

Ottawa; there are also a number of experimental sites, some at remote northern locations such as Resolute Bay.

The major activity of the Department is the Communications Technology Satellite (CTS) program. The satellite, to be launched in 1975, is being constructed at CRC and represents a major new undertaking for the Centre's staff. They draw on invaluable experience gained in the highly successful Alouette and ISIS satellite research programs conducted during the previous decade.

One major project involves a joint study by CRC and universities into the feasibility of a Canadian computer communications network (CANUNET). Other research areas include: computer graphics systems; effectiveness and impact of two-way video, audio and graphics communications services for institutional user groups; computer image processing; optical data storage and processing, and optical propagation in glass fibres. Studies of computer signal processing have been undertaken for the Department of National Defence.

Communications systems. Research in communications systems supports the Department's mission to develop and introduce new systems and facilities for Canada's domestic and international communications needs. One of the most important new developments in this field is the introduction of satellites for domestic communications, navigation and other applications.

Communications experiments are being developed to test and demonstrate the applications of the high-powered transponder to be carried in the Communications Technology Satellite. This transponder will enable it to beam back to earth a much more powerful signal than present satellites. Studies cover the problems of providing colour television, wide-band data transmission and audio broadcasts to low-cost terminals in remote regions. Provincial governments, industry, universities and other organizations are to propose experiments to be carried out in the satellite's expected two-year lifespan. Experiments are being carried out to study propagation in the super-high frequencies which will be used by future satellites. Studies continue to develop advanced satellite terminals for use by the Department of National Defence in land, sea and air environments. Research also continues in the area of proposed communications and navigation satellites for aeronautical communication at extreme latitudes. The latter is a joint program with the Ministry of Transport and supports Canada's participation in international studies of these proposed navigational aids.

The Communications Technology Satellite program began officially on April 20, 1971, when the Department of Communications and the US National Aeronautics and Space Administration (NASA) signed a Memorandum of Understanding. Under the agreement, Canada will design, build and operate the experimental satellite and NASA will provide some advanced components and launch the satellite into a geostationary orbit. The program will allow Canada to evaluate the technological, economic and social benefits which could be provided by such a powerful satellite broadcasting to small, low-cost ground terminals in remote areas. Another important objective is to test, under actual space conditions, various items of advanced design which might be suitable for telecommunications satellites. The ten-nation European Space Research Organization (ESRO) has asked to participate in the program by providing some components which it hopes to use on its communications satellites for the 1980s.

Under CRC direction, a team of experts from various industries established initial design concepts and a basic spacecraft configuration for the Project Definition Plan. Industrial proposals were then invited for spacecraft design, and design contracts were awarded to Spar Aerospace Ltd. of Toronto for the structure and RCA Ltd. of Montreal for the electronics.

Information sciences. Research in information sciences seeks ways of improving machine-to-machine communications, man-to-machine interactions and man-to-machine telecommunications services. This basically involves finding better ways to use new technology for storing, processing and retrieving information.

Communications systems engineering has increased, and the technique of systems modelling is being used as part of a study of data communications requirements. Research and development in the radar field includes assistance in communications and remote sensing programs for the Departments of National Defence and Energy, Mines and Resources.