

SPAR AEROSPACE LIMITED

3690 Royal Bank Plaza, South Tower
P.O. Box 83
Toronto, Ontario
Canada M5J 2J2
Tel: (416) 865-0480
Telex: 065-24240 SPARCAL

Contacts: Ron Neville, Director, Program
Development
John D. MacNaughton,
Sr. Vice-President, Marketing
and Technology

Company background. Spar Aerospace Limited commenced operations as a public company in January, 1968, following the acquisition of the Special Products and Applied Research (SPAR) Division of The de Havilland Aircraft of Canada Limited.

The company is engaged in the design, development, manufacture and servicing of systems and products for space, defence, communications, aviation and teleoperator markets. Spar employs more than 2 000 people, including about 600 engineers and technicians — one of the largest technological groups in the private sector in Canada. Sixty per cent of Spar employees are shareholders in the company.

In 17 years of growth, Spar has gained international recognition as an advanced-technology company, and has achieved financial stability by balancing the steady sales base of its gears and transmissions and aviation services operations with businesses serving the fast-growing markets of space and communications. Company revenues for 1985 were \$223 million.

Business interests. Spar's business interests are mainly concentrated in the following fields:

Communications — Spar has worked on more than 230 projects worldwide for satellite earth stations, subsystems and components.

Defence — The company's defence sector has achieved international recognition in the field of military electro-optics.

Aviation — Spar is an industry leader in the production of high-precision aerospace gears and transmissions. Spar also repairs and overhauls aircraft and helicopter components and sells aviation products and accessories.

Teleoperator systems — The Canadarm, Spar's most widely known product, deploys payload from NASA's Space Shuttle. Spar is the world leader in the design development and manufacture of "man in the loop" remote manipulator systems.

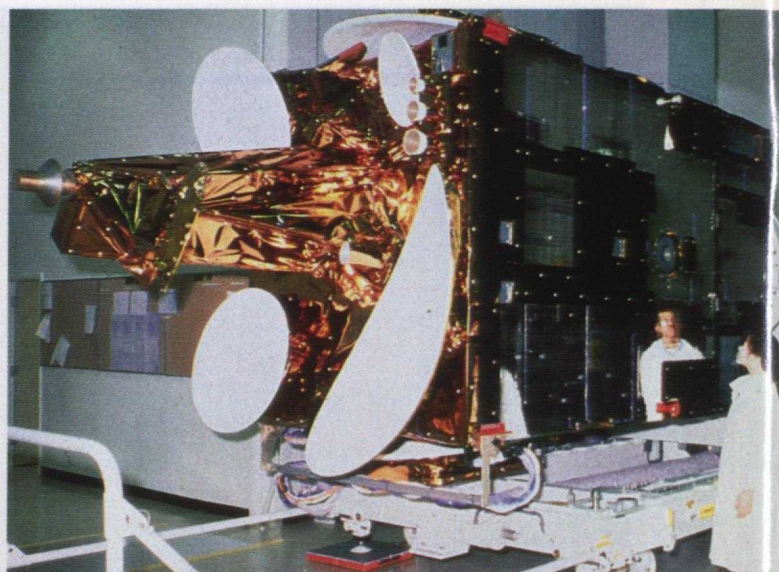
Activities in space. Spar's interests are varied and include the following areas:

Satellites and subsystems — Spar is the principal supplier in Canada and a major international manufacturer of satellites and satellite subsystems, for communications and remote sensing markets.

Spar and its predecessor companies have contributed to the design and manufacture of 50 satellites and subsystems, including the fabrication of structures, payloads and products for Canadian and international satellites including Anik-A, B, C and D for Telesat Canada; Satcom for RCA; TDRSS for TRW; Olympus for BAe/European Space Agency; and Palapa B and INTELSAT VI for Hughes.

In 1982, Spar was awarded a US \$125 million prime contract to provide two satellites and a related ground control system for EMBRATEL, the Brazilian government-owned telecommunications company.

Remote sensing from space — Spar has a \$14.4 million prime contract from the Department of Energy, Mines and Resources to design and develop radar sensing technology for the proposed RADARSAT satellite.



Major members of this industrial team include British Aerospace PLC, Canadian Astronautics Ltd., Canadian Marconi Company, ComDev Ltd., SED Systems Inc. and Telesat Canada. The RADARSAT satellite launch is planned for the early 1990s.

Spar has a long history of contributing to the European Space Agency's remote sensing programs. Spar participated in the Remote Sensing Preparatory Program in technology developments for radar altimeter and data link modems and antenna. Spar is supplying the transmission subsystem for the ERS-1 program.

Research and development — Research and development has played an important role in Spar's growth, and expenditures on R&D have averaged approximately 13 per cent of sales over the past five years. Almost one-quarter of Spar's engineering staff devotes its time to R&D projects. In 1984, the company concluded a definition study for the National Research Council of Canada on potential Canadian involvement in the U.S. Space Station.

Spar has worked on more than 230 projects worldwide for satellites and satellite subsystems, for communications and remote sensing markets.

Support for basic research is important to the success of an advanced technology company. Spar's major effort is an advanced research program in artificial intelligence and robotics, undertaken in early 1984, with an initial three-year grant of \$750 000 to the Canadian Institute for Advanced Research to sponsor research at three Canadian universities. The company has seconded four of its most experienced engineers to work with the institute's researchers on this important project. Spar is co-sponsor of an antenna engineering professorship for a five-year period at McMaster University in Hamilton in an effort to help alleviate a critical national shortage in this specialized field of engineering, and provides engineering design courses at the University of Toronto and at McGill University in Montreal.