

In sixteen years of growth, Spar has gained international recognition as a diversified 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. Spar's areas of expertise are outlined below:

- *Space* – Spar's facility in Ste-Anne-de-Bellevue near Montreal is the principal supplier in Canada and a major international manufacturer of satellite communications systems, including satellites and satellite subsystems.

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 all the Canadian and many international satellites. The company's contract from Telesat Canada in 1979 to supply two 24-channel *Anik D* communications satellites was the first such prime contract to be granted to a Canadian company. *Anik D1* was successfully launched in August 1982 and *Anik D2* is scheduled for launching in 1984.

In 1982, Spar was awarded a prime contract to provide two satellites and a related ground control system for EMBRATEL, the Brazilian government-owned telecommunications company. The project known as Sistema Brasileiro de Telecomunicacoes por Satellite (SBTS) is scheduled to be completed in 1985. This is the largest satellite contract won by Spar and will be the first domestic communications satellite system in Latin America. In addition, Spar is working on the following major communications satellite projects – Intelsat VI; G-STAR; Olympus; and MSAT.

A major project being completed at Spar is the production of the Remote Manipulator Systems (RMSs) for the US Space Transportation System. This contract awarded in 1979 calls for the delivery of three systems to the National Aeronautics and Space Administration (NASA) through 1984. Canadarm, the original RMS, was successfully tested for the first time on the Space Shuttle "Columbia" in November 1981 and continues to perform flawlessly on space flights. It was produced in Canada under the agreement between the National Research Council of Canada (NRCC) and NASA. Spar was the prime contractor to NRCC for the design, development and manufacture of this flight system.

Since 1980, Spar has been working on a contract from Ontario Hydro to design a remote manipulator and control system to replace and repair fuel tubes in nuclear reactors. In addition, Spar, Ontario Hydro and the Canadian Fusion Fuels Technology Program are engaged in the concept definition stage of a project to apply remote manipulator technology to the Tokamak fusion reactor project in Princeton, NJ.

Spar's subsidiary Astro Research Corporation, designs and develops lightweight deployable structures for space and ground applications. These include the patented STEM antenna product line and Astromast deployable structures used in many spacecraft to deploy antennas, experiments and solar arrays.

- *Communications* – Spar designs and manufactures satellite earth stations and related projects. The development of its newest product – the Time Division Multiple Access/Digital Speech Interpolation (TDMA/DSI) equipment was largely completed during 1983 and the first terminal will be delivered to Teleglobe Canada in 1984. The system is now being offered in international markets.

SPARCOM, the company's low cost telephony satellite earth terminal developed in conjunction with the Department of Communications, offers unique advantages to users in remote locations and in private networks. The company is working on a SPARCOM and FM-SCPC program with Maritime Telegraph and Telephone and Newfoundland Telephone to improve communications with oil rigs operating off the east coast of Canada.

Spar has signed a multi-year joint development and technology transfer program with the People's Republic of China.

- *Defense* – Spar develops electro-optical defense products, builds electronic assemblies for satellites, and manufactures combat equipment for the Canadian Armed Forces. It also provides technical support to the Forces, particularly systems engineering. Facilities include a manufacturing plant, optical, electronics and systems laboratories, and a dedicated computer for developing military software and the real-time processing and display of complex optical data.

Spar is a leader in the field of remote heat sensing technology, having worked for 16 years to develop the unique AN/SAR 8 infrared surveillance system for the passive detection of ships, missiles and aircraft for defense and navigation purposes. Following successful trials of the system by the Canadian and US Navies, a project agreement was signed by the two governments in 1983 to undertake, on a joint basis, the final development of this equipment.

Spar has been selected by Hollandse Signaalapparaten B.V., the Netherlands, to manufacture and support fire control or other equipment that may be selected for the new Canadian Patrol Frigate.

- *Gears and Transmissions* – Spar is an industry leader in the production of high precision aerospace gears and transmissions. The company manufactures and assembles lightweight, high-speed, high-torque power transmission systems and equipment for gas turbine engines and fixed and rotary wing aircraft. This facility also manufactures, assembles and tests the joints of the RMS.

In 1982, Spar signed an initial contract with Sikorsky Aircraft to produce the main, intermediate and tail gearboxes for the Sikorsky H-60 series helicopter. Under this agreement, Sikorsky has options to purchase additional hardware which, if fully exercised, will provide Spar with more than a dozen years of gear production. As well, the company manufactures the tail rotor, intermediate gearboxes and main rotor shafts for the Sikorsky S-76 commercial helicopter.

In 1983, General Electric Company awarded Spar six contracts for follow-on production of accessory gearboxes and other components for engines that power turboshaft helicopters and turboprop and turbojet aircraft. Spar produces accessory gearboxes for General Electric's J85-21 turbojet engine (used in the F-5E/F aircraft), the T700 turboshaft engine (used in the Black Hawk, Sea Hawk, Advanced Attack, and Bell 214ST helicopters), and the CT7 turboprop engine variants. Engine gearboxes are supplied for General Electric's new J79-17X engine development program, the CF6-80 commercial transport engine and for the CFM56 turbofan engine, a joint project of General Electric and SNECMA of France. Gearbox components are also manufactured for Avco Lycoming's T53, T55, and ALF 502 engines.

The company fabricates the transmission and components for the Boeing Vertol CH-46 helicopter, transmission gears for the Westland Lynx helicopter (UK) and gear box components for the Puma helicopter made by Aerospatiale of France.

- *Aviation* – Spar repairs and services aircraft components, sells aviation products and accessories, and overhauls helicopters.

Services cover engine and flight instruments; components of electrical, oxygen, navigational and autopilot systems; constant speed drives; accessory gearboxes; and components for flight control and heating systems. Customers are military and commercial operators in Canada, the US, Mexico, and Central and South America. A large part of Spar's business is with 17 aircraft equipment manufacturers in North America and Europe, which have appointed the company as a Canadian warranty and service station for their products.