

its Communications Research Centre (CRC) near Ottawa, and indirectly, through a program of industry and university contracts for specific research projects.

The CRC has had wide experience in the fields of defence communications, high frequency transmission, the ionosphere and radar. The department is re-orienting research efforts to relate them more closely to the public telecommunications sector — to telephone, telegraph, broadcasting, cable distribution, data networks and mobile communications.

The department is also re-examining its existing radio research programs with a view to ensuring that research in this area is carried out in line with the department's responsibility to manage the radio frequency spectrum.

A working paper in 1975-76 highlighted the major foreseeable public telecommunications developments in Canada over the next decade. Among key problem areas identified were: under-developed rural communication; over-wiring in the urban sector; critical congestion and spectrum scarcity in radio communication; and technological advancement that could radically revise the economics of wide-band transmission.

Preliminary consultations began with industry researchers and planners to identify priorities for research into urban communications. A long-range program to look at the possible effects on communications of such factors as energy shortages, conservation, employment and inflation was identified.

During 1975-76 the department continued its program of general research for the Department of National Defence in radar and high frequency communications and the two departments assessed new cooperative ventures in defence telecommunications.

A \$700,000 university research program continued with 50 projects, designed to provide the department with the benefit of academic research and to provide university researchers with opportunities to work in telecommunications. Ten were in the field of space communications, 14 in conventional communications, seven in radio wave propagation and 19 in socio-economic aspects of communications.

Communication using fibre optics — thin glass threads through which communication is transmitted by light — is a subject of continuing research. During the next decade, the use of this new technology is expected to spread, particularly since the cost and scarcity of the copper used in conventional wire and cable systems is becoming an increasingly important factor. Fibre optics also hold the promise of greater transmission capacity with less interference than wired systems. More than 80 scientists gathered at the Communications Research Centre in May 1975 to attend a symposium on fibre optics, and in Halifax an experimental fibre optics system developed by the CRC went into operation, replacing a Department of National Defence coaxial cable installation.

A joint project of the department and the RCMP to develop a computer terminal for use in police cars continued. The terminal, including a video screen and typewriter keyboard mounted near the patrol car dashboard, would put mobile police officers in instant communication with a nation-wide computerized information system.

In the far North, hunters, trappers and others in small remote communities often need reliable, portable communications systems. The department is conducting research on the practicability of a combined short-range relay system and a longer range, high-frequency radio system for providing reliable low-cost trail communications. Another project is aimed at developing techniques for integrating high-frequency radio transmissions in the North with existing communications and satellite networks.

Microwaves are used extensively in both terrestrial and satellite communications, and a research program is under way to study the effects of rain, turbulence, weather systems and other atmospheric conditions on microwave propagation.

The location of satellite earth stations is an important part of satellite communications planning; through a contract with Teleglobe Canada, the department has been studying site diversity.