the degradation caused by the ambient icing conditions.



Edgelit Panels

Qualified to the latest revision of MIL-P- 7788, Illuminated Panels are tailored to customer's needs or supplied specifications for use in aircraft cockpits and other military and commercial applications.



Mechanical Strain Recorder

This self-powered device collects strain data from an aircraft substructure. Data can be transcribed manually or by desk-top computer to produce strain history and fatigue growth reports.



Naval Communications Systems (SHINCOM)

Selected for the Canadian Patrol Frigate program — a secure, digital system that integrates all voice communications on board ship. Designed to be survivable through dual configuration, the system is easily reconfigured and/or expanded.



Tacan Systems

The Leigh Tacan Beacon Transponder is available in fixed ground, VORTAC, tactical mobile or shipboard configurations.



Leigh Navigation Systems Limited (LNS)

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Pointe Claire (Montreal)
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TELEPHONE: (514) 695-8130
TELEX: 05-821-529 (LEIGHNAVS PCLR)

PRESIDENT: Mr. R.T. Prytula
VICE-PRESIDENT: Mr. G. Sinoyannis
MANAGER OF SALES: Mr. G.R. Stockwell

Leigh Navigation Systems Limited (LNS) manufactures, integrates and installs Air Traffic Control Systems, Communications Systems and Radio Spectrum Monitoring Systems. The ATC Systems include both Mobile Air Traffic Control Systems and Fixed Air Traffic Control Tower Systems. In addition LNS manufactures the 909E Communications Switch Systems and LNS's most recent product is the RLS 2000 Mobile Runway Lighting Systems.

The ANT 57 is manufactured in three configurations:

- (a) flat bed on truck
- (b) hi-lift on truck
- (c) hi-lift, trailerized with tractor truck

These mobile systems are manufactured to the specification of the customer and can accommodate 3 control positions.

The fixed control tower cabs are pentagon shaped and manufactured in 3 sizes. The CT 250, CT 350 and CT 450 are designed for low density (CT 250) to high density (CT 450) traffic. The CT 450 can accommodate up to eight air traffic control positions.

The 909E Switch System allows the Air Traffic Controller to monitor, control and select radio receivers and transmitters for ground-to-air or ground-to-ground communications. Also it controls intercom between controllers and hot lines to other agencies.

The Radio Spectrum Monitoring System is integrated in three configurations: RSM-200F Fixed Monitoring, RSM 200M Mobile Monitoring and RSM 200T Transportable Monitoring. RSM Systems are used by government communications agencies for the management of the national radio spectrum or by security agencies for surveillance of the radio spectrum.

The company was established in 1971 and is located in Pointe Claire, Quebec. In 1982 LNS developed and manufactured the first Radio Spectrum Monitoring System (RSM 200).

Leigh Navigation Systems Limited (LNS) designs, manufactures, procures, integrates and installs all equipment into fully operational systems to meet the customer's requirements.

Each LNS system is assembled, tested and verified at its 40,000 square foot facility in Montreal, thereby

removing system integration risks, ensuring a fully operational system and allowing the customer to take the equipment to site for operation with minimum system commissioning delays. The company's sales are primarily to the military, civil aviation and various government communications agencies.

LNS

AIR TRAFFIC CONTROL SYSTEMS



ANT 57 High Lift Mobile ATC Tower System

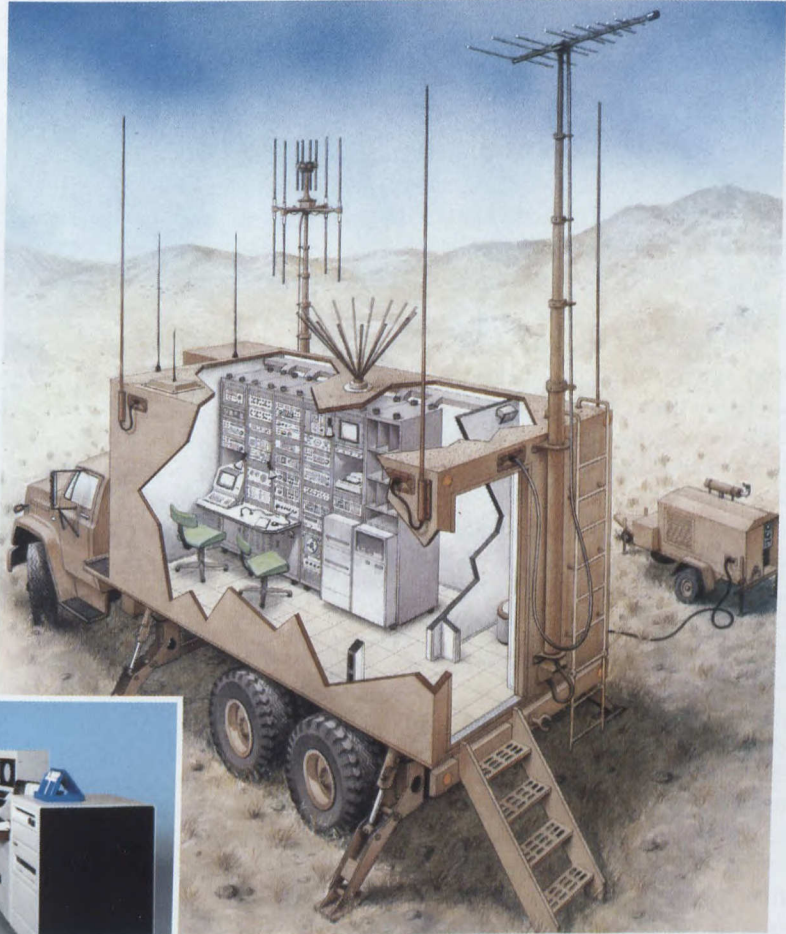


CT 350 Fixed ATC Tower System



RSM-200F Fixed Monitoring System

RADIO SPECTRUM MONITORING SYSTEMS



RSM-200T Transportable Monitoring System

COMMUNICATIONS SYSTEMS

AIR TRAFFIC CONTROL

LNS's family of Air Traffic Control Systems are used by Civil Aviation and Air Forces in operational areas around the world. LNS ATC products include:

- ANT 57 ATC Tower Systems
- ANT 57 RSU Runway Supervisory Units
- RLS 2000 Mobile Runway Lighting Systems
- CT 250, 350 and 450 Fixed Control Tower Systems
- TT070 Transportable Control Tower Systems
- Control Tower Support Structures
- ATC Tower Consoles and Communications Refurbishment
- 909E Communications Switch Systems

RADIO SPECTRUM MONITORING

Government Communication agencies are responsible for the management of the radio spectrum, which requires the ability to ensure that regulations are followed, that noncompliant users of the radio spectrum are identified, and that spectrum occupancy information is available for consideration during the licensing process.

Internal Security, Police and Military require surveillance of the radio spectrum to assist in protecting and policing borders; urban and rural centres; and uninhabited, remote and vast areas of land from guerrillas and hostile neighbours.

LNS RSM-200 Systems provide radio spectrum monitoring for these applications using state-of-the-art computer controlled electronic communications and test equipment with specialized software. LNS RSM-200 systems include:

- RSM-200F Fixed Monitoring Systems
- RSM-200T Transportable Monitoring Systems
- RSM-200M Mobile Monitoring Systems

GENERAL

LNS designs, manufactures, procures, integrates and installs all equipment in a fully operational facility to meet customer specifications.

Each LNS system is assembled, tested and operationally verified at LNS's 40,000 square foot facility in Montreal thereby removing system integration risks, ensuring a fully operational system and allowing the customer to take the equipment to the site for operation with minimum system commissioning delays.

LNS has over 60 systems installations in more than 20 countries worldwide.

LEIGH NAVIGATION SYSTEMS LTD. (LNS)

7 Bovis Drive, Pointe Claire (Montreal) Quebec, Canada H9R 4W3 Telephone: (514) 695-8130 Telex: 05-821-529 (LEIGHNAVS PCLR)



Litton Systems Canada Limited

25 City View Drive
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M9W 5A7
TELEPHONE: (416) 249-1231
TELEX: 06-989406
TEX: 610 492-2110

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VICE-PRESIDENT, ADVANCE PROGRAMS: W. Wallace
VICE-PRESIDENT, MARKETING: H.A. Sievert
DIRECTOR, MARKETING: B.A. Bisley
DIRECTOR, MARKETING: D.R. Hughes

Litton Systems Canada Limited is a Canadian company with an international reputation as a producer of highly sophisticated electronic equipment. The company is best known for its engineering and manufacturing capabilities in the demanding field of airborne and maritime electronics. In addition, however, Litton Canada has earned strong credentials in the application of its high technology to the design, manufacture and integration of large scale, ground based special purpose systems.

A division of the multinational organization Litton Industries, of California, U.S.A. Litton Canada is one of the leading members of the Canadian advanced electronics industry. It currently employs over 3,500 scientists, engineers, technologists and other highly skilled specialists who work in some of the most modern engineering and manufacturing facilities in Ontario.

The company's products include inertial navigation systems for both commercial and military aircraft. Litton Canada is the world's second largest manufacturer of inertial guidance systems. The Canadian made systems are used by more than half of the world's intercontinental, commercial airlines as well as scientific aircraft, military transport aircraft and long range corporate aircraft. More than 11,000 military and commercial systems have been produced to date.

Litton Canada's navigation system expertise has also been applied to the development of the world's first automatic, self-contained flight inspection system capable of calibrating Category III Instrument Landing Systems. Litton fully automatic and semi-automatic flight inspection systems have the capability to calibrate all existing navigation aids such as ILS/MLS/TACAN landing systems as well as VOR, DME and other en route nav aids.

Litton Automated Test Equipment provides high speed, computer controlled testing of analog, digital, microwave and radio frequency avionic systems at Intermediate and Depot level for many air force customers. The advanced architecture of Litton ATE provides a cost effective solution to the problem of testing a high volume of modern, complex systems.

Airborne surveillance of the coastlines of many

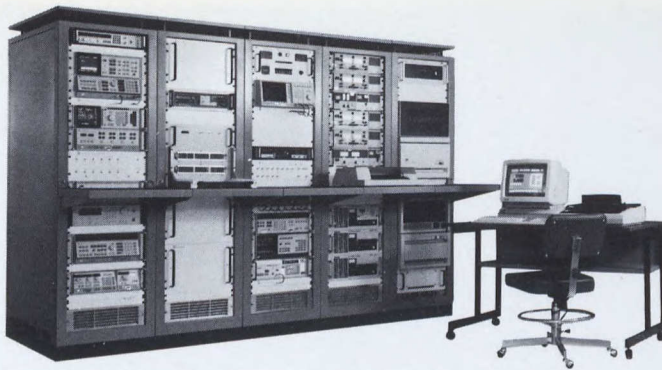
countries is significantly enhanced by Litton Airborne Search Radar that are installed aboard a variety of fixed wing maritime patrol aircraft and tethered balloons. The APS-504(V)5, the latest variant of Litton radars, uses pulse compression and frequency agility to provide optimal detection of small targets in high sea states and provide considerable immunity to ECM.

Over the past several years an extensive research and development program has created advanced solid-state, flat panel displays for both industrial and military applications. Using Light Emitting Diode (LED) and Liquid Crystal (LC) technology, Litton displays greatly enhance the presentation of critical data in aircraft cockpits, land vehicles, naval ships and ground-based control rooms.

Litton Canada is currently involved in two of Canada's largest defence projects. Under a C\$1.2 billion contract the company is prime contractor with overall project management responsibility for the update and modernization of the Canadian Navy's four Tribal Class destroyers. In addition to modernization the ships will be converted from their present role of antisubmarine warfare to that of area air defence.

The second project is the Canadian Low Level Air Defence (LLAD) program. LLAD will be used to protect Canadian airfields and armoured brigades in Europe. Litton Canada is the major Canadian subcontractor to Oerlikon Aerospace Inc., the prime contractor. The company is producing a significant portion of the electronic system for the Oerlikon Air Defence Anti Tank System.

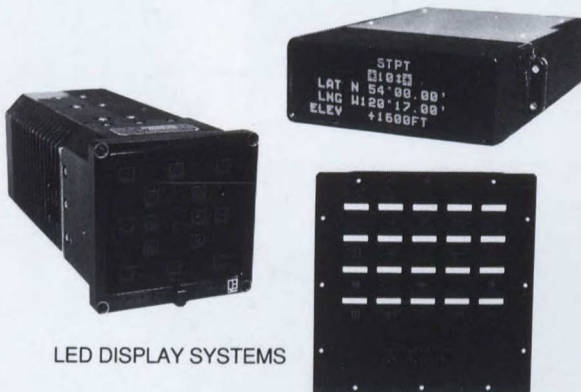
Litton



EXPANDED LITTON AUTOMATED TEST SET (ELATS)



AIRBORNE SEARCH RADAR



LED DISPLAY SYSTEMS



INERTIAL NAVIGATION SYSTEMS (INS)

Litton advanced technology systems serve customers throughout the world.

Expanded Litton Automated Test Set (ELATS) is a general purpose, high-speed automated test system designed to meet the exacting test requirements of modern analog, digital, microwave and RF avionics.

Airborne Search Radar: Litton radars are designed to satisfy the demanding requirement of airborne tactical and maritime surveillance. These modern systems are currently installed aboard a wide variety of fixed wing maritime patrol aircraft as well as tethered balloons.

LED Display Systems: Litton high brightness, multipurpose LED display systems are designed to provide reliable solid-state systems for the presentation of alphanumeric and vectorgraphics in seaborne, airborne and landborne environments.

Inertial Navigation Systems (INS): The LTN-90 ring laser gyro series inertial reference and inertial navigation systems are configured for both all-digital or digital and analog aircraft requirements.

Flight Inspection Systems: Litton Flight Inspection systems are currently in use in the United Kingdom, the Netherlands, Canada and the People's Republic of China.

Litton

Litton Systems Canada Limited



FLIGHT INSPECTION SYSTEMS



MBB Helicopter Canada Limited

1100 Gilmore Road, East
P.O. Box 250
Fort Erie, Ontario L2A 5M9
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TELEX: 061-5250
TELEFAX: (416) 871-3320

PRESIDENT: Helge Wittholz
VICE-PRESIDENT, MARKETING:
E. James Grant
PRODUCT SUPPORT:
Elwood Schmidt

MBB Helicopter Canada Limited is a subsidiary of Messerschmitt-Bölkow-Blohm GmbH of West Germany. On June 20, 1986, MBB "Officially Opened" its first North American helicopter manufacturing plant in Fort Erie, Ontario.

The primary purpose was to establish a helicopter industry in Canada and to achieve this, the BO 105 LS was selected for manufacture. The BO 105 LS has been especially designed for areas of high altitudes and hot climates or for any application requiring demanding performance characteristics. MBB, in Canada, has the world product mandate for the BO 105 LS, but also markets MBB's complete line of light twin-engine helicopters — the BO 105 CB, CBS and BK 117 — and completes them to customer specifications. These helicopters have received worldwide acceptance in a variety of configurations and more recently have developed a niche in the Emergency Medical Service (EMS) and Airborne Law Enforcement markets, particularly in Europe and North America.

MBB Helicopter Canada Limited has the capability to perform customization of the aircraft, adaptation of optional equipment and development of new optional equipment in response to market demands. A complete flight test facility with associated research and development in areas of product improvement and design of new helicopters is supplemented by a state-of-the-art three dimensional computer aided design system.

A repair and overhaul capability has been established together with a full product support capability which includes conversion training for pilots and technicians, provision of technical representatives and an Aircraft on Ground (AOG) service.

On June 20, 1986 MBB Helicopter Canada Limited was awarded a contract for 12 x BO 105 CBS helicopters for the Canadian Coast Guard and are currently completing this order.

All marketing activities for MBB products are coordinated from the Ottawa office at the following address:

MBB Helicopter Canada Limited
130 Albert Street
Suite 910
Ottawa, Ontario
K1P 5G4
Telephone - (613) 232-1557
Telex - 053-4109
Telefax - (613) 232-5454

MBB

MBB — MORE THAN A HELICOPTER MANUFACTURER

Messerschmitt-Bölkow-Blohm GmbH, is the largest aerospace company in West Germany and is no stranger to international programs. The Tornado Combat Aircraft, Airbus Transport Aircraft, Communications Satellites, the European Space Launcher ARIANE 1-3, the ROLAND Air Defence System, Light-weight Rail Systems and Coastal Minesweepers are but a few of the many international programs in which MBB is participating.

Now, in Canada, MBB's newest subsidiary MBB Helicopter Canada Limited is manufacturing helicopters at their Fort Erie, Ontario plant. With their highly experienced staff of engineers and MBB's extensive knowledge and broad base in inter-



national programs, MBB in Canada is prepared to accept any and all new challenges in the area of helicopter development and production.

For further information please contact:
MARKETING OFFICE

MBB Helicopter Canada Limited
130 Albert Street, Suite 910
Ottawa, Ontario
K1P 5G4

Telephone: (613) 232-1557
Telex: 053-4109
Telefax: (613) 232-5454





M.E.L. Defence Systems Ltd.

1 Iber Road,
Stittsville, Ontario K0A 3G0
TELEPHONE: (613) 836-6860
TELEX: 053-3944
FAX: (613) 836-6566

PRESIDENT: William R. Dawes

M.E.L. Defence Systems Ltd. has firmly established itself as the foremost supplier to the Canadian Navy of Electronic Support Measure (ESM) and Electronic Counter-Measures (ECM) systems. Incorporated in 1982, M.E.L. Defence Systems is the first Canadian company devoted primarily to the development, manufacture and support of Electronic Warfare (EW) systems and subsystems and associated communications and airborne systems.

The company is the prime contractor for the delivery of AN/SLQ-501 (CANEWS) ESM to the Canadian Navy's fleet modernization program. M.E.L. Defence Systems is also supplying an EW suite consisting of AN/SLQ-501 and AN/SLQ-503 (RAMSES) ECM for the Canadian new ship construction program.

Applying the expertise gained in Naval EW, the company is now broadening its activities into airborne and C³ Systems to meet Canadian and international defence needs. M.E.L. Defence Systems is leading a consortium of Canadian and international companies to bid on the upcoming Canadian EST (Electronic Support Training) Challenger program as well as other airborne requirements.

M.E.L. Defence Systems' staff of 165 includes hardware and software design, engineering research and development teams; program management professionals; marketing and administrative support staff.

Plant facilities and corporate offices, located at Stittsville, Ontario, on the western border of the Nation's Capital, provide 50,000 square feet for engineering, manufacturing and for program management activities. An electro-magnetically secure area is available for computer program generation. M.E.L. Defence Systems is security cleared to SECRET level as are all company personnel.

M.E.L. Defence Systems Ltd. is a wholly-owned subsidiary of Philips Canada Ltd. As a member of the worldwide Philips Defence and Control Systems (DCS) Main Industry Group, M.E.L. Defence Systems has full access to the substantial research, engineering, production and marketing resources of the Philips group.

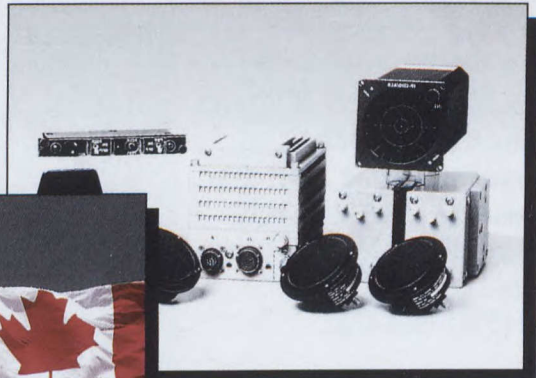
M.E.L. Defence Systems' corporate objective is to maintain its leading role in the development and delivery of advanced electronic warfare, communica-

tions and airborne systems, by offering complete development, manufacturing and support services for a broad range of equipment. To accomplish this objective, M.E.L. Defence Systems is currently undertaking several in-house development programs aimed at high performance, low cost, state-of-the-art EW systems for land, air and sea (including surface and submarine vehicles).



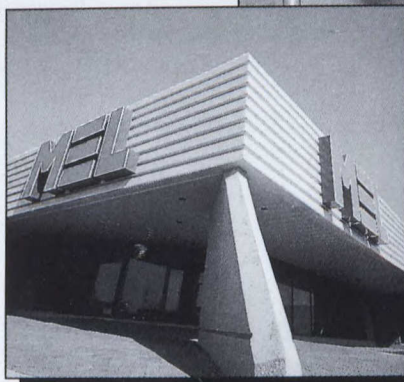
Testing and Quality Assurance are carried out to AQAP-1, the highest standard within NATO.

M.E.L. Defence Systems, Canada's world-class centre for Electronic Warfare Systems.



The M.E.L. Defence Systems approach: modular, light-weight, cost-effective solutions for airborne requirements.

M.E.L. Defence Systems' modern 50,000 square foot corporate office and plant on the outskirts of Ottawa.



Software generation is carried out in an electromagnetically-secure environment.

Advanced program management techniques and a strong team effort assures delivery on time and on budget.





MPB Technologies Inc.

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Dorval, Quebec H9P 1J1
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CABLE: MPBTCAN (Montreal)
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PRESIDENT: Dr. Morrel P. Bachynski
VICE-PRESIDENT, MAJOR PROJECTS: Dr. F.G. Ross Warren
DIGITAL TECHNOLOGY: Mr. Robert J. Clark
DIRECTOR - PROGRAM DEVELOPMENT: Dr. Asoke K. Ghosh
DIRECTOR - ELECTROMAGNETIC SCIENCE & TECHNOLOGY:
Dr. Sebastian Tam
DIRECTOR - LASERS AND LASER APPLICATIONS: Mr. Armand Waksberg

Description

Federally incorporated in late 1976, MPB Technologies Inc. specializes in high technology systems and products and in contract research and development. The Company is fully facilitated to conduct experimental, theoretical and developmental work and manufacturing in a number of fields. MPB Technologies Inc. designs and supplies complex, custom designed systems for aerospace applications as well as high quality, off-the-shelf products.

Plant size: 30,000 ft.²

Personnel: 25 Ph.D.'s

45 Scientific and Engineering

Products

- Radiometer, Radar and Scatterometer Systems and Millimeter Wave Instrumentation
- Solid State Laser Communication Systems for Video and Digital Transmission
- 150 Watt cw Industrial Laser System
- CO₂ and FIR Lasers/Waveguide Lasers/Iodine Lasers/Laser Accessories/Laser Radar/Optical Fibre Devices
- Graphic Systems and Accessories for Television Broadcast Applications
- Custom Data Acquisition and Control Systems
- Event Recorders and Playback Systems
- Communications Operator CRT Display Positions for Routing of Overseas Telex

Capabilities

Electronics Systems: Design, development and manufacture of microprocessor based electronics systems (both hardware and software) for a variety of applications including high quality graphics systems for television broadcast production, special purpose communications consoles, event recorders and playback systems, custom data acquisition and control systems and custom printed circuit boards.

Electromagnetics: Development of specialized airborne and ground systems including millimetre wave radiometers, millimetre wave radars, scatterometers, and instrumentation covering the radio spectrum from 5 to 140 GHz. Activities in defence electronics, EW and radar field trials, radar detection, target RCS studies and measurements, computer (TEMPEST SECURE) modelling. Manufacture of millimetrewave systems,

coherent radar (35, 94 GHz), airborne imaging radiometer (to 90 GHz), IF, RF and microwave electronics and antennas. Research and development of integrated microwave-optical processing systems for EW and high performance radar.

Fusion: Engineering, design, instrumentation, physics and measurements related to fusion systems including data acquisition and control systems, vacuum systems, advanced millimeter and laser diagnostics, laser fusion research.

Lasers and Electro-optics: Laser and electro-optics technology for defence applications. Custom designed systems based on the use of HeNe, CO₂, FIR, Nd-YAG, semiconductor and chemical lasers including complete units for secure communications, surveillance, scientific measurements, optical coherent radar and non-destructive testing; industrial long life lasers; CO₂ lasers for research applications, stabilization, frequency tuning and optical fibre devices. IR seeker electronic processors, laser seekers.

Space Technology: Systems design of multipurpose computer-controlled space shuttle experiments, development of total control electronics software, development of ground support equipment for reception, storage and «quick look» analysis of data streams from space experiments; experimental investigations of semiconducting materials under microgravity conditions and development of multi-user furnaces for materials research in space; design, development and construction of wide bandwidth laser inter-satellite communications systems; design and development of low noise radiometric systems for reconnaissance, water vapor and oxygen measurements, space-based radar clutter.

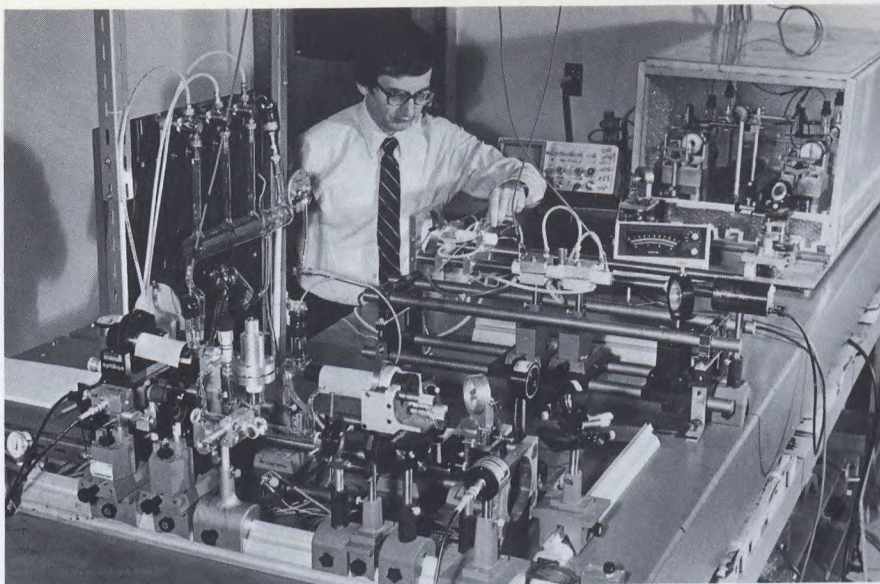
Major Clients:

Canadian: Department of National Defence and its various Defence Establishments: AES, CCRS, CBC, CRC, DOT, DOC, EM&R, NRC, CP Rail, SPAR, RCA, Teleglobe, Telesat, Hydro-Quebec, RCMP, Cdn. Marconi.

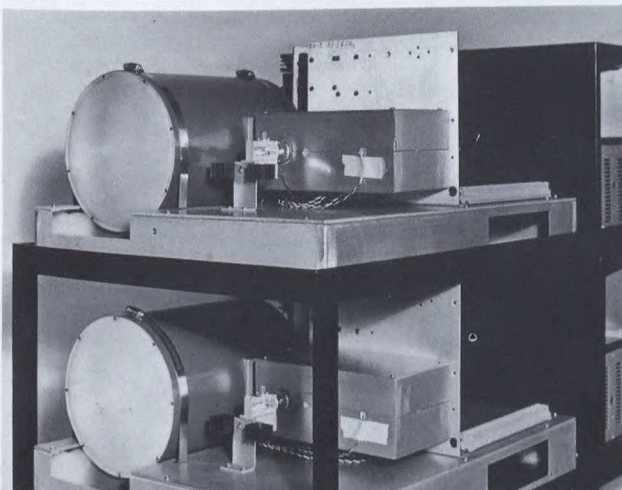
United States: USAF, NSWC, DOE, LLNL, NOAA,

JPL, NASA, Hughes, RCA, Lockheed, Raytheon.

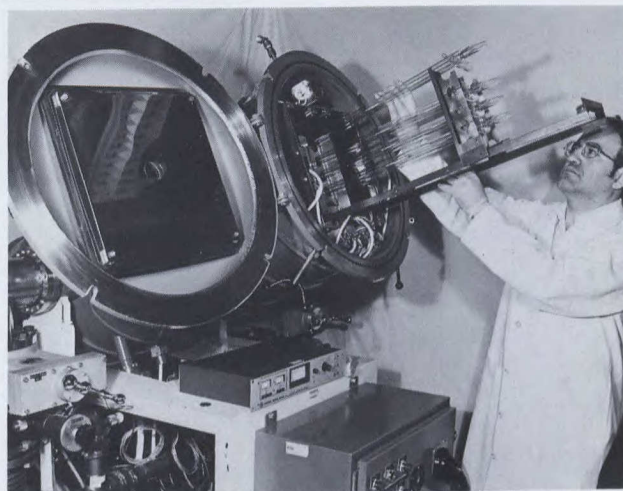
International: Culham (UK), Ferranti (UK), Marconi (UK), Laserlab (Norway), Battelle (Germany), Sony-Kawasaki-Sumitomo-Shumada (Japan), ELOP (Israel).



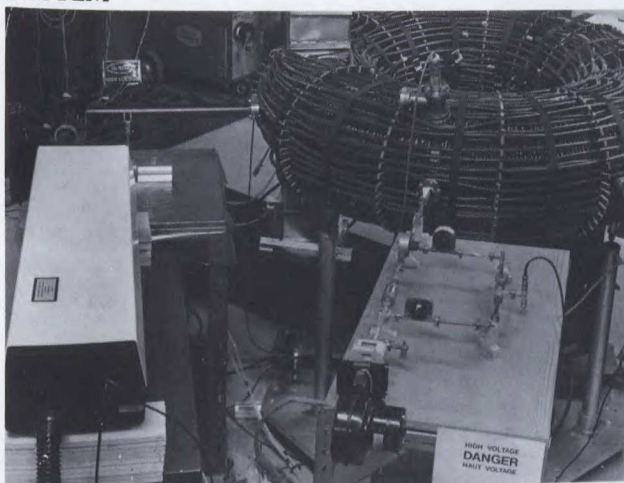
EXPERIMENTAL DEVELOPMENT
OF CERAMIC ENVELOPE
WAVEGUIDE LASERS FOR
LASER RADARS



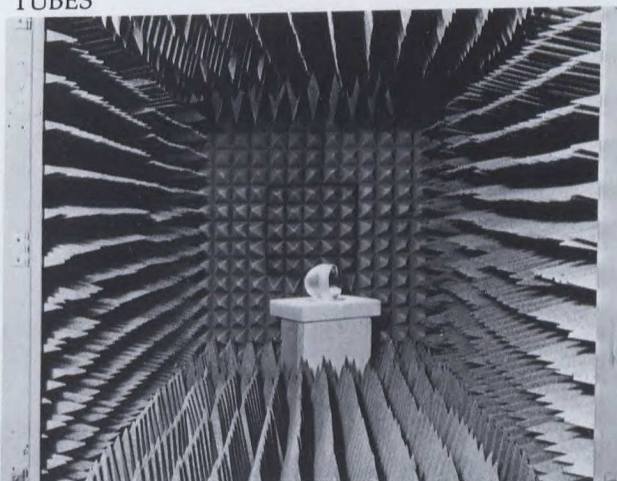
SIX CHANNEL MILLIMETRE WAVE RADIOMETER
SYSTEM



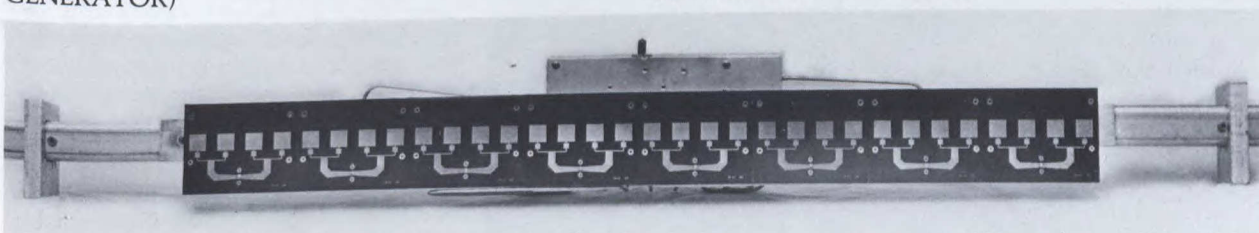
PRODUCTION FACILITY FOR SEALED LASER
TUBES



ON-SITE TOKAMAK FACILITIES (AND EMP
GENERATOR)



MICROWAVE RADAR CROSS SECTION (RCS)
MEASUREMENT FACILITY



STRIPLINE PHASED ARRAY ANTENNA



MacDonald Dettwiler

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CHAIRMAN: Dr. John S. MacDonald
PRESIDENT: John W. Pitts
SENIOR VICE-PRESIDENT, CORPORATE DEVELOPMENT
Dr. Denis J. Connor
INFORMATION OFFICER: Monica Ochs

From incorporation in 1969 MacDonald Dettwiler has grown to over 500 people, of whom about 300 are professionals, with university degrees mainly in electrical engineering, computer science and physics. Sales in Fiscal 1986 were \$45.5M Canadian. The company is growing at a rate of 30% per year.

MacDonald Dettwiler leads the world in developing computer-based remote sensing systems encompassing the latest in digital image processing technology. Since the early 1970s the company has branched out from Landsat ground processing systems to systems handling data from other satellite and airborne sensors. Its capabilities now span all areas of digital image processing, including:

- turnkey ground stations for reception and processing of signals from all commercial satellite sensors;
- acquisition, analysis, correction, enhancement and display of optical, infrared and Synthetic Aperture Radar (SAR) images from both spaceborne and airborne sensors;
- production and updating of cartographic maps from digital imagery;
- meteorological data analysis systems integrating satellite data and surface observations for weather forecasting and forecast distribution;
- digital film recorders and plotters.

As a result of its experience and track record, MacDonald Dettwiler has become recognized throughout the world as the leading supplier of ground receiving and processing systems for remote sensing satellites. The company has been prime contractor for 6 remote sensing satellite ground stations worldwide and major subcontractor for another ten. These stations have included 15 of the world's 16 Landsat stations. Full turnkey services, including training and support, were provided for most of these installations.

The company develops both flexible SAR processors for SAR experimentation and dedicated high throughput systems for operational processing of SAR data from specific sensors. The Generalized Synthetic Aperture Radar (GSAR) software package processes data from NASA's SIR-B shuttle experiments, as well as from airborne SAR sensors and the Seasat satellite.

MacDonald Dettwiler also manufactures an air-

borne X-Band digital imaging SAR - IRIS. The system offers full onboard processing and data management for both high resolution and wide swath image products. Data is available simultaneously at video monitors, image analysis systems, magnetic tape recorders, and hard copy plotters, both onboard and at surface based receivers.

The company has also played a leading role supplying meteorological satellite ground systems and components. These systems gather image data from various weather satellites such as TIROS-N, Meteosat, GMS, and GOES.

More recently, MacDonald Dettwiler has entered the broader field of weather data handling, and has completed a United States Air Force contract for the Automated Weather Distribution System (AWDS). AWDS provides advanced weather image processing and graphics manipulation for weather forecasting.

In March 1986 MacDonald Dettwiler introduced the MERIDIAN family of mapping systems to the cartographic community. MERIDIAN mapping systems are designed to produce topographic base maps from digital imagery sources such as the SPOT and Landsat satellites and airborne SAR, providing the most advanced image mapping capabilities available today.

The FIRE 9000 precision laser photoplotting system from MacDonald Dettwiler plots mapping data from vector format tapes with a combined quality and speed unmatched by any other photoplotter on the market today. With all the advantages of a raster photoplotter, the high 8000 lines per inch resolution of the FIRE 9000 allows plot quality equal to or better than the best electromechanical vector photoplotters which are many times slower. The FIRE 9000 can produce plots up to 22.5 by 34.0 inches. The high resolution capability also allows larger maps to be plotted at a reduced scale and still have excellent quality upon blow-back to normal size.

None of the above is possible without a strong, ongoing program of research and development. MacDonald Dettwiler spends millions of dollars each year in maintaining and expanding its knowledge and capability in remote sensing, data acquisition, data processing and image analysis.

Products and Services

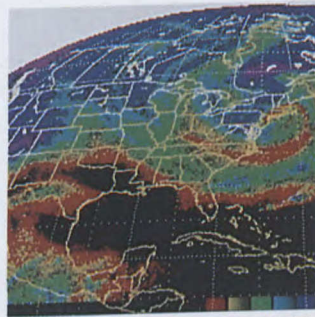
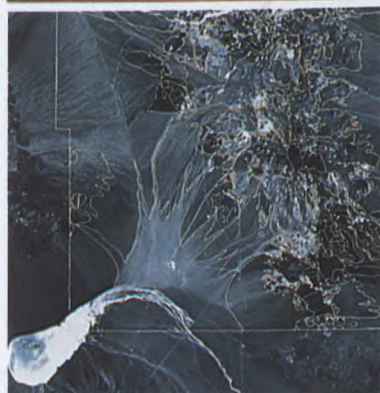
DIGITAL FILM RECORDERS

MacDonald Dettwiler's line of digital film recorders comprises the FIRE and Color FIRE 240 for remote sensing image production, the FIRE 9000 for printed circuit board artwork generation, the instant FIRE 300, a proofing system for the printing and publishing industry, and the GEOFIRE, a seismic plot output generator. All of the FIRE series are based on an advanced electro-optical architecture providing the highest resolution and fastest throughput currently available.



MERIDIAN SATELLITE MAPPING SYSTEM

MERIDIAN is the world's only satellite mapping system capable of producing topographic maps from satellite data only. The system combines input from conventional and digital data sources with an automatic digital terrain modelling capability. Geocoding and sophisticated image analysis functions allow the user to create maps for a variety of applications in environmental monitoring, land use, ice reconnaissance and disaster assessment.



GROUND STATIONS

MacDonald Dettwiler is the world's leading supplier of ground stations for earth resource satellites such as Landsat and SPOT. Over the past 12 years, MacDonald Dettwiler has built or helped build 15 of the 16 currently existing Landsat stations worldwide. Most of these ground stations were built and installed on a turnkey basis, including on-site training and maintenance. MacDonald Dettwiler's modular design approach allows regular upgrading for new satellite sensors. MacDonald Dettwiler continued research and development of remote sensing technology ensures that it will continue to lead the field in ground station design.



SYNTHETIC APERTURE RADAR

MacDonald Dettwiler specializes in airborne and satellite-borne Synthetic Aperture Radar (SAR) imaging capability. IRIS is the Company's airborne SAR reconnaissance system, used in military border surveillance applications and ice reconnaissance. IRIS produces real-time images with 12-metre resolution over a 64-kilometre swath from a height of 15 kilometres and a stand-off distance of over 100 kilometres. Resolution down to one metre is possible over a smaller swath with precision ground processing.





Magnus Aerospace Corporation

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PRESIDENT: Frederick D. Ferguson

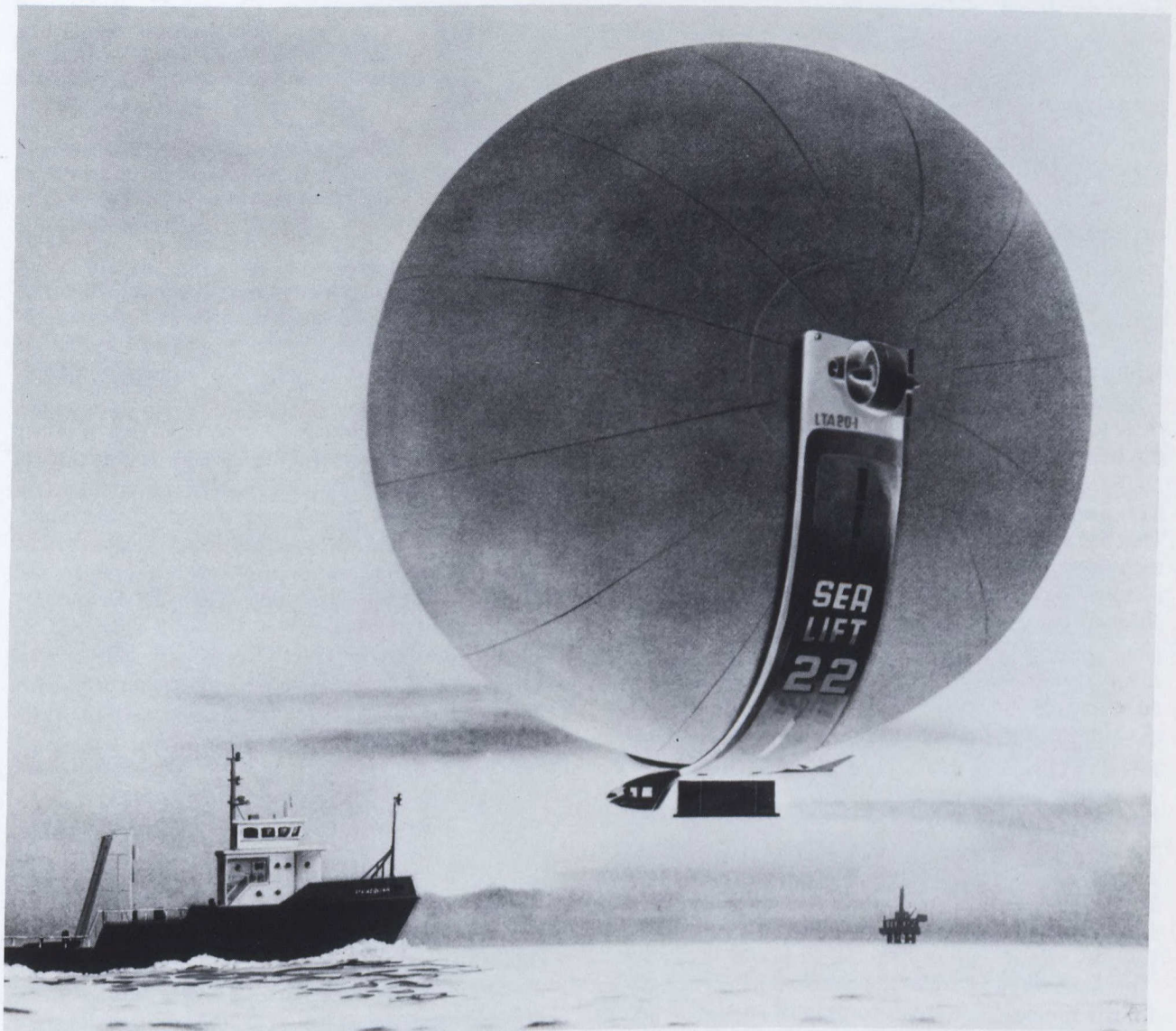
Magnus Aerospace Corporation, with offices in Ottawa, Ontario; Boston, Massachusetts; and Washington DC, has been in the forefront of lighter-than-air (LTA) research and development for many years. The unprecedented detail of research and testing and computer simulation conducted by Magnus has lead to a radically new and unique airship design. Over \$11 million was privately spent creating a depth of analysis during these years that has allowed Magnus to thoroughly examine and evaluate multiple system alternatives, concluding that significant improvements could be made on traditional airship design.

The Magnus concept applied to airships is not only new, it is better. It offers to set new standards for optimum payload capacity, increased ranges, sustained speed, markedly reduced radar cross section, and superior manoeuvrability in all weather.

The Magnus LTA 20-1 research data base is available, which includes wind tunnel tests, computer analysis and simulation, proof of concept drone reports, operating froude model tests, Westland Helicopter Technical feasibility reports, etc., which amounts to 8 years and over 300,000 man hours dedicated to the LTA 20-1 Magnus lighter-than-air craft.

Mr. Ferguson conceived of the idea several years ago. Since then, he has outlined every detail to bring the concept to the threshold of birth. Over 13 patent claims in 12 countries have been awarded.

Products and Services





McDonnell Douglas Canada Limited

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PRESIDENT & C.E.O.: Garret G. Ackerson
VICE-PRESIDENT, FISCAL: L. Gordon
VICE-PRESIDENT, MANUFACTURING: K.J. Palfery

McDonnell Douglas Canada Limited (MDCAN) manufactures major components for commercial and military jet aircraft. It is one of the largest aerospace manufacturing facilities in Canada with an area of 1.8 million square feet (167,220 m²). Capabilities include building close tolerance, high precision aircraft components for the international market.

In addition, investment to date in McDonnell Douglas Canada Ltd. exceeds a quarter billion dollars. This has resulted in new manufacturing methods, high technology manufacturing equipment and operating systems which contribute to high productivity and competitive capability. On all major aircraft components, McDonnell Douglas Canada has total project management responsibility, including material and subcontract management, manufacturing concepts, design and fabrication of all tooling, as well as complete production.

McDonnell Douglas Canada is one of the major airframe manufacturers in Canada. Sales currently exceed \$300 million dollars annually, and since the inception of the company in 1965, exports have exceeded \$3 billion. Personnel, including engineering, administrative and production staff now totals more than 4,500 people.

McDonnell Douglas commercial jetliners have by far the greatest Canadian content of any such aircraft in the world. In fact, the MD-80 family of planes has more than 25 percent of the airframe content fabricated and assembled in Canada. MDCAN makes the wings, cabin floors, leading edges, flaps, tailcone and rear fuselage sections for this family of aircraft. The MD-80, in various configurations, currently seats 100 to 172 passengers and services routes up to 3,000 miles (4,827 km). Much of the world flies on Canadian wings.

Another major product is the new generation MD-11 tri-jet that is designed to fulfill airline needs in the 1990's and beyond. When comparing internationally competitive wide-body aircraft, the MD-11, as with the DC-10, has the highest Canadian content. McDonnell Douglas Canada participates in the fabrication and assembly of components for this airframe. The MD-11, in various configurations, can seat from 276 to 405 passengers and service routes up to 8,870 miles

(14,274 km). The freighter version is capable of carrying payloads up to 102 ton. The "combi" model combines the best of passenger and freighter capabilities and can be changed to adapt to changing market requirements.

MDCAN also builds components for military fighters. The F/A-18 Hornet is a high performance, multi-mission strike fighter capable of air combat, fighter escort, close air support, day and night strike, fleet air defence and bad weather attack missions. The F/A-18 is one of the most sophisticated fighter aircraft in the world, requiring state-of-the-art technology manufacturing methods. MDCAN has developed into a world class leader in the use of leading edge technology and is responsible for manufacturing the forward fuselage side panels as well as the wing pylons. Customers include the U.S. Marine Corp., U.S. Navy, Royal Australian Air Force, Spanish Air Force and the Canadian Armed Forces.

Technical Capability

- MDCAN quality assurance inspection program and laboratories meet the requirements of the Canadian Department of National Defence Specification 1015 and United States DOD Specification MIL-Q-9858A.
- Extensive computer aided design and manufacturing (CAD/CAM) facilities with in-house programming specialists. Some of the tools available are the Uni-graphic system, APT-Automated Program Tool language and Finite Element Analysis.
- Computer aided sheet metal router nesting system.
- CAPP-Computer Aided Process Planning dramatically reduces the time used for planning the sequence and operations for new parts fabrications.
- NC-Numerically Controlled equipment. There are 88 NC machining centers, profilers, lathes, tube benders, drills and drivematic fastening machines. Among these are five axis machine centers and profilers.
- DNC-Direct Numerical Control is being implemented to further improve productivity in NC operations.
- Composites parts manufacturing experience. This includes honeycomb bonding and metal bonding, an example is the KEVLAR tailcone, the largest composite component on the MD-80 aircraft.
- One of the largest spar mill facilities in the world with bed lengths up to 100 feet.

Products and Services

McDonnell Douglas Canada Ltd., is located on 113 acres adjacent to Pearson International Airport with a total building area of 1.8 million sq. ft. Since 1965, there have been planned progressive improvements in the capabilities of the facility incorporating the latest advances in computer aided technology and program management.

Long a pioneer in the use of numerical control for increased manufacturing efficiency and project management, McDonnell Douglas Canada Ltd. has become expert in producing components of high reliability, accurately and economically.



Leaders in complete project management of efficient automated and conventional manufacturing, McDonnell Douglas Canada will continue to find new applications to shape the future of high technology production in Canada.



The MD-80, an advanced derivative of the DC-9, has over 25% of the airframe manufactured in Canada.



McDonnell Douglas Canada Ltd., with the support and teamwork of its employees, has shipped over 1300 DC-9/MD-80 shipsets through 1986. Average annual employment over the last 20 years has been 4,000 employees.



The MD-11 new generation tri-jet is designed to fulfill airline needs in the 1990's and beyond. McDonnell Douglas Canada participates in the fabrication and assembly of components for this airframe.



The F/A-18 Hornet is a high performance fighter/attack aircraft. MDCAN manufactures the wing pylons and forward fuselage side panels.

MCDONNELL DOUGLAS CANADA LTD.



Menasco Aerospace Ltd

1400 South Service Road West
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TELEPHONE: (416) 827-7777
TELEX: 06-982244

PRESIDENT: John M. Cybulski
VICE-PRESIDENT, MARKETING & PROGRAM MANAGEMENT:
Eric Eriksmoen
VICE-PRESIDENT & GENERAL MANAGER,
OVERHAUL DIVISION: Stephen M. Marshall

Menasco Aerospace Ltd, a wholly-owned subsidiary of Colt Industries, designs and manufactures landing gear systems; primary and secondary flight control actuation systems, including fly-by-wire electrohydraulic systems; ground steering/steer-by-wire; variable wing sweep and ramp and door actuation systems. The company also carries out the repair and overhaul of all such systems.

The company's Engineering Department, supported by experienced engineers and technicians and state-of-the-art CAD/CAM technology, can undertake analysis on all phases of design, development, stress, dynamics and testing for all electrohydraulic and hydromechanical applications employed in landing gear and flight control systems.

Numerically-controlled equipment combined with a computer-aided production control system, allows Menasco Aerospace to deliver products which meet all military and commercial quality control requirements on time, and in a cost-effective manner.

Menasco Aerospace maintains a complete physical and environmental testing laboratory for landing gear, flight controls and actuating devices. The laboratory is equipped with two drop test towers (one 45-ft. high), and is able to check shimmy and steering characteristics. Other capabilities include vibration, structural, stress survey, fatigue and environmental testing.

To meet the requirements of the world's airlines and military forces, Menasco Aerospace operates a separate Overhaul Division which is staffed, equipped and committed to meet the most stringent demands of aircraft operators. This Division is able to offer a 30-day turnaround service worldwide. Exchange programs are available worldwide to operators of commercial and military transport aircraft, commuter aircraft and helicopters.

The company's technical competence is recognized by all major airframe manufacturers including Bell Boeing, Canadair, de Havilland, Fairchild, Fokker, General Dynamics, Lockheed, McDonnell Douglas, Short Brothers and Sikorsky Aircraft. The company's products meet applicable FAA, Transport Canada, Mil-Q-9858A, and AQAP-1 quality control specifications.

The company's experience in the design and manu-

facture of landing gear and flight control systems extends to many types of aircraft. It has manufactured main and nose landing gear for the Fairchild Republic A-10 Close Support Aircraft, the Short Brothers SD3-30 commuter airplane and the de Havilland Dash 7. In addition, the Company supplies main landing gear for the Boeing 737-300, -400 and -400HGW aircraft, and is sole supplier of nose and centerline landing gear for the McDonnell Douglas DC-10 and KC-10 transport.

Flight controls for the Fokker 100 and F-28 designed and supplied by Menasco Aerospace include: rudder, aileron, horizontal stabilizer and elevator controls, flap drive, lift dumper and speedbrake systems. The Dash 7's flap system was designed and is manufactured by the company. The firm also was involved in Canada's FHE-400 Hydrofoil project.

Menasco Aerospace's current program includes the design, development and manufacture of nose landing gear (and ground steering) for the Bell-Boeing V-22 "Osprey", flight control systems for the new Fokker 100, and the design and development of nose landing gear and ground steering for the McDonnell Douglas C-17 "Airlifter".

Menasco Aerospace operates two facilities, a 200,000 square-foot (18,600 m²) plant located in Oakville, Ontario (halfway between Toronto and Hamilton and half an hour from Pearson International Airport) and a 50,000 square-foot (4650 m²) facility located in Burbank, California.

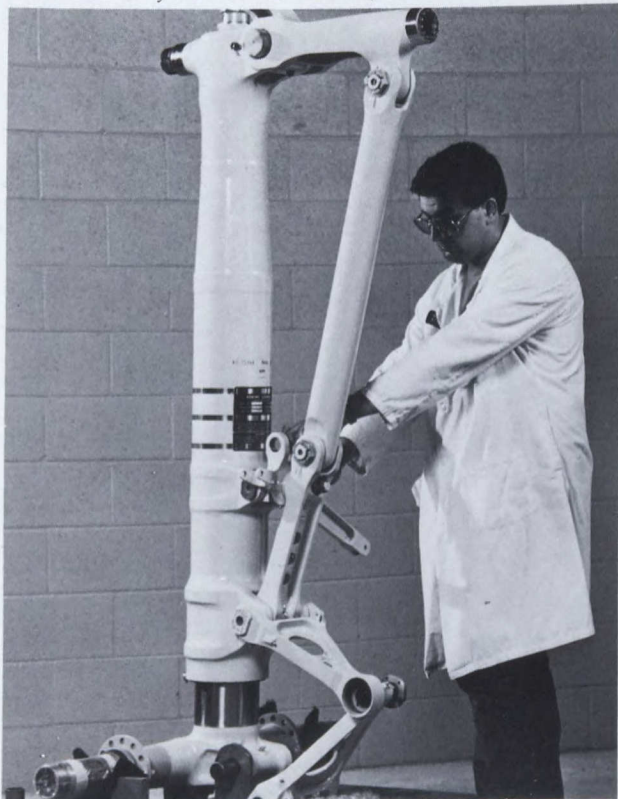
Products and Services



The nose landing gear (with ground steering) for the new McDonnell Douglas C-17 will be designed and manufactured by Menasco.



Fokker F-28 horizontal-stabilizer actuation system, designed and manufactured by Menasco in Oakville, Ontario.



The main landing gear for the Boeing 737-300, and all 737 variants, is manufactured by Menasco Aerospace.

LANDING GEAR AND FLIGHT CONTROLS

Menasco Aerospace Ltd designs and manufactures Landing Gear Systems, Primary and Secondary Flight Control Systems, including Fly-by-Wire Electrohydraulic Systems, Ground Steering/Steer-by-Wire, Variable Wing, Wing Sweep, and miscellaneous Ramp/Door Actuation Systems for major airframe manufacturers throughout the world:

Bell-Boeing.....	V-22	Nose Landing Gear with Ground Steering
Boeing	727	Main Landing Gear Side Strut
	737-200/300	Main Landing Gear
	737-400	Main Landing Gear
	757-200	Main Landing Gear Side Strut
	CH-47	Landing Gear, Steering with Control Module
	B-V 360	Main Landing Gear
Bell	YAH-63	Landing Gear
	XV-15	Landing Gear
Canadair	CL-44	Landing Gear Systems, Steering
	CL-84	Landing Gear Systems, Wing Tilt Actuation
de Havilland	DHC-4 and DHC-5	Landing Gear Systems, Steering, Rudder and Spoiler Actuators
	DHC-7-100 and 150	Landing Gear Systems, Steer-by-Wire and Flap Actuation System
Fairchild Republic....	A-10	Landing Gear, Retraction Actuators
Fokker	F-28 and 100	Rudder, Aileron, Horizontal Stabilizer, Elevator, Flap Drive, Leading Edge Slat, Lift Dumper, and Speed Brake Actuation Systems
General Dynamics...	F-111	Wing Sweep Actuator, Landing Gear Retraction Actuator
Lockheed	C-141	Spoiler, Retraction, Forward & Aft Ramp Actuators
	C-5B	Forward and Aft Ramp Actuators
McDonnell Douglas	DC-10	Nose and Centerline Landing Gear
	KC-10	Nose and Centerline Landing Gear
	C-17	Nose Landing Gear with Ground Steering
Shorts	SD3-30	Landing Gear
Sikorsky	CH-53	Landing Gear



Menasco-designed and built flight control systems are on the new Fokker 100, seen here on its maiden flight.



Oerlikon Aerospace Inc.

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PRESIDENT: Dr. Marco M. Genoni
VICE-PRESIDENT OF CORPORATE AFFAIRS: Bing Peart
DIRECTOR OF BUSINESS DEVELOPMENT: Werner Oesch
DIRECTOR OF CONTRACTS: R. Stuart Riley

Oerlikon Aerospace began operations in 1986 to provide project management of the Canadian Forces Low Level Air Defence contract. The company assembles, integrates and tests the ADATS air defence missile system which is the centerpiece of Canada's Low Level Air Defence (LLAD) system.

A full time employer of several hundred persons in a high skills retention environment, Oerlikon Aerospace is a member of the Swiss based Oerlikon-Buehrle Group. This multi-national group employs more than 30,000 persons and has over 70 years of international business experience. With annual sales of over 4 billion dollars, Oerlikon-Buehrle's commitment to its Canadian offspring is not only substantial, but reflects a continuing dedication to technological progress within a broad product range on a worldwide basis.

Having been awarded the first contract for ADATS in the spring of 1986 — by the Canadian Department of National Defence — the company's progress in Saint-Jean-sur-Richelieu, Quebec, has been rapid. Employees numbered in excess of 300 in the spring of 1987 with increases planned to 400 in later months.

As the complexity of ADATS far surpasses that of any previous air defence systems built in Canada, the ADATS project has created application opportunities for many indigenous Canadian technologies resident within the highly specialized Canadian industrial base. The resulting Canadian Air Defence Industrial Team of companies offers significant technologies in the fields of electro-optics, radar, infra-red sensing, command and control, software development, specialized machining, and computer sciences with total integration by Oerlikon Aerospace.

Oerlikon Aerospace is mandated to serve Canadian and other NATO customers. Including offspring technology and products from the CF-LLAD project, the company's officials estimate sales in the next ten years to approach the ten billion dollar mark.

The highly skilled workforce in place at the modern 16,000m² Saint-Jean-sur-Richelieu facility is dedicated to providing advanced research and development, integrated logistic support, sophisticated systems integration and unique operational analysis capability to

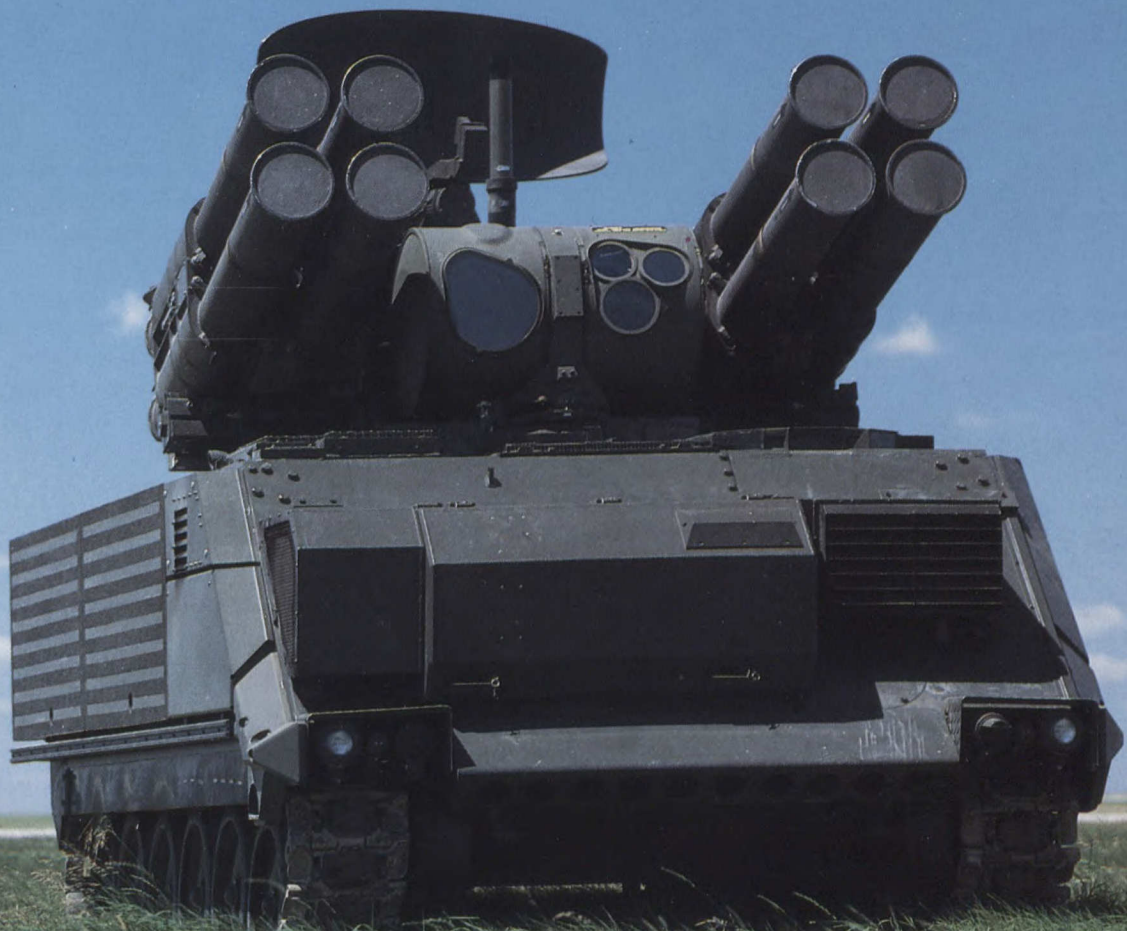
Canada and the world market.

Experience gained through years of research and development of new products, and expertise gained from the management and coordination of complex international project teams (involving European and North American companies), allow Oerlikon Aerospace to feel confident that its products and capabilities will meet the systems needs and quality standards of the Canadian Government, as well as NATO customers, for many years to come.

ADATS

ADATS is the world's most technically advanced low level air defence missile system:

- *Laser guidance and passive FLIR tracking for outstanding accuracy and electronic counter measures immunity.*
- *Eight ready-to-fire missiles for excellent fire power.*
- *Quick reaction time, Mach 3+ missile velocity and greater than 8 kilometer range for maximum coverage.*
- *Large warhead and dual fuzing for high lethality against all types of targets, including helicopters and high performance aircraft as well as armoured ground targets.*
- *Sensor package of radar, FLIR, TV and optical sight for full redundancy.*
- *Built-in growth potential to meet the requirements of tomorrow's threat.*



**Oerlikon
Aerospace**

A MEMBER OF THE OERLIKON BÜHRLE HOLDING GROUP

High Technology of the Future in Canada Today.
ADATS, part of the Canadian Low Level Air
Defence System



Okanagan Helicopters Limited Engineering Support Division

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TELEX: 04-355727

GENERAL MANAGER: Gerry K. Vanslyke
MANAGER, TECHNICAL SALES: Mike Druet

The Engineering Support Division of Okanagan Helicopters Limited is Canada's largest and most diversified all helicopter support facility in Canada. The division provides full support services to Okanagan's own large fleet, and to over 150 other helicopter owners and operators worldwide.

Okanagan began operating helicopters in 1947 and over the past 40 years has established itself as a leader in all facets of helicopter operations and support services. Okanagan is the largest helicopter operator in Canada and one of the three largest in the world. Its fleet of over 130 helicopters operate throughout Canada and around the world. Approximately 25% of the fleet operate outside of Canada with major emphasis in Southeast Asia, India, China, the Middle East, Africa, South America and Europe. All technical support services and logistics are handled through its Richmond facility. The company employs 600 people in total and 120 in the Engineering Support Division.

The Engineering Support Division operates a modern 42,000 square foot facility that comprises an Engine Overhaul Shop, a Component Overhaul Shop, an Accessory Overhaul Shop, an Avionics Shop, a Materials Control department and an Engineering Design department. Additionally, a 16,000 square foot hangar and large Sheet Metal Shop are located at Okanagan's airport facility at Vancouver International Airport nearby.

Okanagan's support philosophy emphasizes quality, reliability and cost-efficiency. On the quality side Okanagan maintains the highest in quality standards and workmanship in all of its shops. The company's quality control meets or exceeds the exacting standards of the aircraft manufacturers, Transport Canada, and the Department of National Defence.

Okanagan enjoys a somewhat unique benefit from its dual role as an operator and a support facility. Access to operating data and reliability statistics from its own large fleet allows the company to better identify and monitor problem areas which facilitates the development of special repair schemes and overhaul procedures to increase unit reliability. Improvements in unit reliability minimizes operating costs and enhances safety. The company's own helicopter fleet enjoys one of the best safety records in the world, a reflection of its approach to helicopter support.

Okanagan's extensive range of helicopter support services include the following:

Engine Repair and Overhaul

Okanagan operates a large and modern engine overhaul shop with the state-of-the-art facilities.

Allison Engines — Okanagan is approved by Allison as a Maintenance and Overhaul Centre for 250 series engines. Over 100 Allison engines are processed through the shop annually. Significant to note is the special build procedures for Allison C28 and C30 engines, developed by Okanagan, and subsequently adopted by Allison, that have substantially increased the reliability, performance and safety of the engines.

General Electric CT58/T58 Engines — Okanagan has been overhauling the CT58 for over 10 years now, and is endorsed by General Electric as a quality source for overhauls. Okanagan is involved extensively in TBO life extension programs on the CT58/T58, including all of its own engines and can provide this service to its customers.

Airframe Repair and Overhaul

Okanagan has extensive airframe capabilities including component, accessory and avionics overhaul, line maintenance, airframe repair, rewire, modification and aircraft rebuild on Bell 205, 206, 212, 412, 214B, 214ST, Sikorsky S-61, S-76 and Aerospatiale AS350, AS332 C/L. These airframe capabilities are augmented by the company's highly experienced sheet metal shop.

Design Engineering

Okanagan's design engineering department is active in several areas of technical support including the design of operational equipment, aircraft modifications and shop repair schemes. Recently developed products include:

- E.M.S. Ambulance interior package for Sikorsky S76
- Fire-bombing belly tank for Bell 212
- Aerospatiale AS332 bubble door for improved vertical reference for heavy lift or search and rescue missions
- Auxilliary fuel seat tank for Aerospatiale AS332

The Engineering Support Division's customers are spread throughout Canada, the United States and around the world. They include commercial and corporate helicopter operators, the Canadian government, the Canadian Department of National Defence and a number of foreign military establishments.

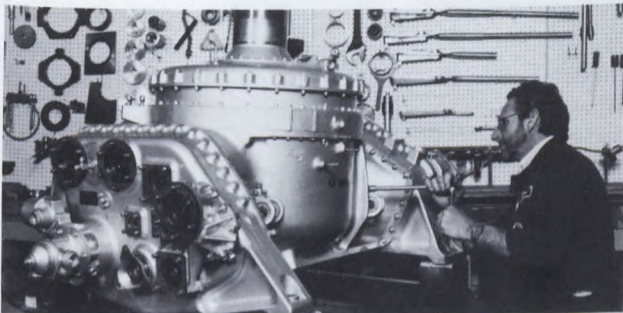
Products and Services



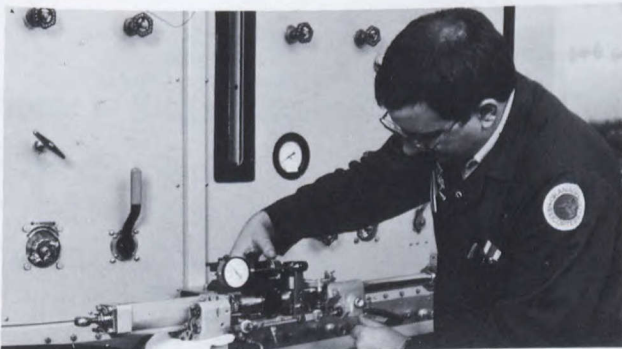
ENGINE SHOP - Okanagan's large and modern engine shop has full repair and overhaul capabilities on the Allison 250 series and the General Electric CT58/T58 series turbine engines.



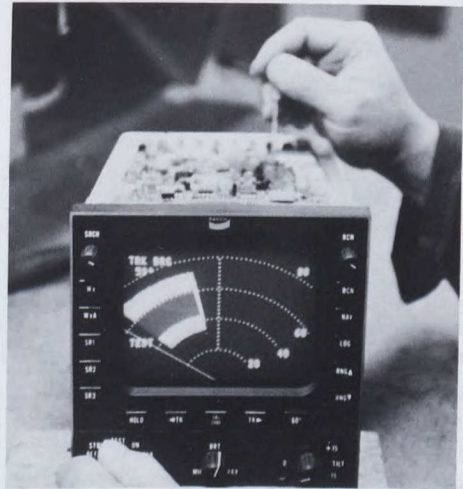
Technicians building a C30 turbine module (left) and balancing a CT58 rotor (right). Okanagan builds its engines to very tight tolerances as part of its efforts to improve unit reliability.



COMPONENT SHOP - Finishing touches on a Sikorsky S61 main transmission overhaul. Okanagan overhauls all dynamic components on the Sikorsky S61, as well as the S76 and most all Bell helicopter models.



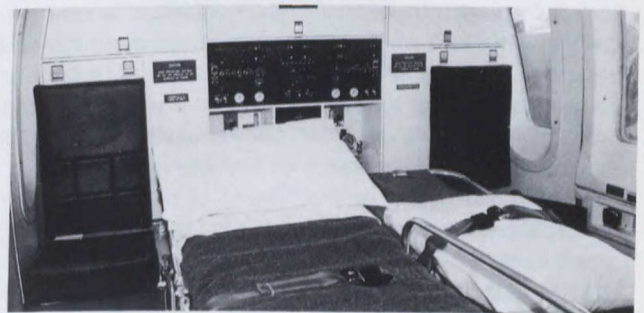
ACCESSORY SHOP - A hydraulic servo being tested after overhaul on Okanagan's hydraulic test unit. The accessory shop overhauls a variety of hydraulic, electrical and electromechanical accessories.



AVIONICS SHOP - Repairing a Bendix weather radar unit. This shop has repair and overhaul capabilities on a wide range of avionics and instruments.



Airframe work ranges from major inspection and overhaul to complete rewiring or rebuild.



Custom S76 Air Ambulance Interior - one of Okanagan's many innovative designs.



The Ontario Aerospace Consortium Incorporated

c/o Indal Technologies Inc.
3570 Hawkestone Road
Mississauga, Ontario
L5C 2V8
Attn: Mr. R.E. Marcille

The Ontario Aerospace Consortium Incorporated is a group of Ontario aerospace companies who collectively possess some of the most extensive engineering design and manufacturing capabilities in the aerospace industry in Canada. Associated through a co-operative marketing venture, the Consortium's primary purpose is to enhance the marketing of the aerospace products and services of its members. Consortium shareholders are all leading suppliers to the international aerospace industry who offer their products and services to high technology customers, either jointly or individually. The Consortium, formed with the support of the Ontario Ministry of Industry, Trade and Technology, enjoys the enviable position of being able to combine the flexibility and low overhead costs of a small company with the strengths and capabilities of a much larger corporation. The Consortium's members are:

ATG Aerospace Inc.

ATG Aerospace is a wholly owned subsidiary of Israel Aircraft Industries, a major foreign aerospace and electronics company selling into the international market; it was established to provide for the transfer of high technology products to Canada through license arrangements and joint venture agreements which will result in the establishment of a manufacturing facility. Its participation in the Consortium provides customers with access to state-of-the-art technologies which might not otherwise be available in Canada.

Indal Technologies Inc.

Indal Technologies is a diversified company which engineers and manufactures a wide variety of mechanical, electro-mechanical, hydraulic and structural systems. The company is the world's leading supplier of shipborne helicopter recovery and support systems, telescopic helicopter hangars and hangar door systems, lightweight flight decks and visual landing aid packages. The company is also actively involved in the design of other shipborne aircraft landing and handling systems, military land vehicles, aerospace support systems, and other defence-related projects.

NYAB VICOM

NYAB VICOM is an internationally-recognized producer of high-quality machined components and assemblies for helicopters and manufacturer of air and hydraulic equipment for railroads and transit systems,

customized machined parts, synthetic fibres, nuclear components and special machinery. The company has earned several Audited Source Approvals from McDonnell Douglas Canada Limited and The Boeing Company for excellence of workmanship, computerized technology and quality control.

Reil Industrial Enterprises Limited

Reil Industrial Enterprises is a recognized leader in the custom precision machining of small to medium-sized components and assemblies for the aerospace and related industries. The company's main area of expertise is the precision machining of high-strength steel and aluminum alloy castings. Reil's Computer Aided Manufacturing facilities as well as sophisticated CNC machines, enable it to match any competitor for accuracy, delivery and cost.

Valcom Limited

Valcom Limited designs and manufactures commercial and military communications and electronic equipment and is recognized as the world's leading manufacturer of whip antennas, being the sole supplier of that product to the United States Navy. The Canadian Navy, Canadian Coast Guard, U.S. Navy, U.S. Coast Guard, Spanish Navy and many commercial organizations specify Valcom's free-standing whip antennas for ground-to-air, ship-to-shore, and ship-to-ship applications. Valcom is also a specialist in build-to-print MF, VF and UHF radio communications equipment and also supplies a range of custom-made antenna accessories and filament reinforced plastic products.

ATG Aerospace Inc.,
224 Merton St.,
Suite 305,
Toronto, Ontario,
M4S 1A1
Tel: (416) 487-6455

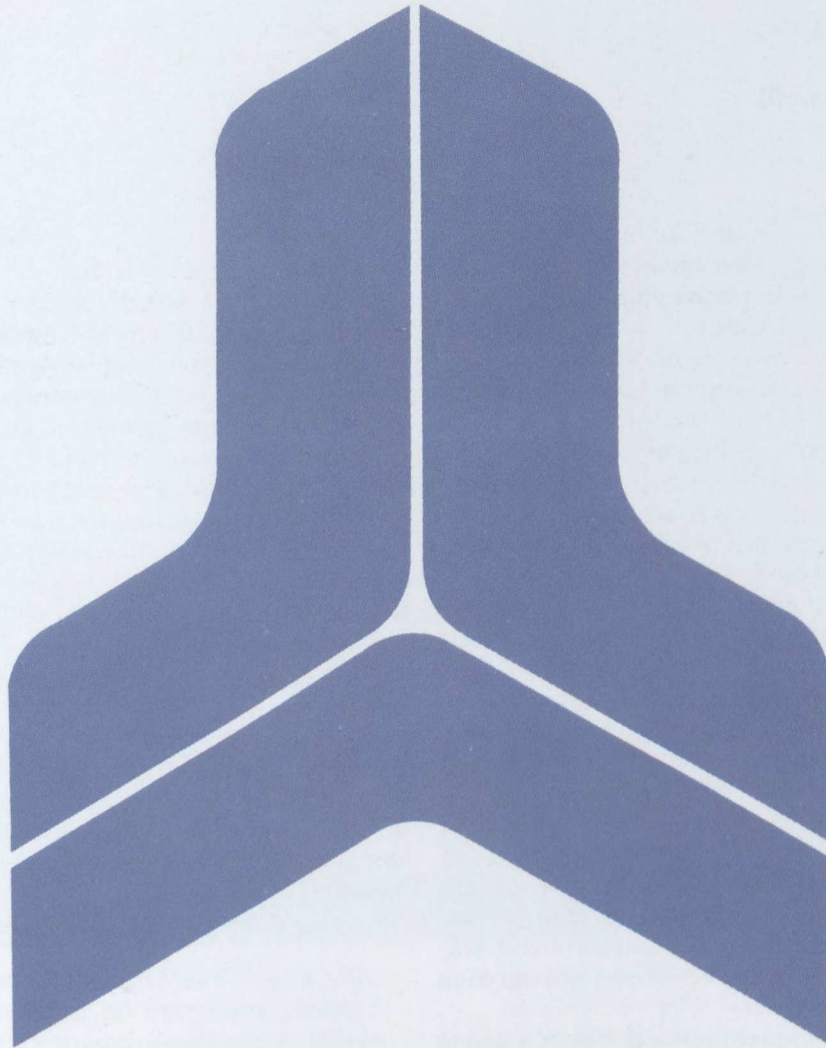
NYAB VICOM
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Kingston, Ontario
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Indal Technologies Inc.
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Reil Industrial Enterprises Ltd.
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Mississauga, Ontario
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Tel: (416) 672-1070

Integrated Precision



THE ONTARIO AEROSPACE CONSORTIUM INC

Some of the leading aerospace companies our members supply:

- Bombardier Inc.
- de Havilland Canada
- Fairchild Weston Inc.
- Garrett Manufacturing Limited
- Grumman Corporation
- Hughes Aircraft Company
- Litton Systems Canada Limited
- Lockheed Corporation
- Martin Marietta
- McDonnell Douglas Canada Limited
- Plessey Aerospace Limited
- Pratt and Whitney Canada
- The Boeing Company



Paramax Electronics Inc.

6111 Royamont Avenue
Montreal, Quebec H4P 1K6
TELEPHONE: (514) 340-8310
TELEX: 05-824142

PRESIDENT: Gerald M. Zutler
DIRECTOR OF MARKETING:
Jack C. Henry

The business of Paramax Electronics Incorporated is systems management. This highly sophisticated expertise is presently being used to design, integrate, automate, test, install and to support all electronic and combat systems on the first six ships of the Canadian Patrol Frigate Project.

Established in April 1982 as a wholly-owned subsidiary of Sperry Inc. (now Unisys), Paramax has a \$1.25 billion contract and operates as the major subcontractor to Saint John Shipbuilding Limited, the prime contractor for construction of the frigates.

Systems management is a complex process of analysis, selection and synthesis which works to assure that the overall performance of the system exceeds the sum of the performance of its elements. The responsibility of Paramax is to define, purchase, test and assemble the elements of the system. Many engineering disciplines are called into play, such as Systems Engineering, Support Engineering and Equipment Management. A major activity is the development of computer software programs to drive all the components of the electronics and combat systems as well as the testing and integration of equipment and software. Everything has to meet customer specification and operational objectives.

To accomplish this enormous task Paramax had to grow at an amazing rate. Within just three years, its employee strength rose from a core of 6 people to its present day total of 500. In even less time — some eleven months — the Paramax headquarters facility literally "grew" out of the ground to become an outstanding 160,000 square foot building. Its key feature is a 16,000 square foot Radio Frequency (RF) shielded enclosure for classified electronic tests and procedures. Within it is a full scale detailed mock-up of a Patrol Frigate bridge and operations room where software and equipment are tested and integrated and ships crews trained to ensure that the system is trouble free before going to sea.

Paramax is committed to spending \$35 million for research and development directly related to the Canadian Patrol Frigate Project and another \$16 million in R & D for future business development.

Canadian industry as a whole is reaping significant

benefits not only from the \$1.25 billion expenditures of this program but from the valuable transfer of technology. An enduring high technology capability within Canada will allow our industries to effectively compete worldwide for the management of complex systems and software development.

Paramax is actively pursuing Canadian Government contracts to provide integrated combat systems for six additional frigates under the Ship Replacement Program II (SRP-II); up to 50 helicopters under the New Shipborne Aircraft (NSA) project and at least four submarines under the Canadian Submarine Acquisition Program (CASAP).

With the immense investment in a permanent high tech facility and a concentration of engineering specialists in software and hardware design, Paramax is enviably in the lead. It is presently the most capable to tackle new large scale program management business for Canadian and allied navies, air forces or major civil programs of systems integration both in Canada and around the world.

Integrated Shipboard Combat System...

STATUS
LOG ON
INS FWD ON
INS AFT ON



**Trouble free
before
it goes to sea**

For the new Canadian Patrol Frigates the Navy requested an integrated combat system for command, display and control. A system that would be tested, evaluated and problem-free before installation on board ship.

So Paramax designed and built a land-based Combat Systems Test and Support Facility (CSTS F) in its Montreal headquarters building. Here, sophisticated test and simulation systems are being installed to help solve interface and operational problems as they occur during the integration of complex electronic equipments and software.

Life-size replicas of the CPF bridge and operations room in the CSTSF will be used to validate the physical design of combat system spaces and prove out the effectiveness of the system with realistic, repeatable and sophisticated operational scenarios.

This approach helps keep major ship-building programs on schedule and within cost and our systems are trouble free, *before* they go to sea.

PARAMAX

Advanced Electronic Technology for Canada

JOIN OUR TEAM - SEND RESUMÉS TO: PARAMAX HUMAN RESOURCES - 6111 ROYALMOUNT AVE. MONTREAL, CANADA H4P 1K6



Patlon Aircraft and Industries Limited

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Mississauga, Ontario L4W 2T7
TELEPHONE: (416) 624-5572
TELEX: 06-960379
TWX: 610 492 4312

CHAIRMAN OF THE BOARD: William J. Mann
PRESIDENTS: Patrick B. Mann
Michael J. Mann
VICE-PRESIDENT: John J. Kinoshita
MARKETING DIRECTOR: Richard D. Thomas

Patlon Aircraft & Industries Limited is located in Mississauga in a modern plant readily accessible to all major modes of transportation. The Company has been in business for over 30 years and in each of the last three fiscal years has recorded record sales. Patlon's Miami operation has grown into two divisions, and the acquisition of Skymotive Limited in 1982 has significantly increased the Company's activity in certain segments of the aircraft industry.

Patlon began its operations in 1953 around a capability of supplying logistic support for North American designed military, transport and fighter aircraft. This capability is still a very important part of the firm's business, and has grown to a point where Patlon maintains one of the largest computerized master reference libraries in Canada which includes all the military aircraft, vehicles and equipment operating in the free world. This enables Patlon to cross reference products replacing specified materials and equipment with qualified products from multiple sources usually at a lower cost. Patlon has been particularly successful in this area with the Canadian military and currently holds many Canadian government "blanket" contracts for the supply of airframe and engine spares, instruments, electronic equipment and other equipment. Patlon provides a similar capability to various armed forces around the world.

Patlon considers itself an Engineering Sales organization. With engineering sales capability and the products of many principals Patlon has provided valuable service to the Canadian government; specifically the Department of National Defence. Patlon has, in conjunction with its Principals, designed and supplied mobile electronic weighing systems for the CF18, electrical connector crimping tool kits for the CP140 and CF18 maintenance facilities; and supplied static control materials and equipment for various avionics shops, naval facilities, army vehicles and supply depots. Patlon supplies noise/shock attenuation hardware to the Canadian navy, and this equipment is approved for use on the Canadian Patrol Frigate program. All Frigates will be equipped with Patlon outboard bearings. Patlon also designed and supplied aircraft and ground support equipment cleaning machines. These examples illustrate how Patlon has utilized its capabilities and expertise to help National Defence solve particular problems.

Although many of the products Patlon supplies are manufactured outside of Canada, the Company makes a very conscious effort to maximize Canadian content. All of the examples above, including the supply of aircraft spare parts, have a substantial amount of Canadian content. In fact solely through the efforts of Patlon, a Canadian manufacturer has designed and supplied a sophisticated lubrication pump to Canadair on the CL227 program.

Over the years Patlon's capabilities as an engineering sales organization have overlapped into non-government industries. A strong presence and a large customer base have been developed in the following industries: aerospace, avionics, electronics, telecommunications, shipbuilding, transportation, off-highway vehicle and farm equipment. Whether it be the Dash 8 at de Havilland, subway cars at Bombardier, combines at Massey-Ferguson, switching equipment at Northern Telecom, frigates at Saint John, various military programs or CL215 Water Bomber operators, Patlon's selling procedure is basically the same. Depending upon the product and customer requirements, meetings are held with the appropriate management, engineering, procurement, service and sometimes manufacturing personnel to identify the requirement and attempt to develop an appropriate solution. This procedure has been quite successful in having Patlon's equipment specified at the drawing board stage of the customers' program.

Patlon has more than doubled both the number of employees and sales in the past three years. The firm has recently completed an expansion in its Mississauga facilities, and the Miami operation has moved to larger, more modern facilities. Engineering sales staff is completely supported by competent, factory-trained order desk personnel and a twenty month office automation program has just been completed. Patlon has also installed a mainframe computer with fifteen terminal locations. All facets of Patlon's operation have been automated to some degree to provide more effective, more efficient service for customers.

U.S. SUBSIDIARY

PATLON INDUSTRIES INC.
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Products and Services

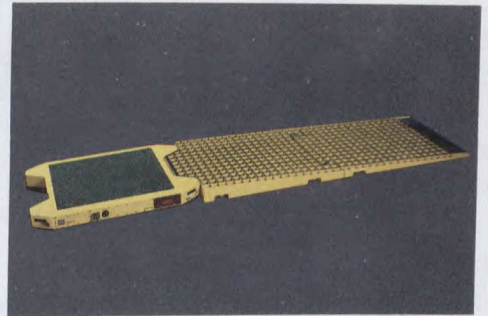
LOGISTIC SUPPORT For over thirty years, Patlon Aircraft & Industries Limited has been providing logistic support to a wide variety of military programs. The following diverse examples illustrate just a few of Patlon's solutions to meet the needs of the military.



CRIMPING TOOL KITS Custom crimping tool kits have been designed and supplied in support of the CF18, CP140 and other programs.



STATIC CONTROL EQUIPMENT Static control systems, including protective materials and equipment, have been supplied to practically every arm of the Canadian military.



GROUND SUPPORT EQUIPMENT Ground support equipment and tooling, such as Mobile Electronic Weigh Systems, can be provided for virtually every North American aircraft and aircraft engine.



ROTORTUNER State-of-the-art vibration analysis equipment is currently being used in the maintenance of various rotary wing aircraft.



SPARE PARTS SUPPORT Airframe and engine spare parts, components and rotables can be provided for virtually every North American manufactured aircraft.



FRIGATE All City-Class Frigates will go to sea with many of our products including outboard bearings, shock mounts and expansion joints.

MANUFACTURERS AGENT In addition to our military activities, Patlon acts as Manufacturers Agent in the aerospace, avionics, electronics, telecommunications, shipbuilding, transportation, off-highway vehicle and farm equipment markets. Some of our product lines include aircraft switches, refuelling systems, batteries, couplings, bearings, hydraulic pumps and valves, mechanical seals, engine and crimping tools, static control equipment, shock and vibration hardware, aircraft tires, wheels and brakes, vibration analysis equipment and line supports.





Plastal, Division of Avcorp Industries

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J2J 1A7

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(514) 866-3224

TELEX: 05 832 579

FAX: (514) 378-8699

PRESIDENT: M.E. Artus

Plastal is a Canadian company formed in 1952 to produce acrylic cockpit canopies for the North American F-86 Sabrejet fighter. Since then the company has become a prime producer of specialized plastic components using materials and fabricating techniques that reflect the latest advances in plastics technology. Plastal's customers represent a broad segment of the aerospace industry.

Precision Plastics

Plastal offers experience and expertise in the manufacture of products made from composite plastic, transparencies, thermoformed plastic and engineered reinforced plastic. The company's design team works with customers to find innovative, cost-effective solutions to fabrication problems.

Composites: Plastal can adhere to rigorous dimensional and weight tolerances for complex, high-strength, composite components featuring Kevlar honeycomb construction. Components currently in production include the interior paneling for the Challenger and BAe 125-800 executive jet, flap closure panels and aileron shrouds for the DASH-8, and fairings and ducts for the DASH-7 aircraft.

Transparencies: Plastal fabricates aircraft canopies, wingtip lenses, passenger cabin windows and simulator windscreens made from acrylics and polycarbonates. In 1984, Plastal delivered its 5800th aircraft canopy.

Engineered Reinforced Plastics: Plastal manufactures flight simulator bodies for CAE Electronics for Boeing, Lockheed and McDonnell Douglas flight simulators; the tail, nosecone and engine intake system for the AN/USD-501 Airborne Surveillance Drone; and the cockpit glareshield, wheel-well bins and ducts for the Challenger aircraft.

Reliability is Key

Plastal's success depends not only on the quality of its products but also on its reliability as part of a multi-discipline design team. Although modest in size (35 employees) Plastal has been a supplier for many major aircraft and aerospace programs including:

F-104 fighter	T-33 trainer
CL84V/VTOL	CL-41 jet trainer
Challenger	BAe 125-800

CL-215 water bomber de Havilland DASH-7
de Havilland DASH-8

In addition, the company supplies components for the Pratt & Whitney Canada JT-15D engine; Spar Aerospace satellite communication systems; the fibreglass, honeycomb parabolic antennae (ground application) for Spar Aerospace; and the Canadian Marconi polemast antenna used by the Canadian Armed Forces.

Quality

Plastal's manufacturing processes achieve the high-quality product required by the aerospace industry. The company's Military Aviation Quality Control manual is in accordance with the Canadian government DND-1016 specification (equivalent to the United States Mil-1-45208 and NATO AQAP-4). The Civil Aviation Quality Control manual is approved by Transport Canada.

Source inspection on products for foreign government programs is normally carried out at the plant by Canadian DND inspection services.

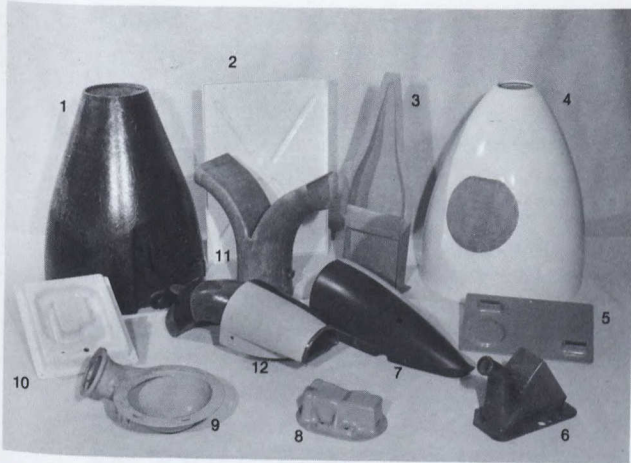
Location and Facilities

Plastal is located in Granby, Quebec, 45 miles east of Montreal. The factory and offices occupy 22,000 sq. ft. In support of the manufacturing techniques required by the production processes, Plastal offers:

- tool manufacturing
- air-conditioned and humidity controlled lay-up area
- cold storage for prepreg and other materials
- Quality Control and inspection facilities calibrated to National Standards

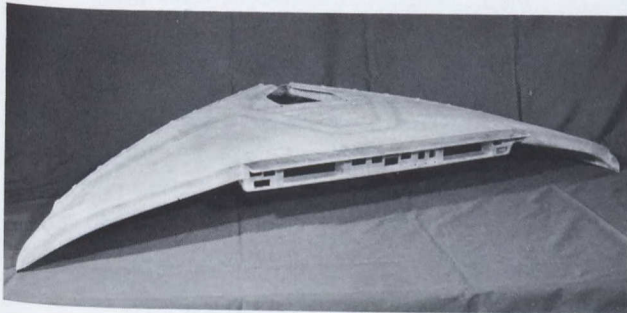
In support of customer component requirements, Plastal offers engineering services to resolve applications problems.

Products and Services

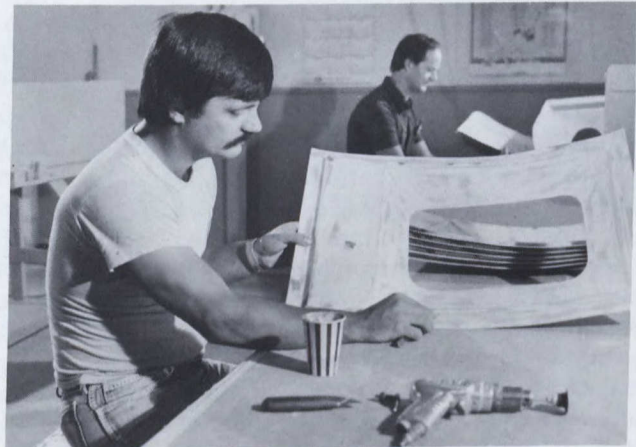


Plastal components ready for incorporation into aerospace products.

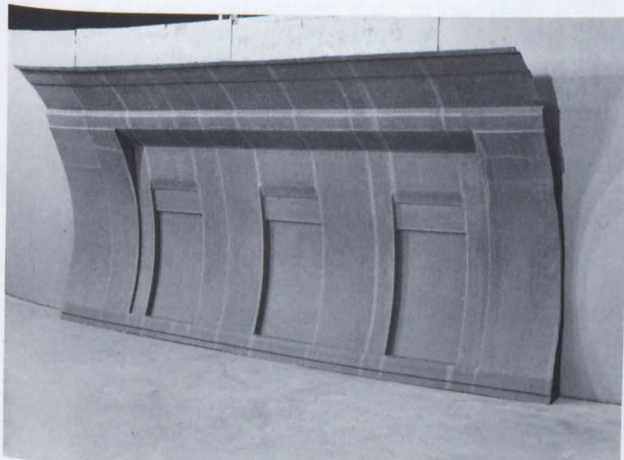
1. CL-89 tail cone.
2. ABS galley tray for CL-600.
3. Intake duct for Beech King Air nacelles.
4. CL-89 nose cone.
- 5/8/10. Vacuum formed parts.
6. Epoxy manifold duct, CF-5.
7. CL-89 fairing.
9. Exhaust manifold duct, CF-5.
- 11/12. CL89 engine intake system, Y- and outboard duct.



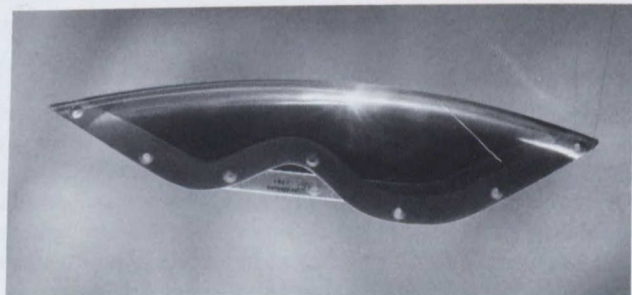
The Challenger glare shield, a complex Plastal component incorporating heating and ventilation ducts.



After fabrication, BAe 125-800 window surrounds are finished with poly-ep filler to achieve the smoothness necessary for the end product.



CL-600/601 sidewall panel. Composite components such as this are characterized by extreme light weight and high strength.



Wing-tip lens for the Macdonnell Douglas DC-9-80. This transparent lens must not vary in thickness by more than $\pm .030$ through a small radius.

Plastal, Division of Avcorp Industries Inc.



Pratt & Whitney Canada

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VICE-PRESIDENT, MARKETING & PRODUCT SUPPORT:
Roland P. Dilda
VICE-PRESIDENT, COMMUNICATIONS: Pierre Henry

In 1986 sales of Pratt & Whitney Canada (P&WC) reached more than \$800 million, 75 per cent of that for export.

As of December 1986, some 30,000 gas turbine engines had been produced in P&WC plants. The company's engines power a wide variety of aircraft in 149 countries.

These statistics are part of the business record of an autonomous Canadian corporate unit totally responsible for the design, development, manufacture, international marketing and service of small gas turbine engines for air, sea and land applications.

Pratt & Whitney Canada employs some 8,200 people in its Quebec, Ontario and Nova Scotia-based plants. Approximately 2,200 employees work full time on research and development projects to improve gas turbine technology. They form the second-largest engineering department in the Canadian private industrial sector.

Pratt & Whitney Canada is a subsidiary of United Technologies Corporation — a diversified, multi-market industrial organization with headquarters in Hartford, Connecticut, U.S.A.

In 1957, P&WC began design work on the PT6 series of engines which were introduced to the world market in 1964.

The outstanding commercial success of the PT6 series, and the subsequent development of the JT15D turbofan series and of the PW100 series, have allowed the company to establish and maintain a leadership position in the international aviation industry.

In addition to its aero engine design and manufacturing capabilities, the company is involved in industrial and marine applications of gas turbine engines, such as power-generating units, pumping stations for gas and oil pipelines, and propulsion systems for ships.

Three engine families are currently in production at P&WC. The PT6/ST6 turboprop/turboshaft engine — the world's most popular and proven aircraft powerplant in its class — the JT15D turbofan engine, a powerplant which has accumulated more than 8.6 million service hours since certification in 1971 and the PW100 turboprop, an advanced technology fuel-efficient

1800-2400 SHP-class engine.

Since introduction into service in 1964, PT6 engines have been selected for more than 127 applications. More than 123 million flying hours have been recorded by the 25,400 PT6 engines already delivered. Models and derivatives of the PT6 ranging from 475 to 1,970 SHP are in use today.

The P&WC JT15D is the turbofan engine extension into the small executive transport and training jet aircraft fields in which the PT6 turboprop led the way. The JT15D has won acclaim for ease of handling, low noise and reliability.

In 1979, P&WC introduced the PW100 engine series. The PW100 is an advanced technology, fuel-efficient turboprop specifically designed for the 30- to 80-passenger regional transports.

P&WC's headquarters, main R & D and manufacturing facilities are located in Longueuil, Quebec. The company has also established engineering facilities in Mississauga, Ontario, and a manufacturing plant in Halifax, Nova Scotia.

In-plant test facilities are used in research and development and in production and overhaul activities. Turboprop, turboshaft and turbofan engines of all configurations are tested in 30 separate test cells. A central data collection and analysis system is part of the test function.

Pratt & Whitney Canada draws upon the more than 400 Pratt & Whitney field service technical representatives throughout the world.

Overhaul shops in Canada, U.S.A., Argentina, Australia, Brazil, France, Israel, Italy, Japan, Madagascar, Sweden, U.K. and Taiwan, augment the distribution network for spare parts and after-sales support of all of the Canadian company's products.

Products and Services

PW100

The Turboprop for the Eighties and Beyond

The PW100 is an advanced technology, fuel-efficient turboprop engine designed to power regional transport and business aircraft introduced in the 1980's.

The engine reflects more than 20 years of intensive research in centrifugal compressors. The result is a compressor comprised of two rugged and efficient impellers. High component efficiency and state-of-the-art technology result in fuel consumption significantly below that of current gas turbine engines in the same class.

The PW100 operates on a twin-spool principle. The low-pressure spool (LP) consists of a single centrifugal stage and one axial turbine stage. The high-pressure spool (HP) consists of a single centrifugal stage and a single air-cooled turbine stage. The twin-spool principle allows each stage to operate at peak efficiency throughout the flight envelope.

A two-stage power turbine drives the propeller, through an offset gearbox, via a shaft which is concentric with the LP and HP spools.

The reduction gearbox features a twin-layshaft design which results in lower gear stresses and lighter weight.

The patented compressor pipe diffuser is similar to that used on the PT6 as is the reverse-flow annular combustion chamber. The engine is controlled by a mechanical fuel control with an electronic supervisory control. The electronic control automatically provides precise power setting data to the pilot.

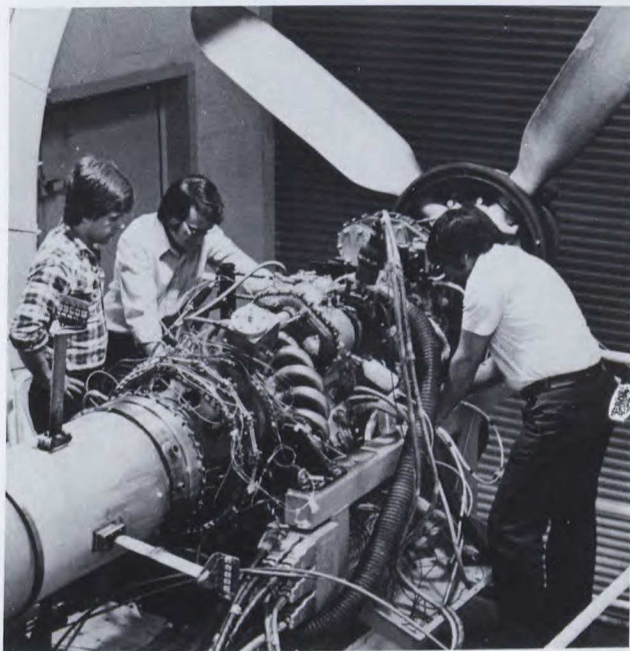
The air inlet system employs a bypass separator duct which protects the engine against the ingestion of birds or other foreign objects.

The PW100 first ran in 1981 and first flew in 1982 in a Viscount flying test bed. Prototype engines were delivered in 1983, and production started in 1984.

PW100 engines power the de Havilland Dash 8, the Embraer EMB-120 Brasília and the Aérospatiale/Aeritalia ATR-42, the British Aerospace ATP and the Fokker F50.

The PW100 has also been selected to power the de Havilland Dash 8-300, Aérospatiale/Aeritalia ATR-72 and Canadair CL-215T aircraft.

The engine is available at 1600 to 2400 SHP. Growth models to 20%-plus SHP are being studied.



The engine is installed in some 127 aircraft types/models used for executive, business, airline, utility and agricultural applications. Versions of the PT6 power several high performance turboprop trainers. The trainer version features a special oil system with inverted flight capability.

The PT6 turboprop is a free turbine engine that consists basically of an annular intake, a three-stage axial and single-stage centrifugal compressor, an annular reverse-flow combustor and a single-stage compressor turbine. A counter-rotating free power turbine drives the propeller through a two-stage reduction gearbox. Fuel is provided by 14 simplex fuel nozzles connected to a dual manifold, and combustion is initiated by two igniter plugs.

PT6 single engines are available at powers ranging from 475 to 1424 SHP for turboprop and turboshaft applications.

The Twin-Pac® version of the PT6 is widely used in medium size helicopters for utility, commercial and military applications. The PT6T Twin-Pac® is a twinned turboshaft engine that consists of two PT6 free turbine engines coupled to a common gearbox with a single output shaft. PT6 Twin-Pac® engines are available at powers ranging from 1800 to 1970 SHP.

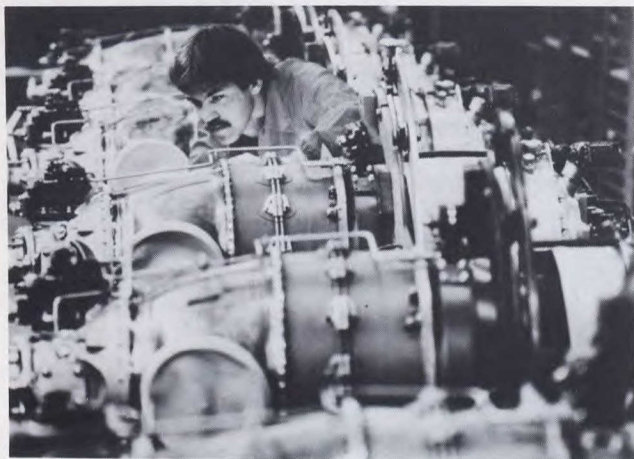
The ST6 designation is used for industrial, commercial and marine applications of the PT6. These include auxiliary power units, pumping stations for gas and oil pipelines, marine propulsion systems, etc.

PT6

The Most Popular Small Gas Turbine Engine in its Class

The PT6 engine is currently offered in some 34 variants in turboprop or turboshaft versions and in single or Twin-Pac® configurations.

Products and Services



JT15D

The Quietest Turbofan

The JT15D turbofan engine is available in several versions, ranging in power from 2200 to 2900 lbs. of take-off thrust. The engine is noted for its low fuel consumption, low noise and high reliability. It has achieved significant popularity as a power plant for corporate aircraft.

The JT15D is a twin-spool, front-fan, jet propulsion engine with a full-length annular bypass duct. The JT15D low-pressure compressor is a single-stage fan. In the larger models (2500-plus lbs. thrust) the single-stage fan is supplemented by a boost stage in the engine core. The low-pressure rotor is driven by a two-stage turbine. The compact rotor arrangement and reverse-flow combustor result in an engine configuration that combines simplicity, high reliability and ease of maintenance.

A version of the JT15D engine, developed for light military trainer aircraft, features a special lubrication system permitting inverted flight.



Engines in Development

In addition to its commitment to the continued development of existing engine models, the company is currently involved in the development of three new engine families; the PW200 turboshaft, the PW300 turbofan and the PW900 aircraft auxiliary power unit (APU).

PW200

Advanced Turboshaft

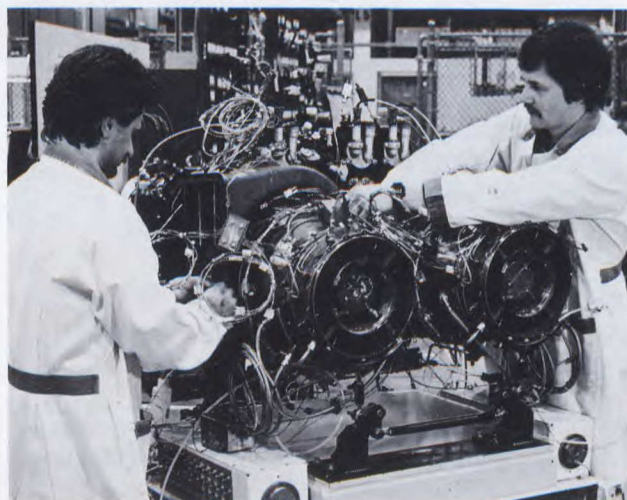
The PW200 series of engines has been designed to meet the power requirement of light/medium helicopters in the late 1980's and beyond. The PW200 engine has approximately 46% fewer parts than equivalent PT6 models. Use of proven technology has permitted the design of an engine with only three turbomachinery elements; a single-stage centrifugal compressor and single-stage compressor and power turbines. Power management is through a Full Authority Digital Electronic Control (FADEC) which reduces pilot workload, prevents excursions outside safe and stable engine parameters (including the start sequence), and provides rapid response to power demand.

The first PW200 engine run was successfully completed in 1985.

Current models under development are the PW205B, a single power unit, rated at 590 SHP and the PW209T, a 'Twin Pac®' configuration, rated at 937 SHP for take-off.

The PW205B has been selected by Messerschmitt-Bölkow-Blohm (MBB) to power the B0105 LS helicopter that will be manufactured in Ontario. The MBB B0105 LS is scheduled to enter production in 1989.

The PW209T will be certified in 1988 and will power two new Bell helicopter models to be built in Quebec, the 400A and 440.



Products and Services

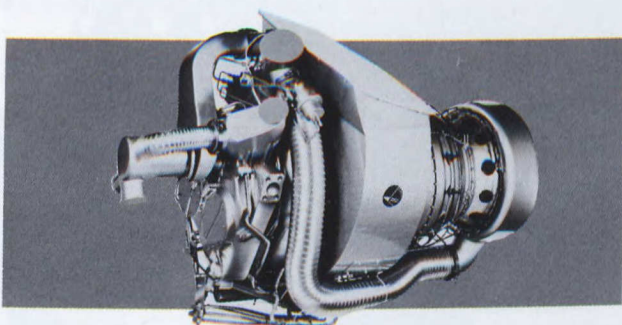
PW300

Advanced Turbofan

The PW300 is a new design which has been optimized for a new range of twin executive aircraft in the 25-35,000 lb. gross weight class. Sized initially for aircraft with 3,000 nautical miles-plus range, the PW300/1 base engine has excellent growth and down-rating potential to cover a wide range of aircraft design specifications demanding take-off thrusts in the 4500-6500 lb. range.

The PW300/1 rated at 4750 lbs. thrust will be jointly developed by P&WC — having a 75% program share — and Motoren und Turbinen-Union GmbH (MTU of Germany) with a 25% share.

The first engine run is scheduled for 1988 and production unit availability in 1990.



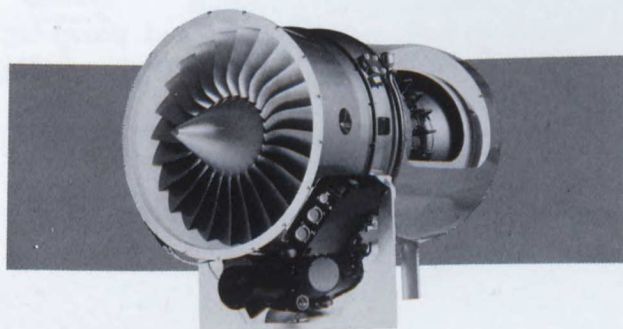
PW900

Aircraft Auxiliary Power Unit (APU)

Pratt & Whitney Canada has launched the development of the first engine model in the PW900 series — the PW901A APU. Designed specifically for the Boeing 747-400, the PW901A is derived from the proven JT15D turbofan, reconfigured as an APU.

The PW901A will be offered for retrofit and future production Boeing 747 models and has been designed for maximum installation compatibility.

The PW901A engine first ran in 1986. Development and production engine deliveries are scheduled for January 1988 and May 1988 respectively.



Summary of P&WC Powerplants

	T/O RATING (SHP or LB)	ESFC	SHAFT RPM	LGTH (IN)	DIA. (IN)	WT. (LB)
TURBOPROPS						
PT6A-110	475	.657	1900	62	19	327
PT6A-11	500	.647	2200	62	19	314
PT6A-11AG	500	.647	2200	62	19	321
PT6A-15AG	680	.602	2200	62	19	319
PT6A-20	550	.649	2200	62	19	286
PT6A-21	550	.630	2200	62	19	316
PT6A-25/25A	550	.630	2200	62	19	341/331
PT6A-25C/25D	750	.595	2200	62	19	335/347
PT6A-27/28	680	.602	2200	62	19	314
PT6A-34/34AG	750	.595	2200	62	19	320/317
PT6A-34B	750	.595	2200	62	19	330
PT6A-36	750	.590	2200	62	19	320
PT6A-41	850	.591	2000	67	19	391
PT6A-41AG	850	.591	2000	67	19	400
PT6A-42	850	.601	2000	67	19	391
PT6A-45A/B	1173	.554	1700	72	19	434/436
PT6A-45R	1197	.553	1700	72	19	436
PT6A-50	1120	.560	1313	84	19	607
PT6A-60/60A	1050	.548	1700	72.5	19	465
PT6A-61/61A	850	.591	2000	67.5	19	426
PT6A-62	950	.567	2000	70.5	19	454
PT6A-65B	1100	.536	1700	74	19	481
PT6A-65R	1376	.512	1700	75	19	481
PT6A-65AR	1424	.509	1700	75	19	486
PT6A-66	850	.620	2000	70	19	477
PT6A-67	1100	.553	1700	74	19	506
PT6A-67R	1424	.520	1700	76	19	515
PT6A-135/135A	750	.585	1900	62	19	330
PT6A-112	500	.637	1900	62	19	326
PT6A-114	600	.640	1900	62	19	345
PT6A-116	700	.596	1900	62	19	334
PW115	1600	.516	1300	81	25	861
PW118	1800	.498	1300	81	25	861
PW120	2000	.485	1300	84	25	921
PW120A	2000	.485	1300	84	25	913
PW123	2380	.470	1200	84	26	992
PW124	2400	.468	1200	84	26	1060
PW124A	2400	.468	1200	84	26	1060
PW125A	2570	.465	1200	84	26	1060
TURBOSHAFTS						
PT6B-34	750	.619	6000	58.6	22.5	298
PT6B-36	960	.594	6050	59.2	19.5	372
PT6T-3	1800	.595	6600	67	—	645
PT6T-3B	1800	.600	6600	66	—	657
PT6T-6	1875	.592	6600	67	—	657
ST6L-71	820	.585	33000	53	19	305
PW205B	590	.556	6000	—	—	220
PW209T	937	.580	6561	35.2	—	468
TURBOFANS						
JT15D-1	2200	.540	—	56.6	27.3	514
JT15D-1A	2200	.540	—	59.3	27.3	519
JT15D-1B	2200	.540	—	59.3	27.3	519
JT15D-4	2500	.562	—	60.4	27.3	557
JT15D-4B	2500	.562	—	63.3	27.3	568
JT15D-4C	2500	.562	—	60.4	27.3	575
JT15D-4D	2500	.562	—	60.4	27.3	560
JT15D-5	2900	.551	—	60.4	27	632



Quantum Inspection and Testing Limited

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PRESIDENT: Wm. I. Marcovitch
VICE-PRESIDENT, OPERATIONS: Michael Dudley
MARKETING MANAGER: Scott Brown

Quantum's product is Contract Quality Services and Expertise — peoples, facilities and related capabilities which for a variety of reasons client-users may not have readily available in-house to meet specific requirements. The company's broadly based resources, experience and capabilities are geared to integrate on both complimentary and supplementary bases with the client's organization in an efficient and cost effective manner to fulfil those requirements.

Established in 1968 as a firm of consulting engineers, Quantum has evolved into Canada's largest specialist independent professional quality services/surveillance and laboratory testing/inspection organization dedicated to the aerospace, defence and precision manufacturing sectors.

Quantum's Test Centre and corporate headquarters are strategically located in a new 15,000 square-foot facility in the hub of Canada's manufacturing/industrial heartland which also provides convenient access to the East and Midwest regions of the United States market.

All Test Centre facilities are traceable to NRC Canada (equivalent of NBS Washington) and the operational capabilities operate under such validated governmental recognitions as The Department of National Defence, Canadian Standards Association, Department of Transportation and Communications and the Canadian Government Standards Board. We are Canada's only Standards Council of Canada recognized facility for testing in Metrology and Non-destructive Examination.

Buyer approvals include such organizations as Pratt and Whitney, Boeing, McDonnell Douglas, Rockwell, Avco Lycoming, Menasco Aerospace, Lockheed Georgia, Bell Helicopter, and Spar Aerospace. Our status is typified by Quantum's recognition by NASA as being the sole Canadian source approved for the non-destructive testing of fracture critical components for the Space Program.

We are Quality Professionals whose permanent staff resources and facilities base allows the aerospace sector optimal flexibility and economies in fulfilling its mandate for quality in confidence and security.

SERVICES OFFERED

Metrology and Measurement Services

- Calibration laboratory
- Three coordinate measurement
- Casting layout
- Dimensional verification
- Relapping and calibration of granite surface plates
- Site portable three coordinate laser theodolites for verification of large fixtures and components
- Robotic installation services

Non-destructive Testing

- Radiographic
- Ultrasonic
- Liquid penetrant
- Magnetic particle

Vendor Surveillance

- Capability and pre-award surveys
- Performance monitoring
- Sampling inspection
- Test witnessing
- Expediting
- Certification

Thermographic Inspection Services

- Field portable and laboratory

Quality Management Consulting

- Quality systems development
- Training
- Problem solving/troubleshooting

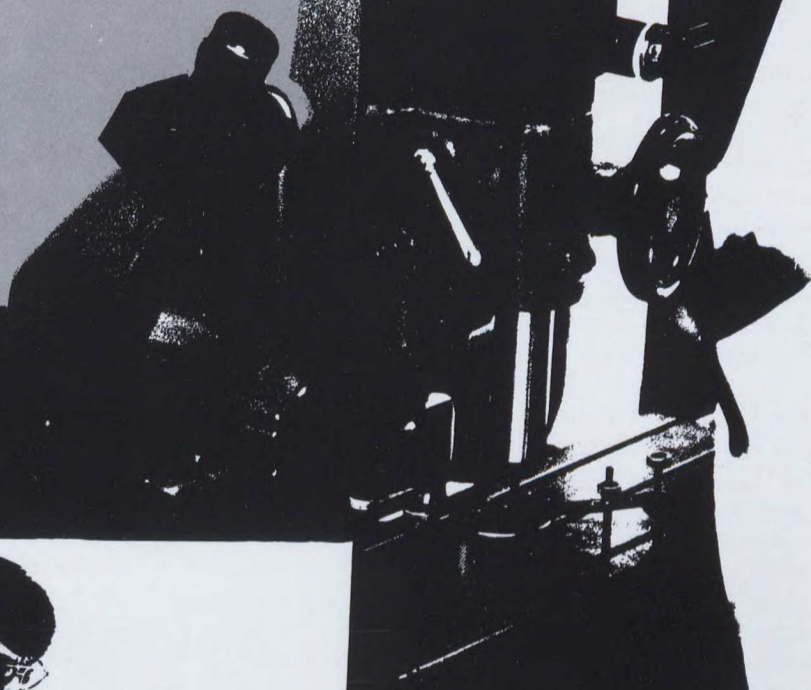
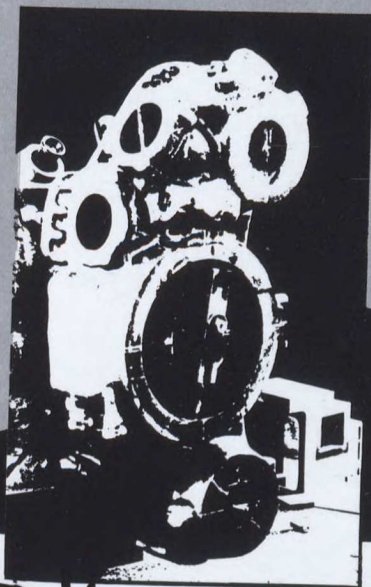
Welding/Fabrication/Consulting

- Procedures development/evaluation
- Specialized welding, machining and processing contract management and subcontracting
- Applications R & D
- Failure investigation

Product Development Services

Quantum participates in industry/government schemes for product development/improvement.

QUANTUM DEFINES QUALITY ...PRECISELY



*"...Solutions for quality logistics,
resources and resource management
...are 'on-line' with Quantum"*

Quantum^{NDT}



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PRESIDENT AND GENERAL MANAGER: John M. Stewart
DIRECTOR OF MARKETING: Graham R. Beaumont
OTTAWA OFFICE/GOVERNMENT LIAISON:
C. Gordon Kitchen

Raytheon Canada Limited designs, develops and manufactures complete air traffic control (ATC) systems, for civil and military applications, for the world market. The company is currently prime contractor to the Canadian government for radar site equipment in the Radar Modernization Project (RAMP), the largest ATC radar system update and expansion in the world.

The company was established in 1956 to undertake production and installation of AASR-1 ATC radars for Canada's Department of Transport in the creation of the world's first national civil ATC radar network. Between 1975 and 1978 four new ASR-803 radars were installed to provide additional coverage. The May, 1984 award of the RAMP radar contract again demonstrated the Canadian government's faith in Raytheon Canada's ability to implement large-scale programs.

As a complete ATC systems supplier, Raytheon Canada is equipped to take on assignments of national scope. The company's involvement can begin with the earliest technical evaluations and continue through to systems development and manufacture, integration of systems, installation, commissioning and complete support, including training, documentation, maintenance and spares supply.

In its role in the international marketplace, Raytheon Canada enjoys the full technical, managerial and financial support of its parent Raytheon Company, of Lexington, Massachusetts, U.S.A., a \$7-billion corporation with more than 74,000 employees.

Raytheon Canada designs, develops and manufactures a broad range of ATC equipment, including: primary surveillance radars for terminal and enroute applications; ground controlled approach radar systems (mobile and fixed base); and, navigational aids including: VORs (VHF Omni-range) in conventional and Doppler configurations; and, DMEs (Distance Measuring Equipment).

In the field of ATC radars, Raytheon Canada's expertise has been recognized for the new RAMP solid-state radar for Canada which offers enhanced reliability and ease of maintenance, compared to previous generations of equipment, and is finding rapid acceptance in international markets.

The company's Waterloo, Ontario, location is a

major advantage, giving it direct access to the University of Waterloo's Computer Sciences Department — one of the most highly regarded data processing schools in North America. The Waterloo region is also home base for centres of applied research in computer-aided design and computer-aided manufacturing, making the area a true high technology centre of excellence.

Raytheon Canada occupies approximately 130,000 square feet of office and manufacturing facilities.

The company employs more than 540 highly skilled engineers, program management professionals and manufacturing personnel. Current strategic plans call for Raytheon Canada to assume a major role in the world ATC systems market and to grow to more than 2,000 employees over the next eight years.

CAPABILITIES

With a total staff in excess of 500, Raytheon Canada's capabilities span the design, development and manufacture of a range of Primary and Precision Approach Radars, Communications equipment and related mil quality products. Current programs include: the design, manufacture and installation of 43 primary and secondary radar stations across Canada to upgrade the national Air Traffic Control system (the RAMP program). The manufacture and test of the Continuous Wave Illuminators and integration of the vertical launch NATO Seasparrow missile system for the Canadian Patrol Frigate program. Development of a fast-hopping frequency synthesizer, for secure satellite communications. The manufacture of RP16 microprocessors and a range of fixed and multi-volt power supplies for a number of Raytheon Defence contracts. Concept Study for an EHF Satellite Communications system for the Department of National Defence.

INTERESTS

The development and manufacture of Precision Approach Radars, Primary Radar equipment and integrated Air Traffic Control systems including Displays and Automation Systems. Digital signal processors for surveillance and fire control radars. Satellite Earth Stations and Communications equipment for military applications. Fast-hopping frequency synthesizers. Manufacturing of mil quality hardware and systems.

Raytheon Canada Limited
400 Phillip Street
Waterloo, Ontario
Canada N2J 4K6

From the Ground Up **— a Total Air Traffic Control Systems Capability**

A leading international supplier of sophisticated air traffic control (ATC) systems, Raytheon Canada Ltd. offers a complete range of products and services for civil and military ATC requirements:

- Turnkey Project Management
- ATC Equipment, including:
 - Solid State Radars
 - Automation Systems
 - Navigation Aids (VORs and DMEs)
- Construction/Installation/Systems Integration
- Full Product Support:
 - Training
 - Logistics
 - Depot

For further information,
please contact the Director of Marketing.

The heart of one of the world's largest air traffic control systems projects — Raytheon Canada's solid state ASR-9000 L-Band primary radar. As prime contractor to the Canadian government, Raytheon Canada is developing, building and installing a 41-site radar network that will enhance radar coverage of air traffic across the country.



Raytheon



Reed Stenhouse Limited

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Reed Stenhouse Limited is the largest aviation insurance broker in Canada. Internationally, the company is part of Alexander & Alexander Services, Inc., the international insurance and reinsurance brokerage and risk management organization. In 1986, the group processed a premium volume of over \$5,000 million.

Reed Stenhouse originated from the 1968 merger of three established Canadian brokerage organizations dating back to the middle of the 19th century. One of the predecessor companies negotiated the first aviation policy issued in Canada. Since that time, Reed Stenhouse has maintained a strong and expanding interest in the aviation industry. In addition to membership in a dozen national and international aviation-related associations and organizations, Reed Stenhouse is a founding subscriber of Canada's Aviation Hall of Fame and is a non-exhibiting participant with Canadian industry at the Paris Air Show.

Reed Stenhouse personnel are specialists in the insurance of hulls, liabilities and aviation/aerospace manufacturing. The company provides a comprehensive range of insurance services for all types of aviation manufacturers, overhaulers, carriers (feeder, charter, major airlines and helicopter operators) and related suppliers and support services.

The company has access to all major insurance markets in the world including underwriters at Lloyds, where it has further enhanced its position by recently assembling a team of recognized aviation broking professionals. It is also able to draw on the world-wide resources of Alexander & Alexander in all areas, including complete service relating to placement of property and casualty insurance, advice on risk management and loss prevention, average adjusting services, claims settlement, computerized financial risk analysis, self-insurance consulting, reinsurance brokerage and employee benefit consulting.

In Canada, the company's insurance brokerage services are directly available through offices in the following 23 Canadian centers: Victoria, Vancouver, Kelowna, Prince George, Whitehorse, Edmonton, Yellowknife, Fort McMurray, Grande Prairie, Lloydminster, Calgary, Saskatoon, Regina, Winnipeg, Thunder Bay, London, Waterloo, Toronto, Ottawa, Montreal, Quebec City,

Halifax and St. John's.

Internationally, the group operates through a network of over 250 offices in 72 countries. The group employs more than 17,000 people world-wide, with many experienced aviation specialists in Canada as well as around the world. It employs the largest number of full-time staff working in aviation and aerospace-related insurance broking activities in Canada.

Services

REED STENHOUSE is able to maximize the benefits of its size, positioning and relationship with its international affiliates through a free exchange of personnel and technical expertise among all offices on an ongoing basis. New risk management concepts in aviation/aerospace insurance marketing techniques developed in one region, for example, are immediately made available to all others. Difficult insurance placements are made in the most suitable world insurance markets by those most capable, regardless of where the business originates.

Relating to its primary activity in hulls and liability and aviation/aerospace manufacturing, **REED STENHOUSE** has become particularly recognized for its technical expertise, marketing ability, reinsurance facilities, risk management, loss prevention engineering services, and employee benefits.

The company's expertise has been developed over years of experience in most aviation/aerospace insurance situations and has often provided the lead in developing new forms of coverages.

Its marketing ability has been gained through an intimate knowledge of the world's insurance markets, an essential component of successful and innovative service to clients.

Through a related insurance brokerage subsidiary, **REED STENHOUSE** has access to world-wide reinsurance markets as a source for imaginative and competitive insurance programs.

Risk management has become an increasingly important function of modern aviation and aerospace as the necessity and complexity of insurance has increased. The company's growing participation in this area includes detailed feasibility studies to analyze financial statistics relating to risk exposure and loss experience, together with relevant data which allows for the determination of the most economic retention level to be selected by a client.

The company's loss prevention engineers provide highly-technical, specialized advice on methods of risk control and the monitoring of quality control programs.

The company provides a broad range of services in the complex and growing field of employee benefits, including actuarial and benefit plan consulting and plan design, marketing, implementation, and employee communications. In addition, there is involvement in the administration of group insurance and pension plans.

REED STENHOUSE

A MEMBER OF THE **Alexander
& Alexander** GROUP



Rolls-Royce (Canada) Limited

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SENIOR VICE-PRESIDENT: Ken Lee
VICE-PRESIDENT, MARKETING: J.P. Cheffins

Rolls-Royce (Canada) Limited is one of North America's most modern aero and industrial gas turbine engine repair and overhaul centres.

The company acquired its present location adjacent to Montreal's Dorval International Airport in 1952.

Rolls-Royce (Canada) employs more than 700 people. This team of dedicated specialists is engaged in engine and component manufacture, research and development, engine overhaul and component repair using advanced repair technologies and processes which required years of experience to develop and perfect.

Each year the company provides service for over 350 corporate, airline and military aero engines. It also offers support to operators of industrial engines used in oil pumping, gas transmission and electrical generation.

Since it was established, Rolls-Royce (Canada) has handled nearly 15,000 engines of all types.

Rolls-Royce (Canada) repairs and overhauls a wide variety of Rolls-Royce engines, including:

- Tay • Industrial RB211 • RB 211 • Industrial Spey
- Dart • Industrial Avon • Spey • Industrial Olympus
- Nene

It also repairs and overhauls or completes component repair and manufacture for other makes of engines, including: General Electric CT64; Pratt and Whitney PT6; Wright R1820; Avco Lycoming AGT1500; TF41.

Rolls-Royce (Canada) offers many repair and overhaul packages, from full and partial engine overhauls to deep repair.

The repair of precision engine components is an integral part of the company's repair and overhaul services, but it is also offered as an independent service.

Comprehensive repair facilities enable Rolls-Royce (Canada) to rework and rejuvenate in-house 99 per cent of engine parts which need repairs. This ensures a high degree of quality control.

When an engine enters the plant, repair engineering teams thoroughly examine every part rejected during engine strip inspection. Instead of simply replacing a used part with a new one, they devise repair procedures which save customers money.

Rolls-Royce (Canada)'s engineers have developed over 5,000 repair applications. All these new ideas have been approved by the original equipment manufacturers and international airworthiness authorities.

Rolls-Royce (Canada) has a world product mandate for the design and manufacture of Rolls-Royce industrial engine fuel systems and lubrication consoles.

The Rolls-Royce (Canada) plant is complemented by a 65,000 square-foot warehouse which contains 80,000 parts for 14 different types of engines. To maintain a high degree of precision in parts management and to ensure that engine parts are returned to the same engine, Rolls-Royce (Canada) employs sophisticated in-plant management systems.

One such system, developed by Rolls-Royce (Canada), is Integrated Control, Production and Kitting (ICPAK). It's one of the most advanced systems of its kind in the world. This computer program contains all the repair schemes in the Rolls-Royce overhaul manuals as well as repair schemes developed by Rolls-Royce (Canada). Relative priorities are constantly adjusted for optimum queue dispatching at work stations to ensure a complete kit for engine rebuild on the scheduled date.

Rolls-Royce (Canada) is enhancing the system by introducing advanced computerized component tracking and identification using electronic bar coding for all engine components in its plant.

As part of its continuing efforts to offer customers the most up to date services available, the company has just opened a fifth test cell. This new \$11-million test facility is capable of accommodating engines producing up to 100,000 pounds of thrust and engines with afterburner capability. It provides customers with the very latest engine diagnostic and trouble shooting technology.

The goal of Rolls-Royce (Canada) is to provide its customers with dependable engines which operate longer between overhauls. This approach, combined with outstanding customer support in the plant or in the field, decreases engine operating costs and has earned Rolls-Royce (Canada) a reputation in the industry for responsiveness to customer requirements.

The Leading Edge

Rolls-Royce (Canada) is recognized as an international leader in aero engine repair and overhaul.

We provide customers with the leading edge in:

Service—Our goal is simply to provide customers with dependable engines. Engines which operate longer between overhauls. This commitment is backed by prompt customer support, in the field or at our plant.



► **Technology**—Our plant is one of the most modern in North America. It includes a recently completed fifth test cell which can test engines producing up to 100,000 pounds of thrust. Facilities like these keep us out front in quality engine testing and superior diagnostic trouble shooting.

► **Experience**—We've been in the business for 40 years. We've provided service for over 14,500 engines.

► **Quality**—We're part of the worldwide Rolls-Royce group of companies. We offer top quality service for the Rolls-Royce Tay, Spey, Dart and RB211, and for many other types of engines.

Get the leading edge in engine repair and overhaul.



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VICE-PRESIDENT, FINANCE & ADMINISTRATION: L.D. Foster
DIRECTOR OF MARKETING: D.K. McKerlie
DIRECTOR OF SALES: P.D. Marshall
DIRECTOR, OTTAWA OFFICE: D.W. Epp

Born of the University of Saskatchewan in 1965, SED was first incorporated as a private company in 1972. Strong engineering and project management capabilities combined with an entrepreneurial spirit have made SED one of Canada's leading advanced technology firms with annual sales of \$27 million and an order backlog exceeding \$40 million. As part of the Fleet Aerospace group of companies, SED has access to complementary aerospace technologies and to additional national and international markets, thus augmenting SED's capabilities and enhancing its position in the growing communications and space systems markets.

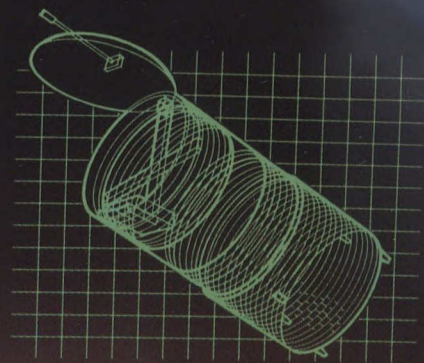
SED's leading space systems technology accrues from over 63 rocket and balloon payloads delivered to the National Research Council of Canada. Current programs include WAMDII, an imaging Michelson interferometer. Planned for ten flights aboard NASA's Space Shuttle, WAMDII utilizes SED's leading-edge optical technology. SED's mass spectrometer, SMS, is the first foreign scientific instrument scheduled to fly aboard a Japanese spacecraft, demonstrating the company's international reputation for space systems design and real-time control. And SED's GEODE, launched on a Swedish sounding rocket to manufacture infrared detector materials in the weightlessness of space, is the company's initial entry into the burgeoning micro-gravity market. SED is using its vast satellite ground systems experience as one of four companies now defining the Canadian component of Space Station. A leader in real-time control, SED will undertake major contracts extending over the next 15 years for the Canadian Ground Operations and Operations Management and Logistics Centres.

The company's international reputation in communications systems results from over 200 earth stations supplied to customers such as Telesat, Hughes Aircraft, Spar Aerospace and the Departments of Communications and Transport. SED's ground control station for the Brazilsat program firmly established the company as a world-class supplier of satellite communications systems. This success led to SED's current contract with INMARSAT for a unique in-orbit satellite test system for the next generation of its communications satellites. The company has provided a variety of

equipment for test and ground control of Anik, Intelsat and SBS. SED voice and data communications networks are installed throughout Canada. The growing demand for these networks is uniquely answered by SED's combination of systems integration experience and proprietary communications system elements (SkyswitchTM) and its new generation of low cost VSAT systems). SED is a key company in Canada's defence industry and is presently designing, integrating and testing the complete shipboard meteorological and external/internal communications systems for the Canadian Patrol Frigate program for the Department of National Defence. SED has also provided DND with the Canadian Mission Control Centre for the successful Search and Rescue Satellite program.

SED's manufacturing facilities, capable of AQAP-1 quality standards, build SED's space and communications systems. Additionally, custom manufacturing supplies build-to-print services including SED's current contract with Raytheon for 112 Radar displays for the Radar Modernization Program (RAMP) and a contract for static frequency converters built to full Mil-spec. Contracts like these help assure SED's on-going development of leading capabilities in facilities, technologies, and personnel.

Today, SED employs more than 350 people including 120 engineers, physicists and software specialists. SED's new facility, an 11,650 square metre building located in Saskatoon's Innovation Place, houses SED's complete integration, test and manufacturing facilities and includes a 4,200 square metre integration and test area, and a 125 square metre Class 10,000 clean room. The entire building is secured and access controlled. The skills of SED's specialists are supported by Computer Aided Design tools and a variety of computer systems. SED's Technical Support Department includes complete facilities for drafting, artwork and the production of quality operation and maintenance manuals and proposals. And the engineering and inspection staff of the Quality Assurance Department work to extensive QA procedures and specifications.



Twenty years of achieving the remotely possible.



When SED won the contract to design and build Brazilsat, the vital ground control station for South America's first telecommunications satellite, our Advanced Systems Engineering Division was challenged to do it in 26 months, at a fixed cost and to achieve a new standard of engineering excellence. When we launched on schedule and on budget, the challenge turned to reality.

Over a year later, both the SED produced equipment and software, and the SED trained Brazilian operating team have continued to provide flawless performance, winning respect for both SED and Canada.

Today, our Advanced Systems Engineering Division has earned SED an international reputation for its engineering excellence in communications system design, sophisticated space science instruments, remote sensing systems and real-time processes. Our strengths are in design capability, innovative engineering and manufacturing. This is why international customers as diverse as Hughes Aircraft, Raytheon, Inmarsat, Spar Aerospace, Telesat, the National Research Council of Canada, and the Canadian Departments of Communications, Defense and Transport all come to SED...to achieve the remotely possible.



SED
SED Systems Inc.

Saskatoon, Saskatchewan
(306) 931-3425



Spar Aerospace Limited

Royal Bank Plaza, South Tower
P.O. Box 83
Toronto, Canada
M5J 2J2

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TELEX: 065-24240

TWX: 610-491-1503

CABLE: SPARCAL TOR

Spar Aerospace Limited is a Canadian shareholder-owned, advanced technology company. It employs more than 2,000 people, including approximately 600 engineers and technicians — one of the largest technological groups in the private sector in Canada. It serves the following aerospace markets:

SPACE

Satellites

The company is the principal supplier in Canada and a major international manufacturer of satellites and satellite subsystems for communications and surveillance markets.

Spar and its predecessor companies have contributed to the design and manufacture of 50 satellites and subsystems, including the fabrication of structures and payloads for the following Canadian and international satellites: Alouette I and II, ISIS I and II, the CTS (Hermes), SBS, Palapa B, Westar IV, G-Star, Satcom, TDRSS, and the Anik A, B and C series, as well as the prime contract for the Anik D1 and D2 satellites.

In 1986, Spar successfully completed a \$160 million prime contract to provide two satellites and a related ground control system for EMBRATEL, the Brazilian government-owned telecommunications company. *Brasilsat* is similar to Anik D, the communications satellite currently serving Canada's needs, and has the capability to carry 16,000 two-way voice communications or 24 television channels. It is the first domestic communications satellite system in Latin America.

In 1986 the company signed a \$200 million contract with Telesat Canada to supply two dual band (24 C-band channels and 20 KU-band channels) Anik E communications satellites, launch support services and associated equipment.

This next generation of Canadian-built satellites will represent the most powerful in commercial service over North America when launched in 1990. The Anik E provides extended capacity and great versatility to meet the burgeoning demand of an increasingly deregulated telecommunications market.

Surveillance technology, on earth and in space, is emerging as an important new market. In 1984, Spar received a \$14.4 million contract to design and develop radar sensing technology for the new Radarsat satellite

CHAIRMAN & CEO: Larry D. Clarke
SENIOR VICE-PRESIDENT, MARKETING AND TECHNOLOGY:

John D. MacNaughton

for the Department of Energy, Mines and Resources. This expertise will enable the company to penetrate markets in the 1990s for commercial and scientific surveillance systems capable of detecting and monitoring natural resources, shipping activities and environmental data.

In another major project, Spar completed a \$33 million contract from Hughes Aircraft Company of California to supply subsystems for five Intelsat VI satellites with options for 11 more, and has completed the initial phase of a \$14 million design and development contract from the Federal Government for a mobile communications satellite (MSAT) to improve voice and data transmission from vehicles, aircraft and ships in remote parts of Canada. In addition, Spar was awarded, in early 1987, a \$10 million contract by the Department of National Defence, to build transponders for the Search and Rescue Satellite-Allied Tracking (SARSAT) system.

Deployable Space Structures

Spar completed the development, integration and testing of the first set of solar arrays for the European Space Agency's powerful Olympus satellite in 1986. This \$50 million program expanded the company's technical capability in large deployable space structures — a technology that will be needed for advanced space projects such as the U.S. Space Station.

Astro Aerospace Corporation, Spar's California-based subsidiary, is building the longest man-made structure ever to be erected in space — a 60-meter deployable, retractable tower which will be used aboard the shuttle to study the effects of vibrations and other stresses on large structures in orbit.

REMOTE MANIPULATION

Teleoperator Systems in Space

Spar is a world leader in the design, development and manufacture of teleoperator systems of which the Remote Manipulator System (RMS) for NASA's space shuttle is the leading example.

In early 1987, Spar was awarded contracts worth \$19 million by the U.S. National Aeronautics and Space Administration (NASA) for additional work on the Remote Manipulator System, or Canadarm. Four end

effectors will be redesigned and refurbished and a fifth will be built to the same specifications. The end effector is the "hand" of the Canadarm, a snare mechanism at the end of the 15-meter manipulator that grasps payloads in space. Spar's Montreal facility will redesign and build five manipulator control interface units, which link the Canadarm to the astronauts' controls aboard the shuttle.

The next major step in Canadian participation in manned space flight is the planned commitment by the Government of Canada of some \$800 million over the next 15 years to the U.S. Space Station, a permanent operational centre some 400 kilometers above the earth.

Spar has been designated the prime contractor for the Canadian government's contribution, called the Mobile Servicing Centre (MSC) which will be used to construct and service the space station and attached payloads. The MSC design and definition work to date totals \$18 million and expands Spar's capabilities in robotics and artificial intelligence.

In June 1986, NASA selected a team including Spar to negotiate a contract leading to the construction of the Orbital Maneuvering Vehicle (OMV). The OMV is an unmanned, remotely operated propulsion vehicle that extends the range of the space shuttle in positioning spacecraft. It can also be adapted to support the Space Station project.

COMMUNICATIONS

Spar has completed more than 25 projects worldwide for satellite earth stations, subsystems and components.

Since 1984, the company has undertaken contracts valued at more than \$35 million to provide earth stations and unassembled kits to the People's Republic of China for two major domestic satellite systems. These projects involve the training of Chinese engineers and technicians by Spar and the transfer of technology. Through these contracts Spar has become the leading supplier to the Chinese satellite communications industry.

During 1986, additional international contracts were awarded to build ground-based satellite communications equipment in Zambia; Mozambique and Bangladesh. Spar's U.S. subsidiary, COMTEL, completed shipment of two Time Division Multiple Access (TDMA) systems to Indonesia and India. TDMA is a digital switching technology that improves the efficiency of private satellite networks by permitting several earth stations to share a common satellite channel. Data and voice signals are digitally separated within predetermined time slots.

Early this year Spar began work on a \$23.8 million project to build a new Intelsat A station for Liberia, one of the most modern of its kind in the world. Completion is scheduled for late 1988.

DEFENCE

Spar's Defence Systems Division is located in Toronto and Kanata. It is engaged in the field of tactical infrared surveillance from product development through manufacture to life cycle support for the Canadian and U.S. Armed Forces.

The Division develops and manufactures electro-optical products and provides its defence customers with comprehensive engineering and life cycle support.

In March 1986, the Division moved into a custom-built electro-optical facility in Weston, Ontario. There it develops, assembles, tests and supports military electro-optical systems, primarily the Infrared Search and Target Designation system, which is under development for the U.S. and Canadian navies. The \$90 million project is the largest defence-development sharing contract to be awarded between Canada and the U.S.

An infrared system for battlefield surveillance is under development in the company's Kanata facility.

The tactical infrared surveillance family of products will be further broadened by the manufacture, under licence from Martin Marietta, of the Forward Looking Infrared (FLIR) system for the Air Defence Anti-Tank System (ADATS). This is an element of a major contract to supply Low Level Air Defence (LLAD) systems to the Canadian Forces.

Other FLIR systems currently under development by Spar are undergoing flight trials on a Canadian Forces CP140 Maritime Patrol Aircraft and in a ground-based application by the U.S. Army.

AVIATION

Gear and Transmission Manufacturing

During the year, the Gears and Transmissions Division shipped more than 100 transmission kits to Sikorsky for its Blackhawk helicopters.

In 1986, General Electric Company awarded Spar contracts valued at \$28 million for follow-on production of accessory gearboxes and other components for engines that power turboshaft helicopters and turbo-prop and turbojet aircraft.

Services

In 1986, Aviation Services Division began a new program worth up to \$1 million annually for the repair and overhaul of a number of components for the NATO E3A AWACS, an aircraft that carries out long-range radar surveillance. The initial contract is for a period of five years and is expected to continue for up to 20 years.

The division is developing new business in Thailand and Singapore for overhaul of components on fixed-wing aircraft and helicopters, and has begun repair work on the CF18 variable speed constant frequency generator.



Spiece Associates Inc.

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TELEPHONE: (204) 895-7743

PRESIDENT: E.L. (Gene) Spiece

Serving the global aerospace industry since 1979, Spiece Associates provides task-oriented management and consulting services to high technology industries. Clients include governments, manufacturers of aircraft, aerospace components and equipment, and other high technology products and services in Canada, the U.S. and Europe.

Management Consulting Services

Spiece Associates offers consulting services pertaining to the marketing, operational and financial aspects of management. The firm provides a flexible approach to management consultation. It meets with the prospective client to learn of the specific problem or objective, the client's background, specific areas of concern, operational and organizational preferences, etc. On the basis of this information, a study methodology is tailored to the situation and presented to the prospective client for approval.

Feasibility Analysis Services

The company possesses the managerial, financial, technical, analytical background and practical experience required to undertake project or program evaluations and reviews. The analytical instruments used may include cost benefit analysis, financial analysis, statistical analysis, surveys and/or operational audits.

Spiece Associates has undertaken feasibility analyses for organizations in both the private and public sectors. These analyses have taken the form of cost location studies, economic feasibility studies, technical feasibility studies, project risk analyses, and the analyses of alternatives for strategic planning and for the preparation of specific business plans. Spiece Associates is capable of developing the techniques and methodology for an organization so that it can undertake its own internal analysis.

Marketing Research Services

Spiece Associates is capable of undertaking in-depth marketing research studies. Its approach is to tailor the methodology to the product and market involved and the nature of the information sought. Once these are understood a study methodology is prepared using

such techniques as mail surveys, telephone surveys, personal interviews, panels, delphi surveys, literature reviews, modelling, operations research, statistical analysis, sensitivity testing, comparative analysis of options, product selection, market forecasting, sales revenue forecasting, developing marketing strategy, etc.

Spiece Associates has undertaken marketing research studies for both private and public organizations. Studies include general aviation aircraft, helicopters, aerospace materials, thermoplastic materials, machine tools, propulsion systems, glass products, non-metallic minerals and many others.

Strategic Planning Services

Spiece Associates has undertaken strategic planning assignments in both public and private sectors. It has the experience required to establish a strategic planning process for implementation by the existing management team or assist the organization's management team with an established strategic planning process.

The company works with senior management to develop the goals and/or objectives, study the options and alternatives for each segment and/or organizational entity, taking into consideration the operating environment. It recommends specific strategies and assists in the development of performance measures that will allow senior management to monitor the progress of individual organization segments and to measure the effectiveness of the strategy.

Project Management Services

Project management is the control function required to ensure that the project is completed or objectives met on time and within budget. Project management requires a high level of both technical and managerial experience.

Spiece Associates is experienced with project management in both the public and private sectors. It has demonstrated the ability to develop plans, schedules and budgets, monitor progress, identify problems, devise solutions, achieve objectives on time and within budget and to keep the senior management well informed.

Aerospace industry services provided include:

- ☐ Project Management
- ☐ Proposal Management
- ☐ Proposal Preparation
- ☐ Strategic Planning
- ☐ Advertising and Promotion Programs
- ☐ Product Marketing Programs
- ☐ Canadian Incorporation
- ☐ Canadian Financial Assistance Programs
 - Capital Assistance Incentives
 - Research and Development Incentives
 - Market Development Incentives
 - Export Development Incentives
 - Defence Industry Incentives
- ☐ Marketing Research
- ☐ Economic, Technical and/or Marketing Feasibility Studies
- ☐ Cost Location Studies
- ☐ Marketing Strategy
- ☐ Organizational Planning
- ☐ Business Policy and Procedures
- ☐ Literature Searches
- ☐ Computerized Information Retrieval



Standard Aero Limited

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VICE-PRESIDENT, SALES & MARKETING: R.A. Carter
VICE-PRESIDENT, FINANCE & ADMINISTRATION:
R.C. Hamaberg
VICE-PRESIDENT, OPERATIONS & MATERIAL: H.E. Tackaberry
VICE-PRESIDENT, ENGINEERING & QUALITY: R.M. Herbert

Standard Aero is a wholly-owned subsidiary of Federal Industries Limited with head offices and overhaul facilities adjacent to the International Airport in Winnipeg. The Company which has an established workforce of over 800 employees, repairs and overhauls aviation engines and accessories. It also distributes aviation parts and accessories in Canada, the United States, Europe and the Far East.

A network of strategically located service centres is being developed in both the U.S. and Canada to provide engine servicing and field repairs between overhauls. Regional service centres are already in operation in Vancouver, British Columbia; Dallas, Texas; Van Nuys, California and Charlotte, North Carolina.

Standard Aero's distribution operation serves its customers with parts and products from over 100 major aviation manufacturers. Sales offices are located in most North American cities and in Europe, customer requirements are conveniently accommodated through our office in London, England.

The Company's Winnipeg plant has been expanded by 70,000 square feet to a full 270,000 square feet. This expansion has improved the flow of products through the plant for existing engine lines and the new Pratt & Whitney PT6A line.

The reciprocating engine overhaul facility provides complete overhaul capability on all Teledyne Continental and Avco Lycoming engine models plus the Pratt & Whitney R1830 radial engines.

Standard Aero entered the turbine engine field in 1960 with the overhaul of the Allison T56 engine in the Canadian Armed Forces C-130 Hercules aircraft. Since that time, Standard Aero has expanded its turbine engine overhaul capabilities to include General Electric T58, Lycoming T53 and the T55 Series, the Allison 501/T56 and 501K industrial engines, Airesearch auxiliary power units, and Allison 250 series. Standard Aero now offers the very best in PT6A turboprop overhauls and repairs at the Winnipeg facility. Regional hot section shops have been established at Dallas, Texas and Charlotte, North Carolina.

In addition to engines, Standard Aero overhauls all related fuel, oil, pneumatic and electrical systems as well as a wide range of airframe components such as wheels, brakes, actuators, valves and hydraulic com-

ponents. Most components are stocked for immediate delivery on an exchange basis.

To assist operators in avoiding costly downtime, Standard Aero owns an inventory of exchange and rental engines. Both turbine and piston models are available and ready for shipment at any time.

A critical element in Standard Aero's policy of reducing customer costs is the ability to rework engine component parts. To facilitate this, a comprehensive centre has been established which encompasses a wide range of machining, welding, coating, processing and metal spray capabilities. This centre is dedicated to the concept of cost reduction by repair and carries all internationally recognized approvals.

Field operations are supported by a modern central warehouse in Minneapolis, Minnesota and from regional warehouses strategically located to provide prompt delivery to its customers. Computerized inventory control monitors some 80,000 line items which include both new and overhauled items. All Standard Aero locations maintain a stock of parts and accessories to support local, airline, military and general aviation activity.

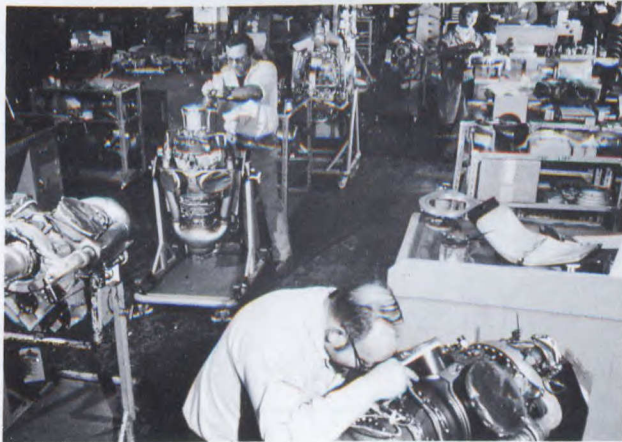
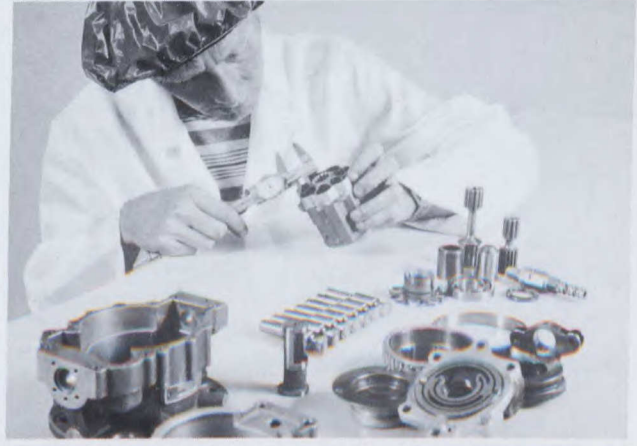
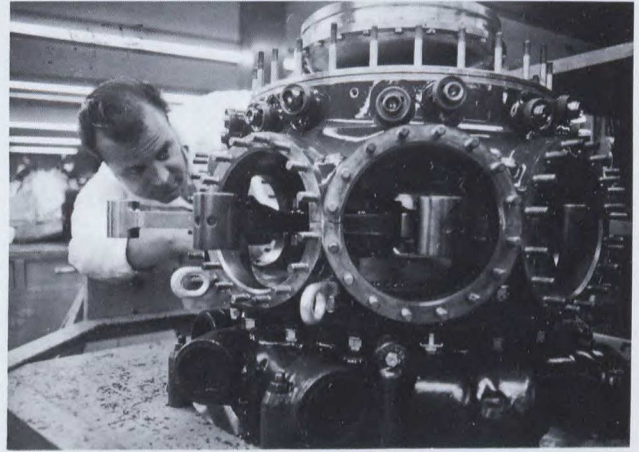
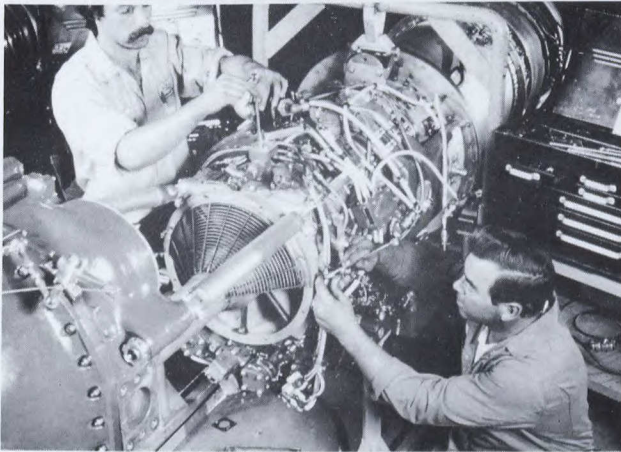
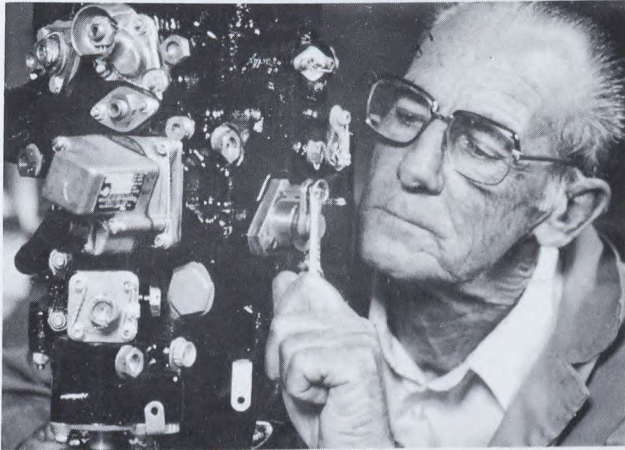
Standard Aero maintains an extensive engineering and service department to provide in-plant technical assistance to their overhaul product lines and to service customers. The service engineers who are specialists in the various types of engines assist customers in optimizing performance and carrying out scheduled maintenance. They are also on call 24 hours a day, seven days a week, to provide trouble-shooting and maintenance service at any location. Standard Aero also provides a "hospital shop" in the Winnipeg facility that allows customers the option of fast turnaround, field-type repairs, often at a cost lower than on-site service.

As part of a continuing effort to offer the best service available to their customers, Standard Aero has appointed a number of Authorized Service Centres throughout the world.

Locations:

Canada - Calgary • Edmonton • Fredericton • Montreal • Ottawa • Toronto • Vancouver • Winnipeg
U.S. - Anchorage • Charlotte • Dallas • Fort Lauderdale • Houston • St. Louis • Lafayette • Minneapolis • Phoenix • San Jose • Seattle • Van Nuys
International - Bellevue (Wash.) • London (U.K.)

STANDARD AERO





Thomson-CSF Systems Canada Inc.

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Shibly J. Abela
DIRECTOR, MARKETING AND SALES:
Frank T. Gilmore
DIRECTOR, INTEGRATED LOGISTICS SUPPORT:
Bernard Dumez

Thomson-CSF Systems Canada Incorporated (TCSC) is a Systems Management company incorporated in 1984 with principal offices in Ottawa. It was established to meet the needs of Canadian, North American and world markets for the management of complex programs and the delivery of technologically sophisticated systems together with their integrated logistics support.

The company's primary area of expertise is focused in defence systems and programs. It is knowledge intensive, employing a multi-disciplinary team of systems engineers and managers with extensive know-how and experience in the analysis, design, life cycle optimization, integration and support of complex military systems and in the management of defence programs.

TCSC presently operates out of a 6,500 square foot secure facility and is equipped with an approved TEMPEST facility housing equipment assigned to classified projects. Its operations are highly automated with a Micro-VAX Computer and Apollo and IBM work stations to support the engineering, managerial and administrative work. The Company has extensive knowledge, experience and capabilities, and undertakes project work in the following areas:

- Project Management
- System Analysis, Simulation and Modelling
- Systems Design and Optimization
- Systems Integration
- Software Development (Mission, Support & Tools)
- Integrated Logistics Support

The systems orientation of the company provides it with a unique ability to encompass the total scope in engineering a complete weapon system structure and in managing a complex defence project together with its management risks. TCSC has the sophisticated tools and engages in the development of the implementation plans (WBS, activity and milestone schedules, responsibility matrices, financial, contingency, support, training, etc.), in performance and progress measurement, risk and impact analysis, the establishment of project control structures and procedures, and the coordination and control of project activities.

TCSC's Integrated Logistics Support Division provides a full range of ILS services to support in-house programs and outside customers. These include ILS program management, LSA/LSAR, maintenance management, provisioning management, spares requirements, training and logistics consulting. The division uses a number of licensed and proprietary software tools including ILSA to conduct the LSAR process, CORIDA to optimize the replenishment and stockage requirement and PPCM to define the maintenance requirements for personnel and support equipment. These tools enable the ILS engineering staff to provide professional logistics support within the framework of MIL-STD-1388 1A and 2A.

The company's level of business is expected to increase to about \$4.0 million in 1987, with a staff of about 30 people of which 80% are professional systems engineers. The company has and is currently engaged in contract work with the Department of National Defence and other industries related to the combat systems of the Canadian Patrol Frigate, Canadian Submarine Acquisition Project, Space-Based Radar, New Shipborne Aircraft and the North Warning System. TCSC's assumption of contractual responsibilities in these and many other projects continues to add to the track record and reputation of this young systems company.

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DEC: Trade Mark of Digital Equipment Corporation

IBM: Trade Mark of International Business Machines

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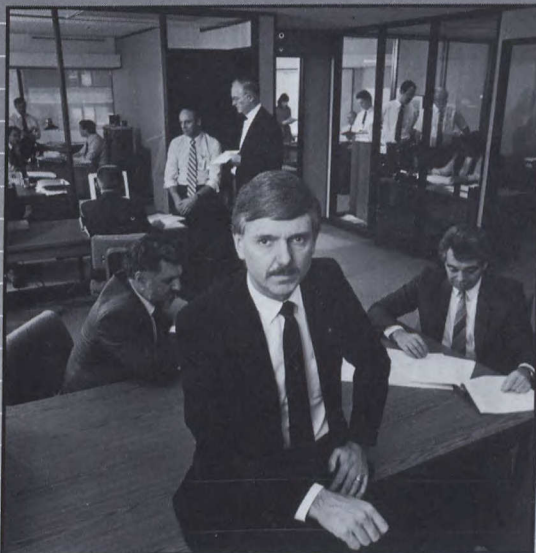
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Systems Management

**"WE HAVE THE
CAPABILITY AND
EXPERIENCE
TO DEVELOP
AND DELIVER
COMPLETE
SYSTEMS."**



Norman R.A. Smyth
President & CEO

Thompson-CSF Systems Canada is a systems management company that can provide fully-supported systems based on equipment from the best sources of supply. Our skilled team has acquired this capability through participation in many significant defence, government and industrial programs in the Canadian and international systems environment. Our experience and expertise encompasses:

- PROGRAM MANAGEMENT
- SYSTEMS ENGINEERING
- COMMAND AND CONTROL
- COMMUNICATIONS • NAVIGATION
- SENSORS • WEAPONS
- AEROSPACE • AVIONICS
- CONTROL SYSTEMS
- LAND ENGINEERING
- NAVAL ENGINEERING
- COMPUTER ENGINEERING
- SOFTWARE DEVELOPMENT
- SIMULATION/MODELING
- INTEGRATED LOGISTICS SUPPORT

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We've been there.





Vac-Aero International Inc.

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QUEBEC DIVISION:

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PRESIDENT: Ross Pritchard

VICE-PRESIDENT: Jack Hooper

SALES MANAGER: Alan Jephcott

MANAGER: Lou Gosselin

As a leader in vacuum thermal processing technology, Vac-Aero supplies a range of related products and services to the military, aerospace and electronics industries.

Manufacture of complex brazed assemblies

- Aluminum Vacuum Brazements (Fluxless)
- Production of finished parts to customer drawings and specifications.

Manufacture of cold wall vacuum furnaces

- Standard and custom models available, as well as auxiliary equipment.

Heat treatment and brazing services

- Landing gear components to 72" diameter x 84" high.
- Nickel and gold filler metal brazing of turbine engine components.
- Vacuum heat treatment of exotic alloys.

Repair and overhaul of aircraft turbine engine components

- Robotic plasma spray coating.
- Electron beam welding (EBW).
- Machining and sheet metal work.
- Vacuum and atmosphere brazing.

Recent equipment additions include 2 CNC Machining Centres and a Co-ordinate Measuring Machine, which will be devoted to the production of custom brazed assemblies.

Founded by experienced aerospace engineers in 1959 to meet the growing demand for a reliable high-quality source for heat treatment and brazing services, in 1978 the company became wholly Canadian-owned, and changed its name to Vac-Aero, thus better reflecting its involvement in the vacuum and aerospace sectors.

In keeping with its commitment to remain at the leading-edge of related technology, continuous research and development is undertaken to determine new or improved techniques, particularly in the areas of repair and overhaul, and the manufacture of brazements.

Vac-Aero works to all related Mil Specs, and holds approvals from all major North American aerospace prime contractors, as well as the Department of

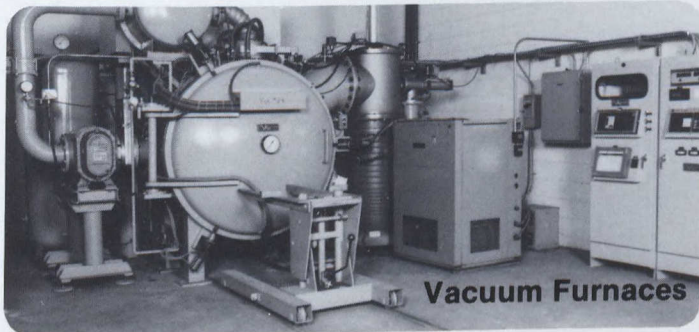
Transport (D.O.T.). These include Menasco Canada, Hughes Aircraft, McDonnell Douglas, Pratt & Whitney, Lockheed, Rolls Royce Canada, Boeing, Spar Aerospace and Litton.

With 1986 sales of over \$8.5 million, the corporation employs 107 people, including 22 engineers and technicians, and 12 quality control personnel, and operates two plants in Oakville, Ontario, and one plant in St. Laurent, Quebec.

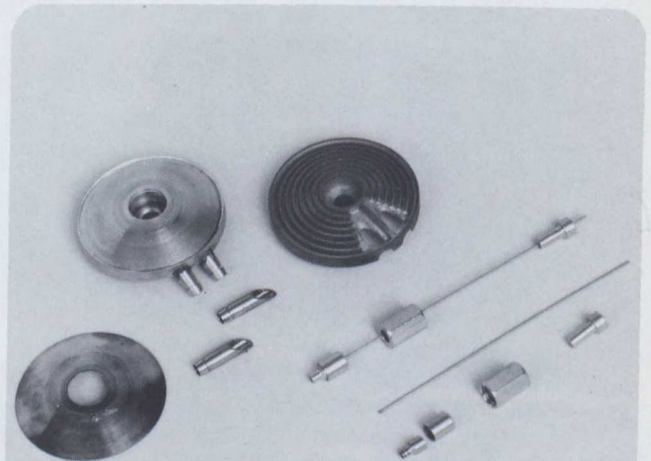
Products



**Aluminum
Cold-Wall Assemblies**
Vacuum Brazed

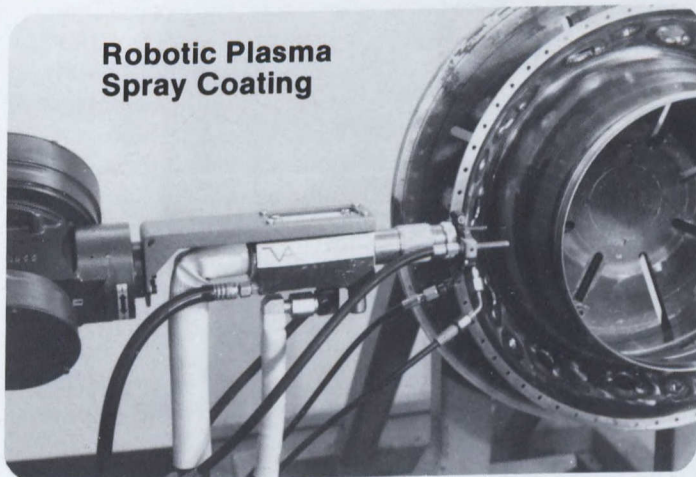


Vacuum Furnaces

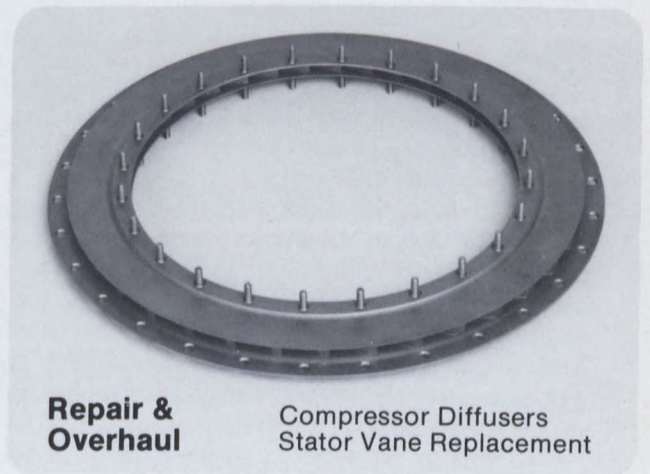


**Filter Assemblies
Heat-Exchangers**

and Services



**Robotic Plasma
Spray Coating**



**Repair &
Overhaul**

**Compressor Diffusers
Stator Vane Replacement**

Vac-Aero
International Inc.



Valcom Limited

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Guelph, Ontario N1H 6L3
TELEPHONE: (519) 824-3220
TELEX: 069-56593

PRESIDENT: Paul R. MacPherson
CHIEF ENGINEER: Donald E. Brandi
CONTRACTS MANAGER: William B. Burtenshaw

Valcom Ltd., a Canadian company founded in 1957, custom designs, manufactures and markets electronic communication systems and components. By attracting skilled radio frequency (RF), digital and software engineers, Valcom has developed the expertise to compete successfully in both the military and commercial segments of the international marketplace.

In 1972 Valcom extended its services to include a repair and overhaul facility to refurbish land tactical and shipboard communications equipment for the Canadian Department of National Defence (DND). This facility was expanded in 1980 with the signing of a contract with Atmospheric Environment Service of Canada (AES) to overhaul meteorological test equipment and sensors.

Valcom's diversification into areas which utilize the firm's assembly and engineering skills continued in 1982 when it became the Canadian licensee for Radiosonde Meteorological instruments.

Systems Engineering

Valcom's management believes that the firm's distinctive competence lies in its ability to design complex equipment that will withstand the rigors of military use for many years.

As an example, Valcom's engineers have designed one and 10-kilowatt HF coupler systems which, in combination with Valcom's whip antennas, interface efficiently with various transmitters. Valcom's 1 KW coupler system is fully automatic. It operates in the two to 30 MHz frequency range and features a non volatile amorphous memory. A military configuration of this system is now in service with the Canadian Navy. Valcom's 10 KW coupler is designed for high power transmission applications such as maritime control and ground to air stations. This system, when interfaced with a 10 KW transmitter and Valcom's 54 foot (16.5 m) whip antenna, can be controlled manually or automatically. This is the only HF automatic coupler designed to handle output power to 10 KW. Seven of these systems have been in operation in Canada since 1978, and four systems are in use in the United States and Indonesia.

Repair and Overhaul

Valcom's technicians have through ongoing training programs, developed the ability to service LF, MF, HF and VHF couplers, coupler control units, transmitter

receivers and a variety of other military equipment.

Quality Control

Valcom's quality assurance plan meets the policies and procedures of AQAP-1 specifications and US military standard MIL-Q-9858A. To ensure that the high quality standards set by customers and management are consistently achieved the quality assurance staff and the engineering department determine product quality and design and implement inspection plans.

Manufacturing

Fibreglass Manufacturing Division

In 1964 Valcom's management recognized the demand from organizations throughout the world for durable, lightweight antennas for transmitting/receiving applications and developed a line of fibreglass whip antennas which ensure mechanical strength and electrical stability in even the most severe operating conditions.

Available in sizes ranging from 29 to 85 ft. (8.8 to 26 m) these antennas operate in the 100 KHz - 30 MHz range. Having produced over 5,000 whips, Valcom has become the world's leading manufacturer of high quality MF, HF, and VHF fibreglass whip antennas. The company's expertise in antenna design and manufacture has resulted in its 35 ft. (10.6 m) AS2537C/SR whip receiving MIL-A-24319B (EC) approval from the United States Navy. The U.S. Coast Guard, and the U.S., Spanish, Greek, Australian, South Korean, Italian, Belgian, British and Canadian Navies, and many commercial organizations specify Valcom's free standing antennas for ground-to-air, ship-to-shore, and ship-to-ship applications.

Electronics Assembly Division

Valcom's electronics assembly personnel built the company's one and 10 KW coupler systems and are skilled in building a wide range of electro-mechanical and avionics equipment to customer's print.

Metal Fabricating and Production Machine Shop Division

Valcom's machine shop staff produce metal sub-assemblies on a custom basis. With a fully equipped machine shop and knowledgeable personnel, Valcom services customers whose production requirements range from several units to thousands of pieces.

LAND SEA & AIR COMMUNICATIONS EQUIPMENT

HF RECEIVERS



DIRECTIONAL FINDING ANTENNAS



1-10KW COUPLER CONTROLLER



DIGITAL LINE TESTERS



V-GUARD VHF-FM
RADIO SYSTEM



AS-2537C/SR 35-FOOT FIBREGLASS
WHIP ANTENNAS
NATO STOCK NUMBER 5985-01-191-0217



10KW COUPLER



Valcom is a privately-owned Canadian company specializing in the engineering and production of communications equipment and systems, particularly fiberglass whip antennas, coupler systems and tactical radio sets.

With its experienced RF, digital and software engineers, Valcom has entered the MF and HF jamming field using its antenna coupler systems.

The company is recognized by the Canadian Department of National Defence and NATO countries both as a supplier of communications systems hardware and software and as a repair and overhaul facility.

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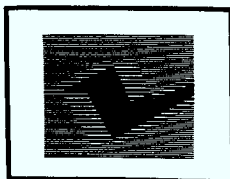
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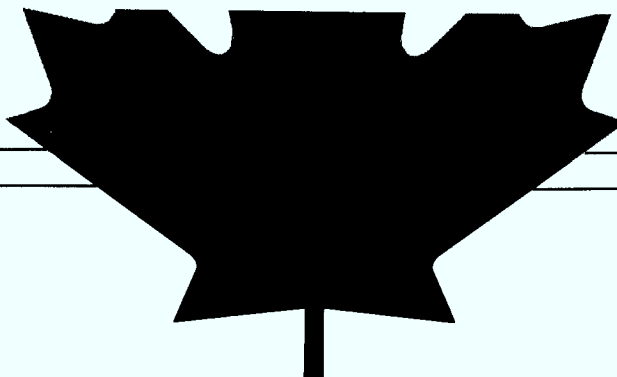
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