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Spar Aerospace Limited

Annual Report 1987

Corporate Profile

Spar Aerospace Limited is a Canadian shareholder-owned company engaged in the design, development, manufacture and servicing of systems for the space, remote manipulation, communications, defence electro-optics and aviation markets.

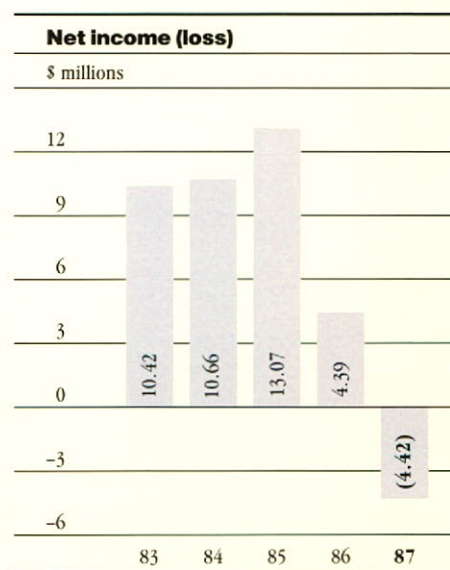
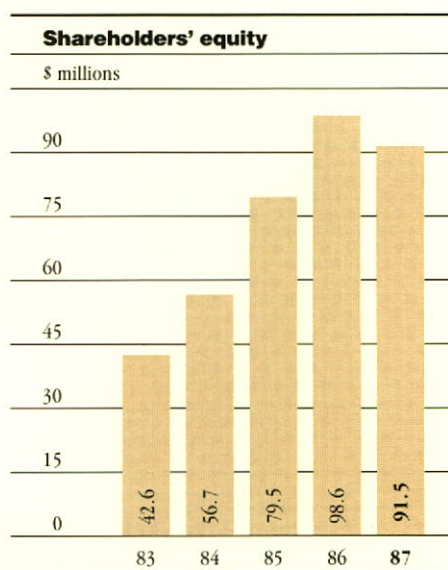
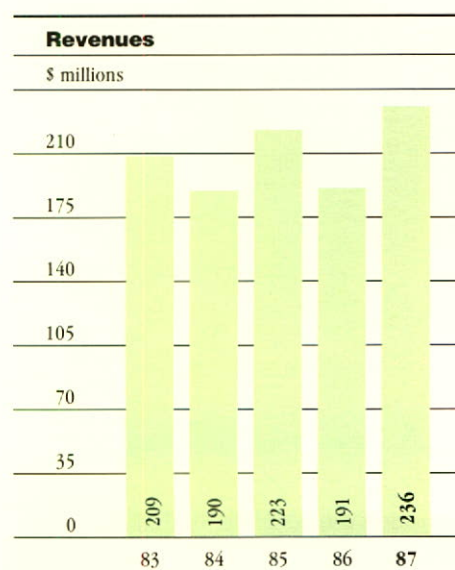
The company employs over 2,000 people, including about 600 engineers and technicians – one of the largest technological groups in the private sector in Canada.

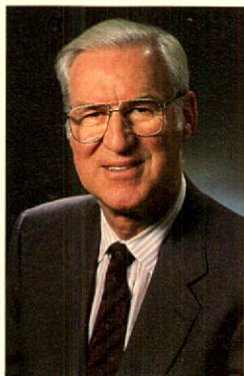
In 20 years Spar has gained international recognition as a diversified technology company. Approximately half of Spar's sales are in international markets. Spar devotes 20% of its time to research and development, including cooperative programs with several Canadian universities.

Canada marked its 25th anniversary as a space-faring nation in 1987. The poster enclosed in this annual report celebrates the milestone with a composite painting by the Canadian artist Paul Fjeld, commissioned by the Ministry of State for Science and Technology. Spar and its predecessor companies had a hand in all of the spacecraft depicted. The record reveals a strong suit in space communications, which has largely made Canada's 10 million square kilometers immune to distance, while the Canadarm reflects our integral role in the manned space program. It is interesting to note that our first satellite – the Alouette – had to be tested for space use in the United States. This year Spar is testing, at Ottawa's David Florida Laboratory, the largest satellite ever built by the European Space Agency – the Olympus. The satellite, as large as a delivery van, highlights the significant strides Canada has made in a quarter of a century of space activity.

Financial Highlights

(\$000s)	1987	1986	1
Revenues	\$236,121	\$191,018	
Income before extraordinary item	5,376	4,394	
Net income (loss) for the year	(4,424)	4,394	
Working capital	32,193	48,475	
Long term debt	834	1,384	
Cash dividends on subordinate voting shares	3,894	4,845	
Shareholders' equity	91,527	98,582	
<hr/>			
(in dollars)			
Income before extraordinary item per subordinate voting share	\$0.50	\$0.42	
Net income (loss) per subordinate voting share	\$(0.41)	\$0.42	
Shareholders' equity per subordinate voting share outstanding at year end	\$8.44	\$9.16	





Larry D. Clarke

This annual report marks Spar's first twenty years as an independent Canadian-owned technology company. During this period sales have grown from \$5 million to almost \$240 million and shareholders' equity from under \$2 million to over \$90 million. Today, Spar is a world class participant in space robotics, satellite communications and military infrared equipment, as well as being the leading Canadian manufacturer of aerospace transmissions and related support services.

Spar's first twelve years were devoted to building the company's engineering skills within a centralized organization, a corporate structure suitable for a period when the primary source of cash flow was the manufacturing and service operations.

By 1980 it was clear that markets for Spar's advanced technology business would become the dominant ingredient of future expansion. And so at the end of 1980 the company was reorganized into a number of market and technology related units. This change to decentralization was made to ensure that operating management became more responsive to the needs of their markets and, in particular, the dynamic technology sector. Each division was formed into an independent profit centre while certain key functions such as finance, legal and human resources were supervised from the corporate office to ensure that full advantage was taken of synergistic opportunities across the divisions. The wisdom of these actions was borne out by Spar's success in winning and managing contracts for the Brasilsat and Anik E satellites, both large and highly complex programs.

1987 Strategic Review

During 1987 management conducted an extensive strategic analysis of the business and reported the findings to the Board of Directors in November. This study concluded that Spar had evolved to the point where it would be advantageous to separate further the advanced technology and manufacturing and servicing activities into a Systems Group and a Service Group respectively. It was also determined that the company's growing organizational and financial strength warranted the broadening of its technological and market thrusts through joint ventures and acquisitions.

The review highlighted several key facets of Spar's operations. First, it is a people business. As has been said, our assets go home every night. This means that effective human resource planning is critical to the company's success. Second, Spar must develop innovative strategies for all elements of its business which focus on markets where the company has a comparative advantage. Third, Spar's organizational structure should have the flexibility to handle the uncertainties arising from the programmatic nature of its businesses. Fourth, Spar's potential as a whole is much greater than the sum of the individual units, a factor which is creating new opportunities as management learns how to take advantage of this valuable capability.

In particular, the review focussed on finding solutions to those aspects of Spar's Defence and Communica-

tions operations which have been a drain on profits. Four years ago, Spar was faced with marketing challenges in both activities. The first was to build a viable base in the defence business following the receipt of the large development contract for the AN/SAR-8 infrared naval surveillance system. The second was to position the company to take advantage of anticipated growth in markets for medium and small high-quality voice and data satellite earth terminals.

To achieve these objectives management decided to temporarily depart from Spar's established policy of limiting product development to customer specified equipment. We therefore commenced work on a line of military infrared equipment and Time Division Multiple Access (TDMA) satellite switches in advance of market requirements. As a result of this decision, the company achieved its basic objectives for both these markets, in that it now possesses competitive, state-of-the-art products. Unfortunately, Spar underestimated the costs of this approach as well as the speed at which these markets would develop.

Actions Taken

During the fourth quarter of 1987, Spar initiated a restructuring of the Defence and Communications Systems Divisions directed to improving the competitive position of both units.

The Defence Systems Division has been divided into two lines of business. The first, dealing with the newly developed infrared FLIR product line has become a separate unit in Kanata, Ontario with its own General Manager. The second, which is responsible for the important AN/SAR-8 project, will continue as an independent unit in Toronto, albeit drawing heavily on the Remote Manipulator Systems Division for engineering support and certain administrative services. These changes will enable each unit to concentrate on building its own distinctive business.

The Communications Systems Division is being merged into the Satellite and Aerospace Systems Division at Ste. Anne de Bellevue, and Comtel's operations in the United States are being reorganized.

As a result of this review and the attendant corporate restructuring the Board has concluded that it would be prudent to make a special charge to 1987 earnings of \$9.8 million. These actions will enable Spar to lower its break-even costs significantly and also respond more effectively to demands from the satellite communications market for fully integrated ground and space systems.

Results

For the year ended December 31, 1987, Spar had revenues of \$236 million compared to \$191 million in 1986. Earnings from operations before taxes and unusual and extraordinary items were \$12.276 million compared to \$8.094 million in 1986. After deducting taxes and unusual and extraordinary expenses Spar showed a loss of \$4.424 million (41¢ per share) compared with a profit of \$4.394 million (42¢ per share) in 1986.

Operating results were on plan for the year. The adverse impact of last winter's strike at our Toronto divi-

sions and losses at Comtel arising from delays in the receipt of orders for TDMA equipment were offset by gains in other divisions. Notwithstanding the write-offs charged to fiscal 1987 operations, Spar is in a strong financial position.

Total investment in research and development (R & D), including sponsored research, was \$25.7 million, up \$4.1 million or 19% from 1986. The company's expenditures on R & D for its own account were \$5.5 million compared to \$6.0 million the previous year.

Business Opportunities

In the 1986 Annual Report we discussed how Spar's drive to bolster its position as Canada's leading technology company was based on a long-term strategy of building the capability of its advanced technology business, now combined to form the Systems Group - comprising space robotics, communications and sensing satellites and defence electro-optics - and how the long lead times needed to bring major programs to fruition had adversely affected the pattern of earnings growth. Now, with several of these major programs approaching realization, it is timely to review their status.

After more than four years of negative growth, the commercial satellite business world-wide is starting to turn around. With new launch rockets and the redesigned Ariane and Space Shuttle vehicles about to come on stream the pent-up demand for satellites should shortly be released: Two recent authoritative studies have concluded that there could be at least 100 new communications satellites launched between now and 1995. Spar expects to be an important player in this international market as a supplier of satellites, earth stations and subsystems. The \$200 million Anik E project has strengthened the company's competitive position to serve this market. When completed in 1989 the Anik E will be the world's largest and most complex dual frequency domestic communications satellite and a forerunner of future space-based communications systems.

For the past decade Spar has also been engaged in the preliminary design of two new types of satellites, Mobile Satellite (MSAT) and Radarsat. MSAT, which should be authorized for production within the next two years, is the first of a line of communications satellites that will bring cellular telephone technology to communities in Canada and to trains, ships, trucks, mining and construction camps and possibly aircraft. Radarsat will offer a real-time data bank of Canada's vital natural resources as well as surveillance of our coastal and Arctic waters. Earth sensing satellites have a special "replacement" market advantage: They must be renewed every 5 years, compared to the 10-15 year life span of the new generation of communications satellites.

By year-end, major production contracts had been awarded in the U.S.A. by the National Aeronautics and Space Administration for Phase 1 of the huge long-term Space Station project. One program, a \$1.9 billion contract to a team led by McDonnell Douglas Corp., includes the design and manufacture of a "mobile transporter" by

Astro Aerospace Corporation, Spar's California subsidiary. In Canada, Spar's work on the design and definition phase of the Mobile Servicing Centre (MSC) continues. Indications are that a production contract valued at some \$500 million for this unique space robotics system will be finalized this year for completion in the nineties.

Markets for defence infrared products and systems in both ground and naval applications should be a major contributor to the expansion of Spar's technology business. Following the company's selection in 1986 as a subcontractor to provide Forward Looking Infrared (FLIR) technology for the Canadian Armed Forces' Air Defence Anti-Tank Systems (ADATS), Spar was part of a team led by Oerlikon-Buhrle and Martin Marietta Corporation which won a \$2.5 billion contract last December to supply an ADATS system to the U.S. Army. We are also engaged in advanced negotiations with customers for the new "Tiger Eye" infrared vision system. In addition, despite delays and cost increases in the development stage of the AN/SAR-8 naval infrared surveillance project, encouraging progress is being made in finalizing the test and evaluation phase of this very complex project. Production of this tactical shipboard surveillance system could generate substantial revenues for the company through the 1990's.

In last year's report we also expressed our intention to gain the maximum return on investment in Spar's helicopter and jet-engine transmission manufacturing and aircraft equipment servicing activities. This business, which now forms the nucleus of our Service Group, was particularly hard hit by the four month strike which ended in February. By year end, through strenuous and costly effort, customer deliveries were back on schedule. With this difficult period behind it, Spar can look to the Service Group returning to its traditional role of providing a stable and growing sales base as a complement to activities of the Systems Group.

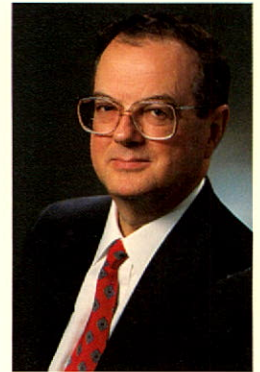
Corporate Affairs

To ensure the full participation of Canada's space industry in the Canadian Space Program, Spar in 1987 negotiated agreements with IMP Group of Halifax, CAE Electronics of Montreal, Canadian Astronautics of Ottawa, SED Systems of Saskatoon, and MacDonald, Dettwiler of Vancouver, to be "industrial associates" in the construction of the Mobile Servicing Centre (MSC). In addition to participating in the MSC program this coast-to-coast team will also work on the execution of other parts of Canada's Space Program, including the Radarsat and MSAT satellite projects.

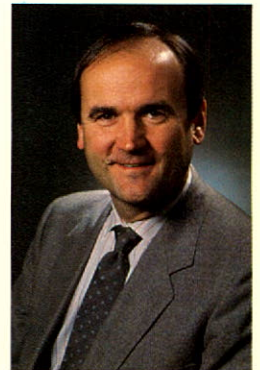
The Memorandum of Understanding (MOU) signed by the Federal Government and Spar in 1986 under which both parties undertook to invest in R & D projects over a five year period is the cornerstone of long-range technology development at Spar. In particular, the funding support provided by Ottawa will enable the company to perform the R & D needed for Spar to compete successfully in the international technology markets of the 1990's. The MOU has been a promising first step towards this goal but these markets are evolving rapidly, and it will



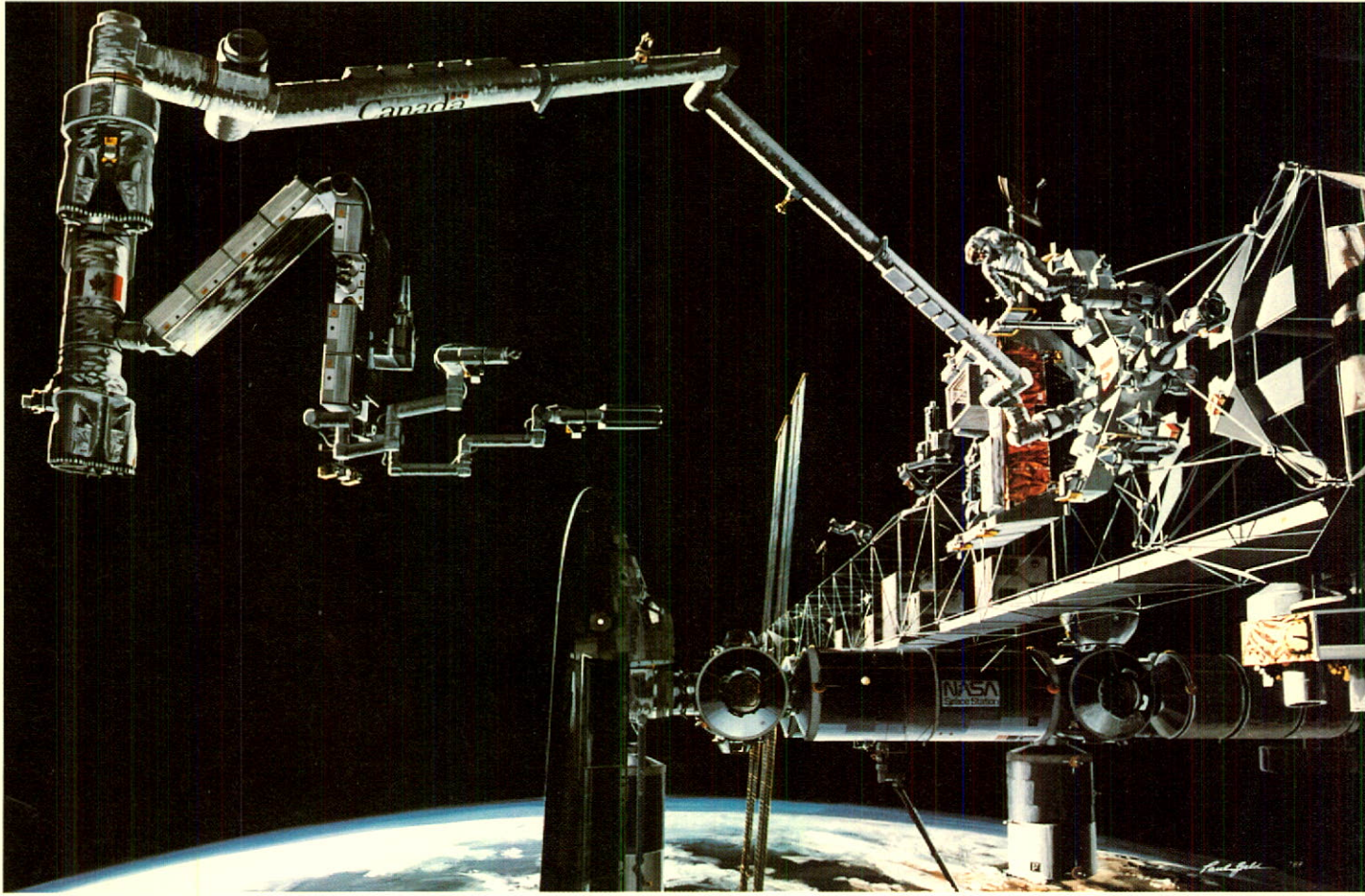
Anthony L. Anderson



John D. MacNaughton



John Neville



Noted Canadian artist, Paul Fjeld, depicts the concept of the Mobile Servicing Centre, the Canadian contribution to the International Space Station scheduled for construction in the next decade.

require a highly focussed effort by all participants if the MOU is to realize its mandate of "strengthening exports and internal economic growth".

Outlook

Spar today has an experienced management team at both the divisional and corporate levels – the culmination of a six year building program. This team has identified the specific markets that the company is best equipped to serve profitably and the necessary steps to be taken to ensure our ability to compete in these markets.

The competitive position that Spar faces is changing rapidly. The world is truly becoming a trading village. North America, Europe and Japan are no longer the sole repositories of advanced technology skills, products and services. Spar's challenge is to run its affairs in such a way that it continues to offer competitive products and services within this ever-changing environment. To do this successfully the company must undertake within its own operations only those activities where it possesses an advantage in the marketplace. This requirement will

necessitate continuous reappraisal and redefinition of all Spar's activities.

Never before in its history has Spar had the major business opportunities it faces today. We believe that the company has the expertise and resources to handle the challenges of these major programs and to generate significant increases in sales and earnings over the next three years. For 1988, management anticipates a return to profitability with higher operating profits than in 1987.

The value of Spar is essentially the value of its people skills. On behalf of the Board of Directors, I should like to thank our personnel for their efforts and also take this opportunity to express our appreciation to Spar shareholders for their support.

Larry D. Clarke

Larry D. Clarke
Chairman and Chief Executive Officer
March 3, 1988

Spar Aerospace Limited is a Canadian-owned public company engaged in the design, development, manufacture and servicing of systems and products for the space, remote manipulation, communications, defence electro-optics and aviation services markets. The company employs over 2,000 people including about 600 engineers and technicians – one of the largest technological groups in the private sector in Canada.

In twenty years of growth, Spar has gained international recognition as one of Canada's leading advanced technology companies. It has achieved financial stability by balancing the high profit potential but volatile advanced technology businesses with the steady sales base of its aviation services operations.

Space

The company is the major manufacturer of satellites in Canada and supplier of satellite subsystems for communications and surveillance markets. Spar and its predecessor companies have contributed to the design and manufacture of more than 50 satellites and subsystems for domestic and international markets, including the fabrication of structures and payloads for the Alouette, ISIS, Hermes, SBS, Palapa B, Westar IV, G-Star, Satcom, TDRSS, Brasilsat, Olympus and the ANIK series of satellites.

In 1987 work continued on the ANIK E, the third generation of Canadian communications satellites, two of which are being built for Telesat Canada. The design and engineering model phases reached the critical design review stage late in the year on schedule. This 44 channel C and Ku-band spacecraft, which is to be launched by an Ariane rocket in 1990, will be the largest, most versatile satellite in commercial service over North America.

Also in 1987, Spar's work progressed on the payload development and design of the Mobile Satellite (MSAT), while the U.S. and Canadian governments continued negotiations for assigning frequency bands for this unique concept in space-based communications. Its purpose is to provide low cost voice and data communications to transient and mobile customers in remote areas of our country. The decision of Australia to incorporate mobile transponders in the Aussat II satellite provides Spar with an opportunity to bid on the supply of hardware which will be similar to that used on MSAT.

From space, Radarsat will gather data on the earth's resources and also monitor ocean traffic through its synthetic aperture radar. Spar is the leader in establishing an international team to provide the spacecraft and user participant structure under the Radarsat Inc. name, which is to be responsible for distributing data generated by the spacecraft.

In 1987 Spar undertook with British Aerospace the final assembly, integration and testing of the European Space Agency's (ESA) largest communications satellite, the Olympus, at the Government-operated David Florida Laboratory near Ottawa. Scheduled for launch in 1989, Olympus is the biggest satellite integration program undertaken by Spar. Spar also supplied part of the communications payload as well as extendible mechanisms for the solar arrays of the Olympus.

Work on the ESA Earth Resources Measurement Satellite (ERS-1) was nearing completion by year end. The company provided a portion of the data handling subsystem. ESA approval of the ERS-2 spacecraft as a follow-on program is anticipated.

The Canadian Department of National Defence awarded Spar the contract for the third set of transponders for the Search and Rescue Satellite (Sarsat), bringing to nine the total number of subsystems supplied for this satellite. Placed aboard weather satellites launched by the United States, these monitors in space have been credited with the saving of more than 1000 lives of victims in downed aircraft and ships in distress. The Department of National Defence has also contracted with Spar for exploratory work on extra high frequency satellite communications and space-based radar surveillance programs.

Remote Manipulation Teleoperator Systems in Space

In 1987 Spar was awarded contracts valued at more than \$30 million for NASA's Shuttle Remote Manipulator System, including a new product support contract and modification to existing flight hardware. Additional proposals have been made at NASA's request which should result in additional new business being acquired during 1988.

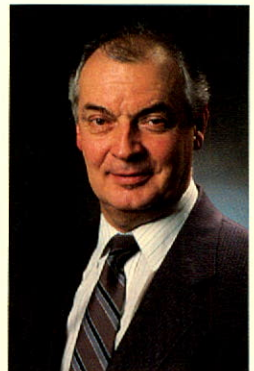
At the same time, Spar developed the docking system for NASA's Orbital Maneuvering Vehicle under contract to TRW. The work, valued at \$21 million, will continue for several years and could result



Gil A. Branchflower



William R. Fitzgerald



Eric R. Grimshaw



Melvin Waldin sets up to check dimensions of a Boeing Helicopter's SR&M gear on the new Zeiss universal coordinate measuring machine.

in follow-on orders well into the next decade.

Canada and the United States reached agreement on NASA's International Space Station in 1987. Spar's contribution to this effort is the prime contract for the Mobile Servicing Centre (MSC), which will play a major role in the construction of the Space Station. The MSC will also be available for subsequent repair and refurbishment activities. Design and development work done by Spar to date on the MSC has amounted to more than \$10 million.

Spar's subsidiary in California, Astro Aerospace Corporation, has been selected to supply the Mobile Transporter for the Space Station as part of the McDonnell Douglas team which recently won NASA's Work Package 2 for the design and construction of the Space Station. Valued at some \$40 million (U.S.) to be completed over a four-year period, this is the largest contract ever awarded to Astro. It draws on the company's extensive experience in developing space structures and innovative precision mecha-

nisms. Astro delivered the development unit of the Milstar Astromast to the Lockheed Missiles and Space Company in 1987 having successfully completed all critical program design reviews. Work has proceeded on schedule for the Hughes SAP-492 and Ford GOES Astromast programs, both of which are to be finished in 1988 at a value of \$2.1 million.

Teleoperator Systems on Earth

Spar continues to develop, for emerging terrestrial markets, the robotics technology used so successfully in space, a spin-off which benefits users in the nuclear, resource and defence markets.

In 1987 Spar delivered to Ontario Hydro a \$45-million system to remotely replace fuel tubes in Candu nuclear reactors. At the present time half of Ontario's electricity derives from nuclear power plants, which has helped ensure that the Province's electricity rates are the lowest in North America.

Spar continues to support fusion reactor research programs and has undertaken conceptual

design studies for European as well as North American projects. Both the U.S. Compact Ignition Tokamak (CIT) and International Thermonuclear Reactor (ITER) programs hold significant business potential for Spar.

A remotely controlled screening and bolting device conceived and built by Spar for INCO is designed to increase the safety and productivity of deep-earth, hardrock mining. The unit is currently undergoing tests at an INCO mine in Sudbury, Ontario.

Late in 1987, Spar and Combustion Engineering won a contract to begin joint development of a steam generator inspection robot for the United States Navy. This project is Spar's first penetration of markets for defence robotics in North America.

Communications

Spar designs, develops and markets satellite-based ground communications systems. During the year, Intelsat satellite stations were completed in Bangladesh, Zambia and Mozambique. In addition, more than 50 earth stations were delivered to Atmospheric Environmental Services (AES) of Canada for use in an airport network to provide weather information. In the digital network market, Spar delivered ten stations of the Time Division Multiple Access (TDMA) networks to Indonesia. A frequency-hopping TDMA capability was introduced to the Dow Jones Network which effectively quadrupled the network's communications carrying capacity. Spar also installed the first 120 megabit per second Intelsat TDMA station for Teleglobe Canada. Work has begun on a \$10 million contract for Raytheon Canada Limited to build equipment for the Canadian Radar Modernization Project (RAMP) scheduled for completion in 1989.

Defence

During the year, work progressed on the subsystem assembly and test phase of the AN/SAR-8, an infrared scanning device for the U.S. and Canadian Navies. This is the largest program to date under the bilateral Defence Production Sharing Agreement between the two countries.

A proposal was submitted to the Canadian Government for a long-range night observation device based on FLIR technology licensed to Spar by Honeywell Inc. We are optimistic that the next generation of land-based defensive systems for the

Canadian Forces will be using Spar equipment developed under this license. The first Air Defence Anti-Tank System (ADATS) FLIR was delivered to Martin Marietta three months ahead of schedule. Marketing efforts continue to focus on developing additional FLIR sales, including bids for equipment for the U.S. Forward Area Defence System (FAADS) which was awarded to Martin Marietta at the end of 1987.

Aviation Services

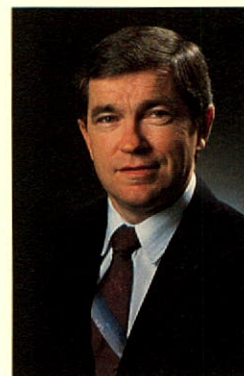
Spar is an industry leader in the production of high precision aerospace gears and transmissions. At its Toronto plant, lightweight, high-speed, high-torque power transmission systems and equipment for gas turbine engines and fixed and rotary wing aircraft are manufactured and assembled. Spar also repairs and overhauls a wide range of aircraft and helicopter components and sells aviation products and accessories.

Research and Development

R & D has played an important role in Spar's expansion and expenditures on R & D have averaged about 7% of sales over the past five years.

Artificial intelligence and robotics comprise one of Spar's major research efforts. Spar has developed an intelligent control system to handle the multiple functions of vision processing and force sensing as well as operator inputs. Company researchers have achieved a 63% weight reduction in the grapple fixture used on board the Canadarm. A special camera has been developed to automatically lock onto and track moving targets in space. A unique concept of determining range and orientation by photogrammetry which has been developed for space applications is also being evaluated for use in the defence market.

Support for the scientific academic community is a priority at Spar. In 1987 the company established the first undergraduate aerospace engineering program with École Polytechnique of Montreal. The fifteen hundred dollar John H. Chapman prize is now awarded to the best students in communications engineering at 17 Canadian universities, ranging from Memorial University in Newfoundland to the University of British Columbia.



Frank B. Driscoll



Gordon A. Epp



Ken J. Perry

Consolidated Balance Sheet


December 31, 1987


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(\$000s)	1987	1986
Assets		
Current assets:		
Marketable securities (note 3)	\$ 63,037	\$ 74,488
Accounts receivable (note 12)	62,585	74,850
Income tax recoverable	1,836	5,015
Inventories (note 4)	29,280	27,641
Prepaid expenses and other	698	1,990
Current deferred income taxes	1,436	—
Total current assets	158,872	183,984
Accrued incentive revenue	12,591	8,556
Fixed assets (notes 5, 9 and 12)	38,745	30,541
Loans receivable	955	2,096
Long term investment (note 6)	3,278	3,278
Deferred pension costs (notes 2(a) and 11)	9,401	6,178
Deferred development costs (notes 2(b) and 9)	4,085	5,853
Goodwill	—	3,905
Total Assets	\$227,927	\$244,391
Liabilities and Shareholders' Equity		
Current liabilities:		
Bank indebtedness	\$ 58,806	\$ 68,503
Accounts payable and accrued charges	50,863	38,250
Payroll and other taxes payable	6,241	5,157
Current deferred income taxes	—	1,610
Dividend payable	650	1,074
Current portion of long term debt (note 7)	574	1,034
Customer advance payments (note 4)	9,545	19,881
Total current liabilities	126,679	135,509
Long term debt (note 7)	834	1,384
Deferred income taxes	8,887	8,916
Shareholders' equity		
Share capital (note 8)	65,283	64,020
Retained earnings	26,244	34,562
Total shareholders' equity	91,527	98,582
Total Liabilities and Shareholders' Equity	\$227,927	\$244,391

(See accompanying notes to consolidated financial statements)

On behalf of the Board:


Director


Director

Spar Aerospace Limited amalgamated under the Canada Business Corporations Act.

Consolidated Statement of Income (Loss)

For the year ended December 31, 1987

(\$000s)	1987	1986
Revenues	\$236,121	\$191,018
Cost of revenues including all expenses except items shown below (note 9)	180,745	139,868
Administrative and selling expenses	29,894	29,691
Research and development costs (notes 9 and 12)	5,486	6,007
Depreciation and amortization	9,225	6,612
Interest on long term debt	239	982
Other income, net	(2,244)	(721)
Amortization of goodwill	500	485
	223,845	182,924
Income before the undernoted items	12,276	8,094
Unusual item (note 14)	3,700	—
Income before income taxes and extraordinary item	8,576	8,094
Income tax expense (note 9)	3,200	3,700
Income before extraordinary item	5,376	4,394
Provision for restructuring costs (note 15)	9,800	—
Net income (loss) for the year	\$ (4,424)	\$ 4,394
Earnings (loss) per subordinate voting share (in dollars)		
Income before extraordinary item	\$.50	\$.42
Net income (loss) for the year	\$ (.41)	\$.42

Note: The earnings per subordinate voting share before unusual item (net of tax of \$4,580,000) and extraordinary item are \$.71 (1986 - \$.42)

Consolidated Statement of Retained Earnings

For the year ended December 31, 1987

(\$000s)	1987	1986
Retained earnings, beginning of year	\$ 34,562	\$ 35,013
Net income (loss) for the year	(4,424)	4,394
Dividends on subordinate voting shares	(3,894)	(4,845)
Retained earnings, end of year	\$ 26,244	\$ 34,562

(See accompanying notes to consolidated financial statements)

Consolidated Statement of Changes in Financial Position

For the year ended December 31, 1987

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(\$000s)	1987	1986
Operating activities		
Net income (loss) for the year	\$ (4,424)	\$ 4,394
Items not affecting cash (note 13)	7,227	433
	2,803	4,827
Net increase in cash invested in working capital related to operations (note 13)	18,458	16,944
Other	(32)	193
Net cash from operating activities	21,229	21,964
Financing activities		
Issue of subordinate voting shares	1,263	19,512
Conversion of subordinated debentures to share capital	—	(14,987)
Employee share purchase plan term loans	1,141	(32)
Increase in long term debt	73	—
Long term debt repayments	(1,083)	(5,381)
Dividends	(4,318)	(4,938)
Net cash used in financing activities	(2,924)	(5,826)
Investment activities		
Additions to fixed assets	(17,499)	(9,397)
Long term investment	—	(678)
Deferred development	(2,560)	(3,447)
Purchase of technology	—	(555)
Net cash used in investment activities	(20,059)	(14,077)
Increase (decrease) in cash	(1,754)	2,061
Cash, beginning of year	5,985	3,924
Cash, end of year	\$ 4,231	\$ 5,985

"Cash" consists of marketable securities less bank indebtedness

The provision for restructuring costs in 1987 had no effect on cash.

(See accompanying notes to consolidated financial statements)

Auditors' Report

To the Shareholders of Spar Aerospace Limited:

We have examined the consolidated balance sheet of Spar Aerospace Limited as at December 31, 1987 and the consolidated statements of income (loss), retained earnings and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these consolidated financial statements present fairly the financial position of the company as at December 31, 1987 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year, except for the changes, with which we concur, in accounting policies as described in note 2.

Toronto, Canada
February 12, 1988

C. Clarkson Gordon
Chartered Accountants

Notes to Consolidated Financial Statements

December 31, 1987

(tabular amounts are in thousands of dollars)

1. Summary of accounting policies

The accompanying financial statements consolidate the accounts of the company and its subsidiaries and have been prepared by management in accordance with generally accepted accounting principles consistently applied. Because a precise determination of many assets and liabilities depends on future events, the preparation of financial statements for a period necessarily involves the use of estimates and approximations. The financial statements have, in management's opinion, been properly prepared within reasonable limits of materiality and within the framework of the accounting policies summarized below.

(a) Revenue recognition

Revenue is accrued under the percentage of completion method as the work is performed and provision is made for any anticipated losses when the estimate of total costs on a contract indicates a loss. As some contracts extend over one or more years, any revisions in cost and profit estimates made during the course of the work are reflected in the accounting period in which the facts indicating a need for the revision become known. Some contracts contain incentive and/or penalty provisions based on performance relative to established targets. Such awards or penalties are included in revenue or cost estimates when such amounts can reasonably be determined.

(b) Research and development costs

The company expenses all research and development expenditures, after deducting investment tax credits and government assistance, as incurred with the exception of certain development costs incurred prior to commencement of or during initial commercial production of new products, which are deferred.

Deferred development costs are amortized in proportion to projected revenue of related products commencing in the year of initial commercial production. Should the company determine that the unamortized balance of deferred costs is in excess of amounts that can reasonably be recovered from the benefits of future sales, such excess will be written off at that time.

(c) Inventories

Inventories of raw materials and finished goods are valued at the lower of cost, determined on a moving average basis, and market value, determined as the lesser of replacement cost and net realizable value. Contracts in process are valued at estimated sales value calculated on the percentage of completion basis.

(d) Fixed assets

Additions to fixed assets are recorded at cost after deducting investment tax credits and government assistance. Depreciation and amortization are provided on the straight-line method on a basis estimated to amortize the cost of the assets over their useful lives as follows:

Machinery and equipment	10% to 33 1/3%
Buildings	5%
Leasehold improvements	Term of the lease plus renewal option, if applicable

Fixed assets include those lease obligations which transfer substantially all of the benefits and risks associated with ownership.

(e) Goodwill

Goodwill is amortized, on a straight-line basis, over the useful lives of the related assets as estimated by management.

Goodwill at December 31, 1986 represented the unamortized price of purchased technology and was being amortized over 10 years. The unamortized balance at December 31, 1987 (after amortization for 1987) has been written off and is included in the provision for restructuring costs (see note 15).

(f) Foreign exchange

Transactions in foreign currencies are translated into Canadian dollars at the approximate rate prevailing at the time of the transactions. Assets and liabilities in foreign currencies are translated at rates prevailing at the year end. Foreign exchange gains and losses are included in income for the year, except those which relate to long term monetary items which are deferred and amortized over the term of the related asset or liability.

(g) Accrued incentive revenue

Accrued incentive revenue relates to satellite contracts and represents the non-current portion of the present value of cash payments, net of allowances for performance failures, that the company estimates it will receive.

(h) Pension costs and obligations

Current service costs under the company's pension plans are charged to operations as they accrue, based on annual actuarial valuations calculated using the accrued benefit method and management's best estimate assumptions. The valuation of pension fund assets is based on market-related values, which spread unrealized gains and losses over five years.

The excess of the value of pension fund assets over the actuarially-computed present value of accrued pension obligations as at January 1, 1987, which was in excess of amounts included in income in years prior to 1987, and any surpluses or deficits arising since that date are amortized, on a diminishing balance basis, over the expected average remaining service lives of the employee groups covered by the plans.

(i) Income taxes

The company and its subsidiary companies follow the practice of providing for income taxes based on income included in the financial statements regardless of when such income is subject to payment of taxes under the tax laws.

2. Changes in Accounting Policies

(a) Accounting for pension costs and obligations

Effective January 1, 1987 the company changed its method of accounting for pension costs and obligations, on a prospective basis, in accordance with the new recommendations of the Canadian Institute of Chartered Accountants. Under the previous method, the annual increases in the excess of pension fund assets over pension obligations were amortized over succeeding three-year periods. Current service costs were charged to operations as incurred. The application of these changes has increased income before extraordinary item and reduced the net loss for the year by approximately \$900,000 (\$.08 per share) and increased the deferred pension costs by approximately \$1,400,000.

(b) Amortization of deferred development costs

The company revised its method of amortization of deferred development costs effective January 1, 1987. Deferred costs in prior years were amortized on a straight-line basis over a five-year period commencing in the year of initial commercial production.

The amortization of such costs is now being determined in proportion to future revenue projections of related products. (See note 1(b)).

This change, from the straight-line basis, results in a more appropriate matching of these costs with related revenues. The effect of the change on the 1987 and prior years' results was not material and accordingly, prior years' results have not been restated.

12 3. Marketable securities

The company's marketable securities portfolio is carried at the lower of cost and market and consists of the following:

(\$000s)	1987		1986	
	Cost	Market	Cost	Market
Retractable preferred shares	\$ 6,046	\$ 6,000	\$ 6,046	\$ 6,015
Canadian government bonds	53,867	54,000	54,559	55,000
Corporate bonds and other	3,124	3,124	13,883	13,906
	\$63,037	\$63,124	\$74,488	\$74,921

The preferred shares are retractable at a total amount of \$6,000,000.

4. Inventories

Inventories consist of the following:

(\$000s)	1987	1986
Contract costs and related profit margins recognized to date	\$237,792	\$380,633
Less: related progress billings	215,475	360,751
	22,317	19,882
Raw materials, parts and supplies	5,914	6,921
Finished goods	1,049	838
	\$ 29,280	\$ 27,641

Customer advance payments in excess of contract costs and related profit margins of \$9,545,000 (1986 - \$19,881,000) are included in current liabilities.

5. Fixed assets

Fixed assets consist of the following:

(\$000s)	1987	1986
Cost:		
Land	\$ 400	\$ 400
Buildings and leasehold improvements	8,571	7,638
Machinery and equipment	65,831	49,606
Machinery and equipment under capital leases	2,304	2,757
	77,106	60,401
Less: accumulated depreciation and amortization	38,361	29,860
	\$ 38,745	\$ 30,541

6. Long term investment

Investment in MacDonald, Dettwiler and Associated Ltd. is carried at cost and consists of the following:

(\$000s)	1987	1986
9.75% debentures		
- convertible at a maximum price of \$1.30 per share on December 20, 1988	\$ 1,300	\$ 1,300
- redeemable under certain conditions	1,300	1,300
Common shares	678	678
	\$ 3,278	\$ 3,278

7. Long term debt

The company's long term debt consists of the following:

(\$000s)	1987	1986
Bank term loan and other	\$ 497	\$ 934
Capital lease obligations expiring from 1988 to 1990 bearing interest at 11.0% to 14.5%	911	1,484
	1,408	2,418
Less: amount included in current liabilities	(574)	(1,034)
	\$ 834	\$ 1,384

Long term debt is repayable as follows: (\$000s)

	Bank Term Loan and Other	Capital Lease Obligations	Total
1988	\$150	\$424	\$ 574
1989	150	468	618
1990	167	19	186
1991	30	—	30
	\$497	\$911	\$1,408

In April 1986 the company called its 8% convertible subordinated debentures, all of which were converted into subordinate voting shares.

8. Share Capital

A summary of changes to issued share capital for the year ended December 31, 1987 is as follows:

(\$000s)	Subordinate voting		Special		Total
	Shares	\$	Shares	\$	\$
Issued and outstanding, December 31, 1986	10,744,132	63,869	1,077,133	151	64,020
a) Issue of subordinate voting shares for cash under employee share purchase plan	54,316	1,174			1,174
b) Exercise of options for cash	28,000	89			89
c) Conversion of Special Shares to subordinate voting shares	4		(240)		
Issued & outstanding December 31, 1987	10,826,452	65,132	1,076,893	151	65,283
Authorized, December 31, 1987	Unlimited		12,000,000		

Preferred Shares and Junior Preferred Shares

Such classes of shares may be issued in one or more series with such designations, preferences, rights, privileges, restrictions and conditions attached as may be determined by the directors.

Authorized – 10,000,000 Preferred Shares and 20,000,000 Junior Preferred Shares; Issued and outstanding – none

Special Shares

The articles of the company provide that, subject to the Canada Business Corporations Act, Special Shares are:

- (i) not transferable except in certain limited circumstances;
- (ii) ranked, as to payment of dividends and repayment of capital, junior to all other existing shares of the company;
- (iii) limited as to repayment of capital to the amount paid up thereon;
- (iv) not entitled to dividends except in a year in which dividends of at least \$0.375 have been paid on the subordinate voting shares and then payable subject to prescribed limits;
- (v) entitled to 10 votes per share at a meeting of shareholders;
- (vi) only redeemable on or after June 30, 1991 at the redemption price of \$0.075 per share;
- (vii) purchasable by the company at any time;
- (viii) convertible by the holder into subordinate voting shares at any time on the basis of one subordinate voting share for 50 Special Shares.

The Special Shares carry a preemptive right entitling the holders to receive newly issued Special Shares in proportion to such shareholders' holdings of Special Shares.

On the issue of additional subordinate voting shares (except in certain circumstances) or on the issue of any security convertible into subordinate voting shares, the company is required to offer to the Special shareholders, at a specified price, sufficient additional Special Shares in proportion to their holdings of Special Shares to bring the number of Special Shares, to be outstanding thereafter, up to 10% of the number of subordinate voting shares outstanding on a fully diluted basis. Neither Special Shares nor subordinate voting shares are to be subdivided or consolidated without the other being subdivided or consolidated on the same basis.

Subordinate voting shares

Each subordinate voting share entitles the holder to:

- (i) one vote per share;
- (ii) receive dividends when declared;
- (iii) receive, on dissolution of the company, subject to the prior rights of the holders of Preferred and Junior Preferred Shares but in priority to the rights of the holders of Special Shares, the amount paid up thereon together with any declared and unpaid dividends and, after payment to the holders of Special Shares of the amount paid up on such Special Shares, to receive any declared and unpaid dividends thereon together with the remaining property of the company.

Employee stock option

At December 31, 1987, 521,130 subordinate voting shares were reserved for issuance upon the exercise of options granted to full-time employees, including 451,500 to officers of the company, at prices ranging from \$3.205 to \$24.75 per share and averaging \$20.60 per share. These options may be exercised at various periods to 1997.

In 1987, 28,000 options were exercised, 10,000 options expired and options on 75,370 subordinate voting shares were forfeited on termination of employment.

Employee share purchase plan

In each of 1985 and 1986, the company introduced a share purchase plan to qualified employees. Under each plan a qualified employee may purchase subordinate voting shares of the company having an aggregate cost to the employee of 7½% of the employee's annualized base earnings. The company provides an interest-free loan to the full amount of the employee's commitment, repayable over three years and secured by the subordinate voting shares purchased under the plan. At the end of each of these three years, the company will pay a bonus to each participant equal to 13½% of the employee's commitment to be used to purchase additional subordinate voting shares.

Employees have purchased or are committed to purchase a total of 399,400 subordinate voting shares under the 1985 and 1986 plans at \$24.19 and \$22.37 per share, respectively. At December 31, 1987, outstanding loans amounted to

\$1,034,000 (1986 - \$3,313,000), of which \$135,000 (1986 - \$1,397,000) is included in loans receivable and \$899,000 (1986 - \$1,916,000) in accounts receivable.

Shares required for future issue

At December 31, 1987, a total of 591,230 subordinate voting shares may be required for future issue as follows: 21,538 for conversion of the Special Shares, 521,130 for exercise of stock options and approximately 48,562 for participants in the 1985 and 1986 employee share purchase plans.

9. Income taxes

Investment tax credits

Investment tax credits earned in the current year on scientific research and capital expenditures have been applied to reduce the cost of the related expenditures and assets as follows:

(\$000s)	1987	1986
Fixed assets	\$ 468	\$ 300
Deferred development costs	250	200
Cost of sales	3,375	3,350
Research and development costs	825	850
	\$ 4,918	\$ 4,700

Effective income tax rate

The company's income tax provision consists of the following:

(\$000s)	1987	1986
Combined basic Canadian Federal and Provincial income tax rate	48.5 %	50.0 %
Income tax expense prior to the following (reductions) increases	\$ 4,159	\$ 4,047
- Manufacturing and processing deduction	(600)	(526)
- All other items, net	(359)	179
Income tax expense	\$ 3,200	\$ 3,700

Loss carry forwards

The company has not recognized the tax benefit of losses of prior years in the amount of \$9,000,000 in respect of foreign subsidiaries. Of these loss carry forwards, \$4,900,000 expires in 1999 and \$4,100,000 expires in 2000.

10. Commitments

The future minimum payments under operating leases are as follows:

Year	\$000s Annual rental
1988	\$1,939
1989	978
1990	730
1991	771
1992	789
	\$5,207

At December 31, 1987, the company is committed to sell \$20,500,000 U.S. dollars under forward exchange contracts at an average conversion rate of \$1.3270 Canadian and to buy \$2,250,000 U.S. dollars under forward exchange contracts at an average conversion rate of \$1.3239 Canadian. These contracts mature on various dates throughout 1988.

11. Pension and retirement plans

The company maintains several pension plans covering substantially all of its employees. Pension contributions by employees together with those made by the company are deposited with trustees according to the terms of the plans. Pensions at retirement are related to various factors including remuneration, years of service and, in the case of certain officers, the market value of the company's subordinate voting shares.

Based on the latest actuarial reports prepared as of January 1, 1987 using management's best estimate assumptions, the present value of accrued pension obligations as at December 31, 1987 was \$35,602,000 (1986 - \$32,425,000) and the market value of the fund assets available to discharge these obligations was \$50,768,000 (1986 - \$51,237,000). The amount of pension surplus as at December 31, 1986 which was in excess of amounts included in income in years prior to 1987 and any surpluses or deficits arising since that date are being amortized (on a diminishing balance basis at a rate of 25 % per annum) over eight years, which approximates the expected average remaining service lives of the employee groups covered by the plans. All past service liabilities were funded and recorded in the accounts as at December 31, 1987 and 1986 with the exception of the liability related to certain retirement plans for certain officers which is estimated to be \$1,512,000 at December 31, 1987 (1986 - \$1,667,000). This amount will be amortized over the estimated number of years to normal retirement.

The net amount credited to income before income taxes and extraordinary item in respect of all pension and retirement plans was \$1,308,000 (1986 - \$580,000).

12. Government assistance

On February 14, 1986 the Federal Government executed a Memorandum of Understanding (M.O.U.) under which the Government will share the costs of research and development and capital expenditures with the company over the period 1986 to 1991 to a maximum of \$130 million or 43.6 % of the total investment by the company.

Government assistance received and receivable from the Federal Government related to research and development activities and capital expenditures in the year totalled \$20,227,000 (1986 - \$15,573,000). This assistance normally takes the form of grants which may be repayable in the form of royalties based on future sales levels related to the projects funded, or the company's ability to meet certain investment targets as specified in the agreements. At December 31, 1987 no provision for repayment has been recorded with respect to contributions received and receivable. Amounts, if any, that may be repayable will be accounted for in the period in which conditions arise that will cause repayment.

Government assistance received and receivable at year-end has been applied to reduce the cost of the related expenditures and assets as follows:

(\$000s)	1987	1986
Fixed assets	\$ 659	\$ 2,175
Research and development costs	19,568	13,398
	\$ 20,227	\$ 15,573

13. Statement of changes in financial position

Items not affecting cash

The components of net income (loss) which did not affect cash consist of the following:

(\$000s)	1987	1986
Depreciation (including \$730 included in provision for restructuring costs)	\$ 9,327	\$ 6,216
Amortization of deferred development costs	628	396
Reduction in deferred development costs	3,700	—
Deferred income taxes	(3,075)	257
Amortization and write-off of goodwill	3,905	485
Accrued incentive revenue	(4,035)	(4,208)
Deferred pension costs	(3,223)	(2,713)
Items not affecting cash	\$ 7,227	\$ 433

Net increase (decrease) in cash invested in working capital related to operations

The net increase (decrease) in cash invested in working capital related to operations results from the following increases (decreases) in working capital components:

(\$000s)	1987	1986
Accounts receivable	\$ (12,265)	\$ 25,804
Income tax recoverable	(3,179)	717
Inventories	1,639	(20,449)
Prepaid expenses and other	(1,292)	(1,249)
Accounts payable and accrued charges	(12,613)	(5,599)
Payroll and other taxes payable	(1,084)	(1,517)
Customer advance payments	10,336	(14,651)
Net decrease in working capital related to operations	\$ (18,458)	\$ (16,944)

14. Unusual item

As a result of management's assessment of the recoverability of the company's investment in defence product development a reduction of \$3,700,000 in the carrying value of deferred development costs was recorded at December 31, 1987.

17. Industry segment information

The company's operating divisions have been grouped into two industry segments.

It is the company's policy to price internal sales or transfer values for services, generally on an equivalent basis as that used for pricing externally.

(\$000s)	Aviation and Ventures Sector		Systems Sector		Eliminations		Consolidated	
	1987	1986	1987	1986	1987	1986	1987	1986
External revenues	\$ 46,443	\$ 44,139	\$ 189,678	\$ 146,879			\$ 236,121	\$ 191,018
Intersegment revenues	4,382	975	27	—	\$ (4,409)	\$ (975)	—	—
Total revenue	\$ 50,825	\$ 45,114	\$ 189,705	\$ 146,879	\$ (4,409)	\$ (975)	\$ 236,121	\$ 191,018
Segment operating profit	\$ 3,115	\$ 1,322	\$ 17,494	\$ 15,324	\$ (1,002)	\$ (189)	\$ 19,607	\$ 16,457
General corporate expenses							(9,336)	(8,064)
Interest on long term debt							(239)	(982)
Other income, net							2,244	683
Unusual item							(3,700)	—
Income tax expense							(3,200)	(3,700)
Provision for restructuring costs							(9,800)	—
Net income (loss)							\$ (4,424)	\$ 4,394
Identifiable assets	\$ 42,559	\$ 36,083	\$ 169,324	\$ 163,886			\$ 211,883	\$ 199,969
Corporate assets							\$ 16,044	\$ 46,814
Total assets							\$ 227,927	\$ 246,783
Capital expenditures	\$ 1,315	\$ 1,411	\$ 15,643	\$ 7,737				
Depreciation and amortization	\$ 1,883	\$ 1,426	\$ 6,230	\$ 4,034				

- The company operates principally in Canada.
- The company's revenues from export markets were approximately \$108,400,000 in 1987 (1986 - \$108,500,000).
- A significant portion of the company's business is with various branches and agencies of the Canadian government and crown corporations as well as with foreign government agencies.

The Aviation and Ventures Sector includes: (i) gears and transmission systems and equipment for gas turbine engines, fixed and rotary wing aircraft and robotic applications; (ii) repair and overhaul of a wide range of commercial and military aircraft instrumentation and mechanical components and helicopter maintenance.

The Systems Sector includes: (i) satellite systems and subsystems and ground-based satellite communications systems; (ii) remote manipulator systems for space and terrestrial applications; and (iii) defence systems.

15. Provision for restructuring costs

As at December 31, 1987, the company made the following provisions relative to the planned restructuring of its Canadian and U.S. Communications Group operations and a refocusing of their product, manufacturing and market strategies. (\$000s)

Inventory marketability adjustments	\$ 425
Fixed asset write-downs	730
Provision for employment related costs	4,160
Provision for contractual obligations	3,550
Other relocation and restructuring costs	700
Goodwill write-off	3,405
Total before recovery of income taxes	\$ 12,970
Less recovery of income taxes	3,170
Provision for restructuring costs	\$ 9,800

16. Comparative figures

The comparative financial statements have been reclassified from the statements previously presented to conform to the presentation of the 1987 financial statements.

16	(\$000s)	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978
	Earnings (loss) per subordinate voting share										
	Basic										
	- income (loss) from continuing operations				\$ 1.88	\$ 1.73	\$ 1.34	\$ 0.44	\$ (0.17)		
	- income before extraordinary item	\$ 0.50			1.73						
	- net income (loss)	\$ (0.41)	0.42	1.41	1.26	1.42	1.43	0.37	(0.28)	0.31	0.53
	Fully diluted										
	- income from continuing operations				1.65	1.43	1.06	0.40*	**		
	- income before extraordinary item	\$0.50			1.52						
	- net income (loss)	(\$0.41)	0.42	1.33	1.15	1.20	1.12	0.34*	**	0.28	0.40
	Cash dividends per										
	Subordinate voting share	\$ 0.36	0.46	0.46	0.40	0.35	0.20		0.15	0.15	0.11
	Preferred share						0.54	1.08	1.08	1.08	1.06
	Deferred share									0.05	0.03
	Shareholders' equity per subordinate voting share outstanding at year end	\$ 8.44	9.16	8.16	6.45	5.33	3.85	2.58	2.20	2.28	2.40
	Revenues (1)	\$236,121	191,018	223,278	190,031	209,321	169,121	113,101	120,986	108,813	91,869
	Income (loss) from continuing operations				15,916	12,709	8,049	2,554	(375)		
	Income before extraordinary item	\$ 5,376			14,597						
	Net income (loss)	\$ (4,424)	4,394	13,070	10,661	10,423	8,580	2,167	(877)	1,605	2,184
	Capital expenditures (net of government grants and tax credits) (2)	\$ 17,499	9,397	8,660	13,738	4,788	2,525	1,678	4,155	4,567	2,851
	Long term debt (including current portion) (2)	\$ 1,408	2,418	22,786	31,381	29,796	8,256	12,198	7,000	945	710
	Shareholders' equity	\$ 91,527	98,582	79,521	56,715	42,567	25,635	17,463	15,645	14,730	13,854
	Working capital (2) and (3)	\$ 32,193	48,475	58,561	54,662	54,835	17,096	11,758	3,227	6,089	7,979
	Ratio of current assets to current liabilities (2)	1.3	1.4	1.9	2.1	2.1	1.2	1.3	1.1	1.2	1.4
	Number of employees (2)	2,122	2,089	2,221	2,172	2,041	1,902	1,895	2,100	1,900	1,670
	Number of shareholders										
	Subordinate voting	4,392	4,459	4,590	4,452	3,489	2,800	2,930	2,970	2,690	2,150
	Preferred and Special	39	39	40	42	57	64	620	675	780	744

* Does not include exercise of warrants which would be anti-dilutive.

** Fully diluted not shown as effect would decrease loss per share.

(1) Amounts reported are for continuing operations only. Years prior to 1984 have been restated to exclude discontinued operations.

(2) Amounts reported for 1984 and prior years have not been restated; such years include historical amounts for discontinued operations.

(3) The 1986 amount has been restated to conform with the presentation adopted in 1987.

Corporate Information

Directors

David R. Beatty
President
Weston Foods
George Weston Limited
(Elected director 1983)

Larry D. Clarke*
Chairman of the Board and
Chief Executive Officer
Spar Aerospace Limited
(Elected director 1967)

Camille A. Dagenais
Director
The SNC Group
(Elected director 1980)

Allan A. Hodgson†
Vice President and
Chief Financial Officer
Alcan Aluminium Limited
(Elected director 1987)

John D. Houlding†
President and
Chief Executive Officer
Polar Gas
(Elected director 1977)

Philip A. Lapp*
President
Philip A. Lapp Limited
(Elected director 1967)

Earl H. Orser†*
President and
Chief Executive Officer
London Life Insurance
Company
(Elected director 1978)

Jeffery A. Skelton
Director, Government Affairs
Alcan Aluminium Limited
(Elected director 1986)

David A.B. Steel*
Associate Counsel
Holden, Murdoch & Finlay
(Elected director 1967)

Barbara L. Steele†
Company director
(Elected director 1980)

Ihor Suchoversky
Vice President
Research & Technology
Alcan Aluminium Limited
(Elected director 1986)

Directors Emeritus

David S. Beatty
(Elected director 1969)
(Appointed Director
Emeritus 1985)

William H. Jackson
(Elected director 1967)
(Appointed Director Emeritus
1985)

Roland B. Dodwell
(Elected director 1967)
(Appointed Director
Emeritus 1986)

†Members of the
Audit Committee

*Members of the
Executive Committee

Officers

Larry D. Clarke
Chairman of the Board and
Chief Executive Officer

Earl H. Orser
Vice Chairman of the Board

Anthony L. Anderson
Senior Vice President
Finance & Administration
and Treasurer

E. Peter Birch
Vice President
Administration

Gil A. Branchflower
Vice President and
General Manager
Satellite & Aerospace
Systems Division

Peter Charlton
Vice President, Development

David C. Cleland
Vice President
and Corporate Controller

George D. Dill
Vice President

Frank B. Driscoll
Vice President and
General Manager
Defence Systems Division

Gordon A. Epp
Vice President and
General Manager
Aviation Services Division

William R. Fitzgerald
Vice President and
General Manager
Communications Group

Eric R. Grimshaw
Vice President and
General Manager
Mechanisms & Structures
Group

John D. MacNaughton
Senior Vice President
Systems Sector

Thomas G. Mathers
Vice President, Human
Resources

J. Ron McCullough
Vice President
Corporate Planning

John Neville
Senior Vice President
Aviation & Ventures Sector

Ken J. Perry
Vice President and
General Manager
Gears & Transmissions
Division

Sheldon Polansky
Vice President
Legal Counsel & Secretary

Christopher G. Trump
Vice President
Corporate Affairs

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Wholly-Owned Subsidiaries

**Spar Aerospace Holdings
(U.S.) Inc.**
1001 Jefferson St., Suite 550
Wilmington, Delaware
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**Astro Aerospace
Corporation**
6384 Via Real
Carpinteria, California
93013-2993
U.S.A.
Telephone: (805) 684-6641

**Commercial
Telecommunications
Corporation (COMTEL)**
2811 Airport Drive
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Auditors
Clarkson Gordon

Transfer Agents
The Canada Trust Company

Listed
Toronto Stock Exchange
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