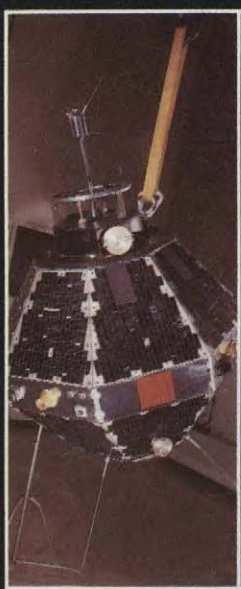
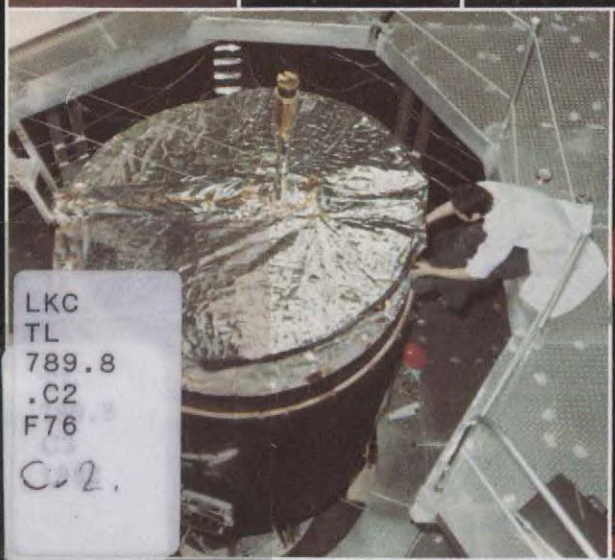
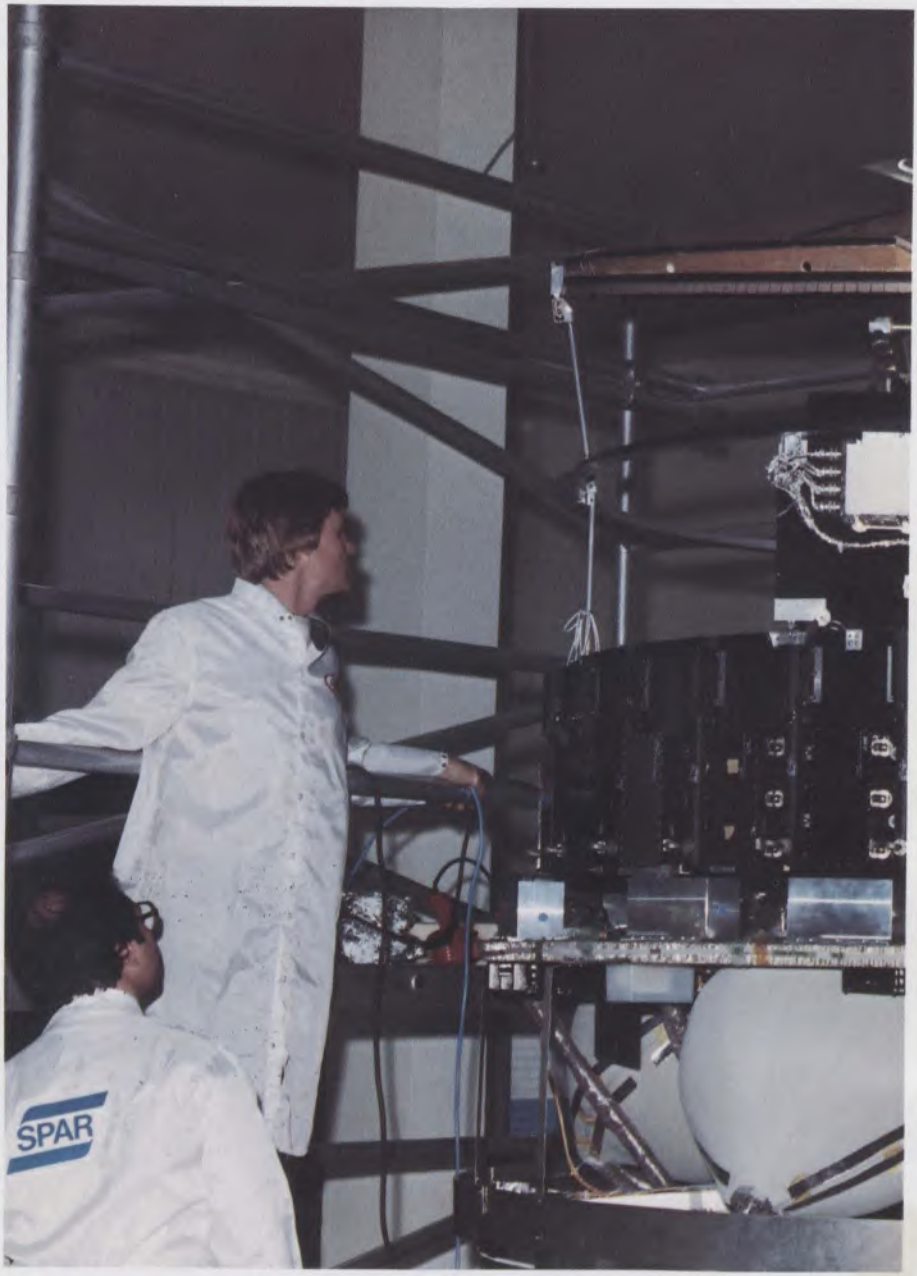
FROM ALOUETTE TO ANIK AND BEYOND

Canada celebrates its first 20 years in space






SPAR

From Alouette to Anik and beyond

Canada celebrates its first 20 years in space

Telesat Canada's Anik D-1 satellite undergoes tests at the David Florida Laboratory at Canada's Department of Communications.

September 29, 1962 – With a roar of sound and blast of heat and yellow flame, Alouette 1 surges toward space aboard a Thor-Agena rocket launched from Vandenberg Air Force Base, California. Canada becomes the first nation after the United States and USSR to enter the space age. For ten years, Alouette will explore the ionosphere and send useful scientific data to researchers in Canada and around the world.

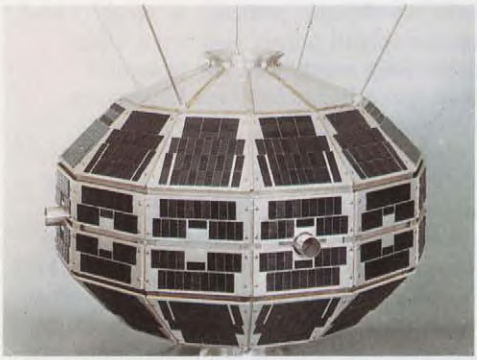
September 29, 1982 – Surrounded by the sophisticated, high technology equipment of one of the most advanced satellite testing facilities in the world, the David Florida Laboratory near Ottawa, the pioneers of the Alouette program join leading figures from the Canadian space industry and members of the Cabinet of the Government of Canada in a ceremony to officially place in operation Anik D1, Canada's most powerful commercial communications satellite to date. Launched on a Delta rocket August 26, 1982, Telesat Canada's newest Anik satellite will bring improved telephone, telecommunications and broadcasting services to the people of Canada. It may well be the last Canadian communications satellite to travel into space on its own rocket. D1's sister satellites in the Anik series will be placed gently into orbit by the US space shuttle.

Space is a unique environment – Canada, a vast land. Together, they pose unparalleled challenges to human ingenuity, and significant opportunities to improve the lives of us all.

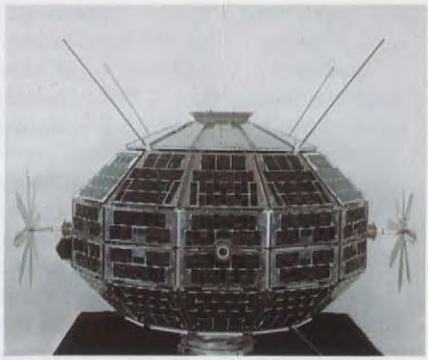
In the 20 years since the launch of Alouette 1, Canada has built a world-class space industry. During the early days of excitement and exploration, the focus was on scientific research and the development of new technologies to operate in this new environment. Next, we turned to practical applications of these technologies, building satellites to serve Canadians from coast-to-coast. Today, we are preparing for new challenges in putting space technology to work, co-operating with other nations to develop international services, and building satellite systems for sale to other countries.

The early research satellites

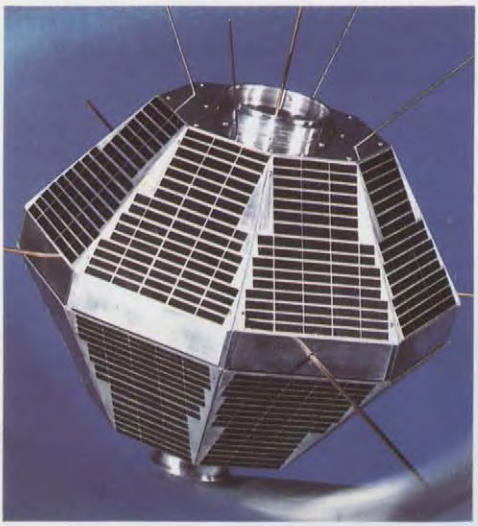
Alouette 1 set a precedent of success for Canadian satellites that has been followed throughout the Canadian space program. Alouette 2, launched in 1965, also provided useful data for a full ten years. Alouette 2 played an important part in a research program by Canada, the US and other countries into the effects of sunspot activity upon the ionosphere and communications. Under this program, Canada participated in the development of two more satellites that expanded the capabilities of Alouette 2. These were the ISIS series, or International Satellites for Ionospheric Studies. ISIS 1, launched in 1969, and ISIS 2, launched in 1971, still provide high quality atmospheric measurements.



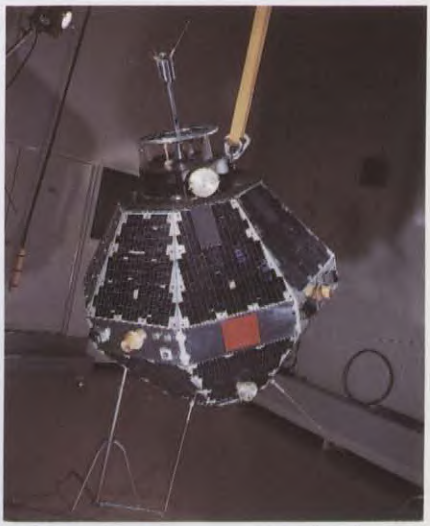
Alouette 1



Alouette 2



ISIS 1



ISIS 2

Putting space communications technology to work for Canadians

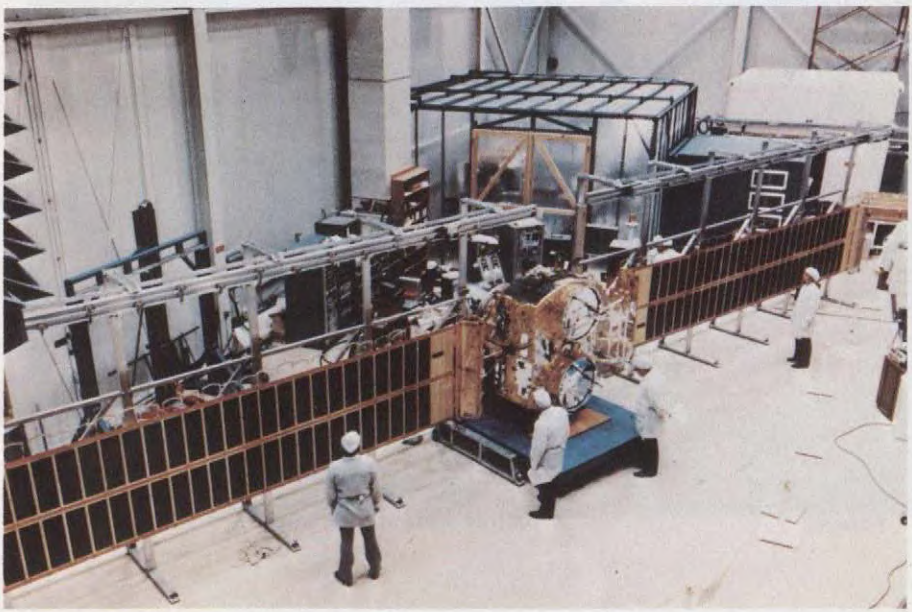
With its harsh climate, complex geography and a population spread across vast territories, Canada has long recognized the potential benefits of space technology for improving domestic communications.

To exploit this potential, Canada became the first nation in world to develop a domestic telecommunications system using a satellite in geostationary orbit. Anik A-1, launched in 1972, was placed in an orbit that allowed it to remain in the same position over earth at all times, providing reliable, continuous telecommunications services to Canadians. In 1973, Anik A-2 was launched to bring network radio, television and improved telephone services to Canadians living in the North. Anik A-3, launched in 1975, provided additional channel capacity.

Anik A, world's first domestic communications satellite to be placed in geostationary orbit.

Meanwhile, the Government of Canada continued to study new satellite technologies in order to provide better services to Canadians. To this end, Canada and the US combined their expertise to design and develop the Communications Technology Satellite, Hermes. At the time of its launch in 1976, Hermes was the world's most powerful communications satellite. It operated for four years – twice its expected lifespan – and was used for many technical and social experiments in the two countries, including trials of telemedicine, tele-education and direct broadcasting to Canada's northern, rural and remote areas. Hermes was the first satellite to operate in the 14/12 gigahertz bands. This allowed the use of smaller, less expensive ground stations and made satellite services more accessible to Canadians.

Hermes, first communications satellite to use 14/12 GHz bands during solar array deployment tests at DOC's David Florida Laboratory.



Using Anik B link, Montreal radiologist advises on x-ray of patient at LG-2 site in Northern Quebec, 1500 km away

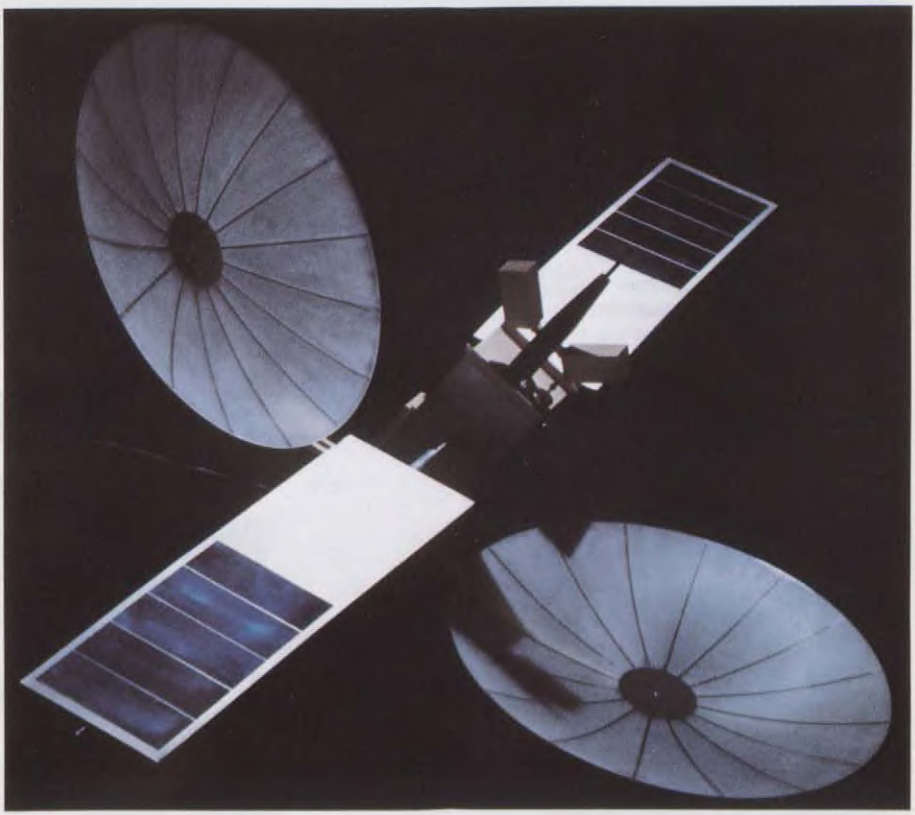
Photo: L'Institut de génie biomédical, université de Montréal

The research begun with Hermes continues with Anik B, launched in 1978. Anik B operates both in the 6/4 GHz frequency bands like the Anik A series, and in the 14/12 GHz bands, like Hermes. As a result, it is useful for a wide range of commercial services and experimental applications. The Department of Communications sponsors a number of Anik B pilot projects that offer government, business and special interest groups the opportunity to explore new uses of space technology, including satellite news-gathering, teleconferences and community interaction among native groups.

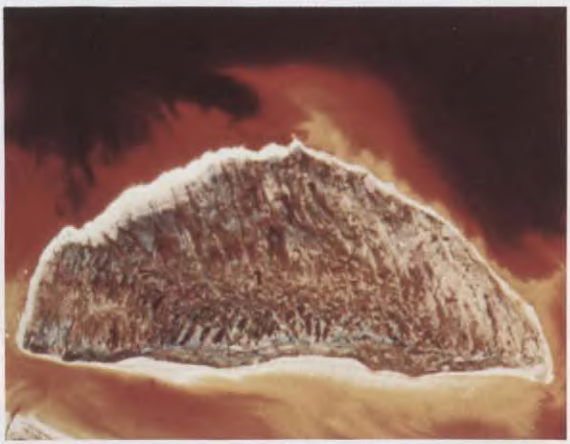
To provide commercial communication services, Canada now builds its own communications satellites in the form of the Anik D series. Anik D-1, launched in 1982, was the first communications satellite built by a Canadian prime contractor, Spar Aerospace Ltd. The Anik D series is primarily Canadian built and will serve as the backbone of Canada's domestic satellite communications system into the next decade.

The spirit of exploration continues. The Government of Canada is now studying a proposal for a Mobile Satellite (MSAT) to provide improved mobile communications services such as cellular radio services, radio-telephone services and data communications to small terminals used by fire fighters, fishermen, truckers, police, military planes and vehicles, resource camp operators, and others. MSAT could bring the benefits of reliable mobile communications, now largely restricted to metropolitan areas, to all areas of Canada.

A proposal for MSAT, a mobile satellite, is now on the drawing boards.

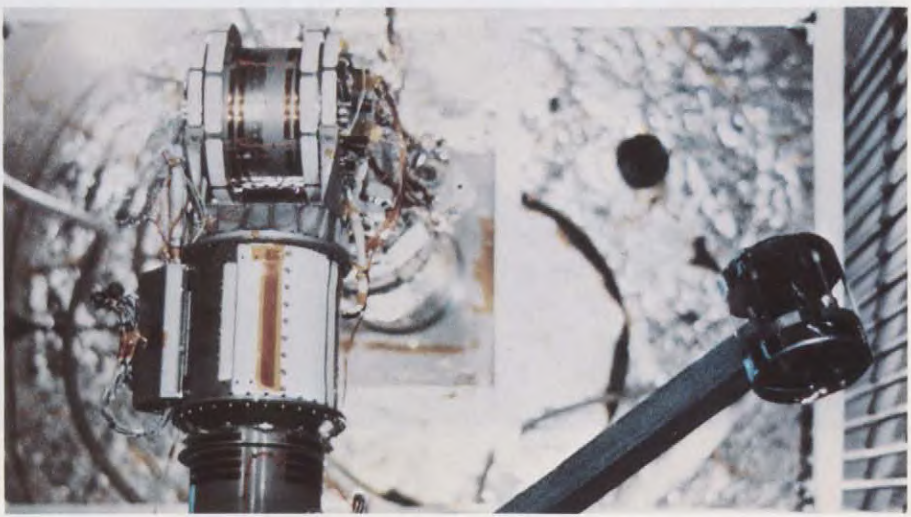


We are also involved in the planning of RADARSAT, a remote sensing satellite that would be able to operate day or night, regardless of cloud cover, and provide information about the location of mineral resources, or the movement of ships around the world. RADARSAT could also assist in the location of oil spills, an important benefit to Canada as the nation examines ways to exploit the energy resources of the far north.



Remote sensing imagery obtained from Landsat 1 satellite showing silt deposits around Akimiski Island, James Bay. False color is used for the data presentation.

The remote manipulator arm (Canadarm) for the U.S. Space Shuttle receives its space initiation in the David Florida Laboratory.



Canada's international role

During the past 20 years, our space industry has evolved to a sophisticated level of development and manufacturing expertise, making Canada one of the few nations with the capacity to design, build and test complete satellites. The reputation of Canadian industry played a large part in the decision by the Government of Brazil to choose Spar Aerospace Ltd. of Canada as prime contractor for its own domestic satellite system, known as Brazilsat, which will be similar to the Anik D series.

This expertise has not been achieved in isolation. Since the earliest days of the space age, we have enjoyed a close association with the US National Aeronautics and Space Administration NASA, and we have co-operated with many other nations to ensure that satellite technology contributes to the well-being of humankind. We participate in many international organizations involved in developing new applications of space technology for remote sensing, weather reporting, and so on.

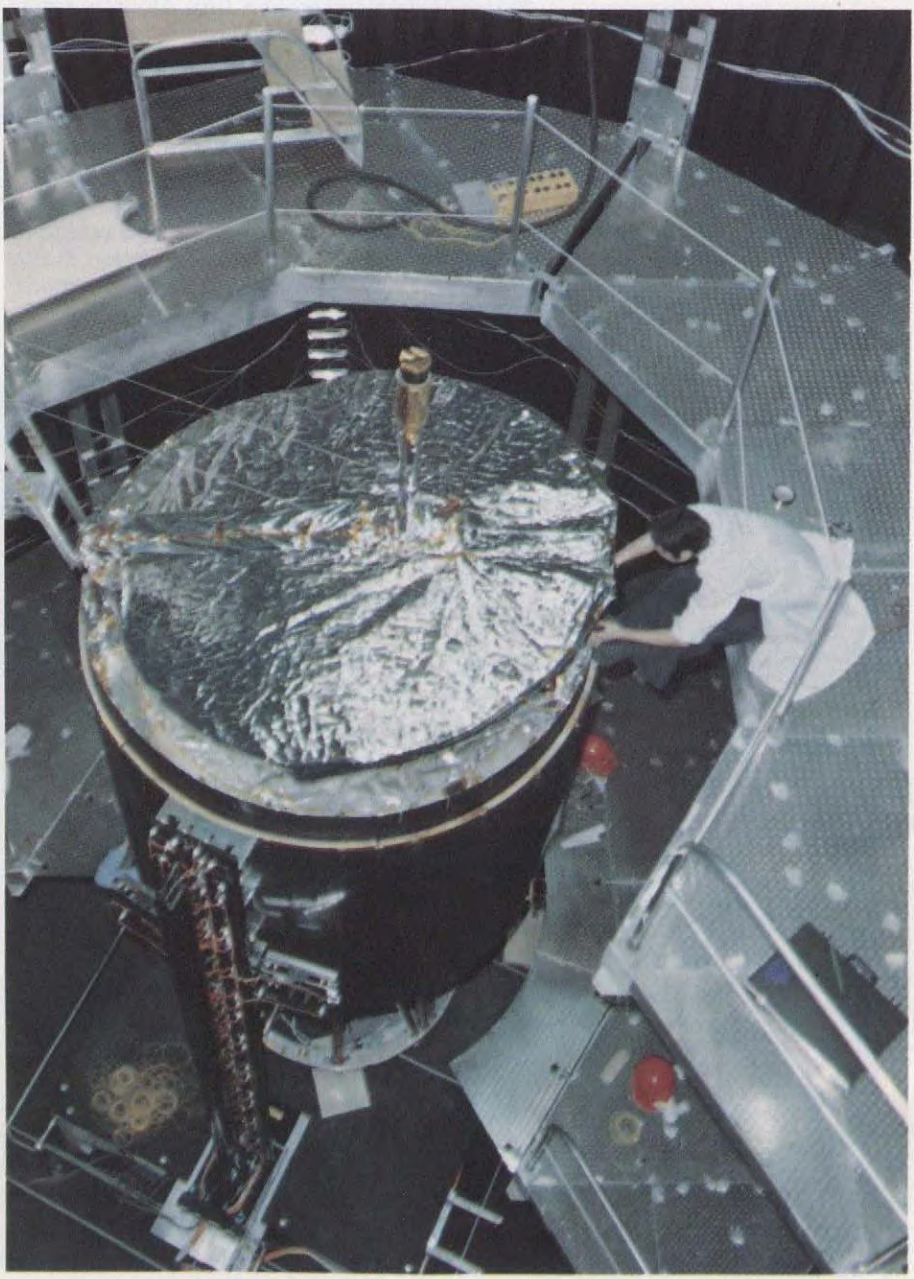
Canada also supports international bodies such as INTELSAT and INMARSAT that administer satellite services. Teleglobe Canada, a crown corporation, was established to administer satellite and conventional telecommunications services between Canada and all nations other than the United States.

Through projects such as the ISIS program, Hermes and Canadarm for the Space Shuttle, we have shared our experiences and technological resources with other nations, working together in research programs and in the design, construction and launching of many experimental and operational spacecraft.

This unique spirit of co-operation continues. Today, for example, we are working with the members of the European Space Agency on the L-SAT, or Large Satellite project. Prior to launch, this experimental satellite will be brought to the David Florida Laboratory of the Communications Research Centre, one of the few facilities in the world capable of performing complete tests of a satellite in a space-like environment.

Canada also plays an important part in the international satellite search and rescue program, known as the COSPAS/SARSAT project in which the Soviet Union's recently launched COSPAS 1 satellite and SARSAT, to be launched by Canada, the United States and France early in 1983, will form a worldwide network that will allow search and rescue officials to pinpoint the site of downed aircraft. Canadian technology will be used extensively in the tracking and ground equipment for this program.

In the 20 short years since tiny Alouette began its journey to the heavens, our relationship with space has been dramatically transformed. Thanks to the foresight of the men and women who made Alouette possible, Canada today has a dynamic new industry that provides vitally important services to the nation. Our culture, our economy, and the security of our nation are inextricably entwined with our space program. We have grown a great deal as a nation in that time. With continued ingenuity and determination, we can accomplish even more in the decades to come.



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Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

Canada