

program became available when Telesat Canada agreed to include in the Anik B satellite a 14/12 GHz transponder to be used by the federal government for experimental purposes. In 1977, DOC and Telesat signed a contract for a two-year lease to use the 14/12 GHz portion of the satellite starting in 1979, with an option for a further three years. The 14/12 GHz portion includes four regional beams and four transponders, and was built in large part by Canadian industry using technology developed in the Hermes program. The satellite was launched in December 1978, and became available for operational and experimental use in March 1979. DOC is responsible for overall co-ordination of the experimental program, and for communications support to the experiments, including provision of ground terminals to the participants; 17 projects were approved for the program.

Direct broadcast satellite systems are now being widely studied and advocated in several parts of the world. The DOC space sector has carried out studies, demonstrations and evaluations including development of 14/12 GHz satellite and earth station technology, and small earth terminals suitable for direct-to-home TV. In 1978-79 DOC completed advanced planning for a major TV pilot project using the Anik B satellite to broadcast signals directly to home or community antennas. This demonstration would involve about 100 community and home TV-receive terminals developed in Canadian industry.

The space sector studied the feasibility of and undertook planning for a multi-purpose UHF satellite system (MUSAT). This system would meet Canadian government requirements for reliable communications to land, air and sea-based mobile and transportable terminals. The department participated in a new search and rescue satellite project (SARSAT), a joint undertaking of Canada, the United States and France.

The department explored the possibility of co-operating with other countries in joint satellite ventures. Canada signed an agreement in December 1978 with the European Space Agency (ESA), involving Canada in the agency's long-term planning.

Much of the new satellite technology has been developed at the department's Communications Research Centre (CRC) near Ottawa. A large proportion of this technology is transferred to Canadian industry through contracts. Industry has access to the department's testing facilities at its David Florida Laboratory (DFL) also near Ottawa. This national facility for the integration, assembly and environmental testing of space components is being expanded to assemble and test complete satellites.

In 1977-78, the department's research sector was conducting 70 distinct research projects in six main areas: transmission and delivery systems, optical communications, space, rural and remote communications, northern communications and new home services.

**Research.** The research sector demonstrated in 1977-78 the first fully bi-directional fibre optics link — a significant advance in lowering network implementation costs. In 1979, three fibre optics field trials were proceeding in Canada. In Elie, Man. up to 150 homes would be linked up by optical fibres and receive for the first time single-party telephone service, multi-channel TV, FM radio and a variety of new home services.

In 1978, the department demonstrated Telidon, a two-way TV system developed by its researchers and acknowledged to be superior to any other such system in the world. In April 1979, the department committed \$9 million to a co-operative program with industry aimed at furthering the development of Telidon, with a view to mass marketing. In 1979, Bell Canada, Alberta Government Telephones, the Ontario Educational Communications Authority and at least three cable companies were participating in Telidon field trials. An independent study foresaw a domestic market of over 600,000 persons for Telidon by 1986.

**Spectrum management and government telecommunications.** The department's telecommunication regulatory service administers the Radio Act and overall management of the radio frequency spectrum. The service develops, reviews, and updates spectrum policies, regulations, procedures and guidelines. It issues radio station licences (for other than broadcasting stations); sets and conducts examinations for radio operators; regulates the use of radio frequencies; develops standards to control