

Alouette I was an unqualified success. The spacecraft had been designed to operate in space for one year but a three-month period of operation was the criterion for a "complete success". In fact, Alouette I operated for 10 years, vastly exceeding even the most optimistic expectations.

Beyond the immense wealth of scientific data produced by Alouette I, there are a number of pertinent observations to be made that are germane to a consideration of Canada's present Space Program. First, the Alouette project was essentially science-based and dedicated to the generation of knowledge in a specific area which might eventually produce dividends in the form of an improved communications technology. Second, the project was an international collaborative effort, thus reducing individual costs while creating a broader network of scientific and technological expertise. Third, the project allowed Canada to develop a knowledge of space technology and the ability to design and build instruments and equipment that could operate for prolonged periods in the hostile environment of space.

Alouette I was followed in 1965 by Alouette II, a spacecraft which not only was a scientific success but also achieved a goal of perhaps equal significance: the successful transfer to Canadian industry of space technology developed by the Federal Government. This initiative was further enhanced with the ISIS satellites, the Canada-U.S. program of International Satellites for Ionospheric Studies. ISIS-1 was launched in 1969 and ISIS-2 in 1971. The latter spacecraft was constructed totally by private industry, with RCA of Montreal as prime contractor and Spar Aerospace Limited of Toronto as associate contractor.

The scientific returns from the early space experiments involving Black Brant rockets and the Alouette-ISIS satellites were very great indeed and, as a result, Canada developed a group of world-class space scientists in university and government laboratories. Much of our understanding of the electrically-charged particles that populate the ionosphere and the region beyond came from this work.

The experiments produced many scientific "firsts", including some of the first measurements of the Van Allen radiation belts at high latitudes and the first images of the aurora from space. Much of the knowledge gained from this early work is used today in the design of such technologies as space communications systems and over-the-horizon radar systems.

In 1967, the Federal Government made a decision to redirect Canada's space activities from purely scientific pursuits (exemplified by the Alouette and ISIS programs) to the applied. Specifically, this meant that Canada's principal objective in space would be the application of technology and science to domestic telecommunications and resource-survey problems. This decision terminated the Alouette-ISIS program with ISIS-2 and led to a serious decline in space-science activity in Canada in the late 1970s.

Following from this decision also, the Federal Government in 1969 created Telesat Canada, a government-industry corporation, to operate a commercial system of satellite-based communications throughout Canada. When the Anik A1 satellite was launched in November 1972, Canada became the first country to operate a domestic communications system based on a satellite in a geostationary orbit.