

in the world capable of simulating launch conditions and space environments on satellites up to 4 500 kg, the laboratory provides a vital service for domestic industries as well as foreign agencies. It played a critical role in the success of the Canadarm, Sweden's Viking, and the SARSAT search-and-rescue satellite developed jointly by Canada, the United States and France. Currently, the European Space Agency's largest and most complex satellite, the Olympus, is undergoing tests at the facility.

### Earth Stations

Numerically, the largest segment of the Canadian space industry is devoted to satellite earth stations and related systems. Canada's excellence in this area is reflected in the worldwide use of its products. SED has supplied over 200 earth stations to customers including Telesat, Hughes Aircraft, and EMBRATEL, the Brazilian government-owned telecommunications company. Spar has worked on more than 230 earth stations,

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subsystems and components in 23 countries around the world.

MacDonald Dettwiler and Associates, recognized throughout the world as a leading supplier of ground receiving and processing systems for remote sensing satellites, has served as prime contractor or major subcontractor for 15 of the world's 16 LANDSAT earth stations. (LANDSAT is a series of earth resources, remote sensing satellites launched by the United States.) And virtually every earth station manufacturer outside Japan and the communist bloc uses microwave components produced by COM DEV.

### Remote Sensing

The fastest-growing space industry in Canada is in the field of remote sensing. It is estimated that annual sales figures doubled between 1985 and 1987, with the export of services accounting for about 60 per cent of total revenues.

The challenge of managing Canada's extensive resources and monitoring environmental changes over its vast land mass led to an early commitment to develop satellite imagery capabilities. As only the second country to build earth stations for the reception of LANDSAT data,

Canada also designed and manufactured new systems that provide unprecedented information for agriculture, geological mapping and terrain analysis.

Today there are more than 30 Canadian companies recognized as world leaders in developing and manufacturing remote sensing equipment. Since the development of satellite observations, Canada has been at the forefront in technologies for satellite data ground stations, sensors, data processing and image analysis.

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As a leader in forest industries, Canada accounts for more than two-thirds of the world's trade in forest products. The country has successfully applied its space technology to this important national industry. New techniques in remote sensing have helped to monitor forests more effectively, and Canada now makes the domestically developed technologies available to forestry managers in more than 60 countries.

Experience with remote sensing in other areas such as agriculture, monitoring of inland and coastal waters, ice reconnaissance, land-use and fishing activities, as well as flood warning and oil and mineral exploration are providing Canada with further expertise. Canadian remote sensing systems are today finding applications in more than 100 countries.

The expected launch of the RADARSAT satellite in 1994 should further enhance Canada's remote sensing capabilities and increase its economic competitiveness.

Equipped with a new synthetic aperture radar (SAR) system able to penetrate cloud and darkness, RADARSAT could map the entire globe every seven days.

### International Co-operation

An essential and vital feature of the Canadian space program is its spirit of international co-operation. Since the decision to pursue a course in space, Canada has joined in numerous partnerships with other nations, sharing the benefits of its space technology and providing expertise and valuable information to other countries.

Canada has enjoyed a long-standing partnership not only with the United States, but also with France, Japan, the Soviet Union, Sweden, Australia, the United Kingdom, West Germany, Brazil and China. And as the European Space Agency's only non-European associate, Canada is active in several of the agency's projects.

Canada also continues to promote the mutual benefit of international co-operation in space through its extensive consulting services. Adapting Canadian expertise and experience to local needs and conditions, Canadian firms have advised governments and private companies in countries from Switzerland and Australia, to Barbados and China.

A roster of such companies includes Canadian Astronautics Limited, COM DEV, SED, Telesat, MacDonald Dettwiler, and Spar. They provide services in virtually every area of space technology and applications — from the design of remote sensing programs, staff training in systems operations, and feasibility studies, to the design and construction of complete satellite networks and their integration with terrestrial systems.



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