

RACE to improve telephone communications

Researchers at the federal Department of Communications (DOC) have developed a new telephone system that could help improve communications for small, isolated communities.

The new system, called RACE (radiotelephone with automatic channel evaluation), is designed to improve chances of making radio contact, increase reliability of the equipment, eliminate the need for an operator, and reduce costs to the consumer.

The system can replace a conventional radiotelephone (essentially a two-way radio) with a piece of equipment which looks just like a standard telephone and can enable users in remote areas to dial direct to any telephone in Canada — without going through an operator.

“Conventional high frequency (HF) radiotelephones have proved difficult to use — particularly in emergencies,” says DOC researcher Sherman Chow of the research branch.

“Frequencies capable of sustaining communications between two stations change with the time of day, season and solar activity. It’s often hard — even for skilled radio operators — to select the right frequency to make radio contact. When they do, the resulting signal is often unclear and hard to understand.”

The system can be used to provide

automatic telephone service in an outlying settlement, mining camp or drilling rig and to link it by HF radio to telephone switches in larger communities. The improved radiotelephone will complement satellite communications, a more expensive alternative planned for use in larger, northern communities.

The level of service made possible by the new equipment should be equivalent to that available to telephone subscribers in Canadian cities, one of the goals set when DOC first began work on the program in 1975.

Microprocessors used

The RACE system uses microprocessors to automate the process of making radio contact and to ensure best possible circuit performance and connection to the correct number.

A microprocessor-controlled radio automatically tests the radio circuit on each available frequency, selects the best frequency, and connects the call. It takes no more than 16 seconds to check eight frequencies (the maximum provided for the test system) and make the call.

The technique used, called real-time channel evaluation, is made possible by a microprocessor at each end of the circuit which controls outgoing signals and “listens” for incoming ones.

Direct dialing will eliminate the need for a telephone operator to be on duty to connect radiotelephone calls to the conventional telephone network. It will help to ensure privacy and eliminate confusion. Until now, for example, a Cree-speaking person using the radiotelephone had to speak enough English to be understood by the operator. Now the connection can be made automatically.

Field trials

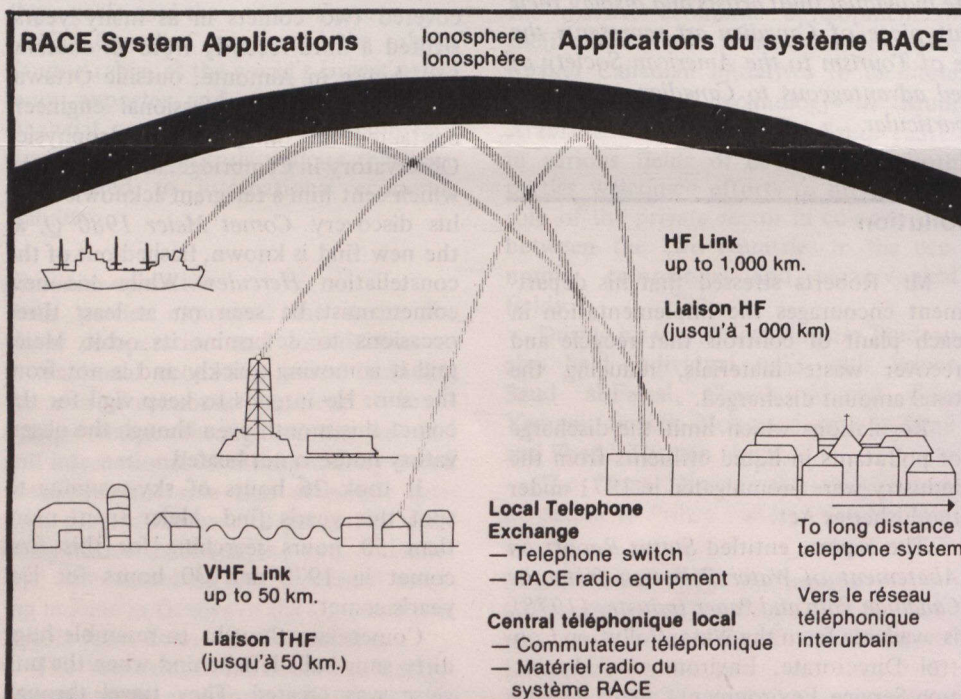
In recent DOC field trials the new system achieved over 95 per cent effectiveness in making radio contact, a “significant improvement” over the less than 70 per cent rate achieved with conventional equipment, Mr. Chow says.

Field trials began this summer, in cooperation with the British Columbia Telephone Company. The system is being tested in three communities: Kelowna, Prince George and Cranbrook. The system will interconnect to the Trans Canada Telephone System through a British Columbia Tel switch, so that during the trial, an HF radio subscriber near Prince George or Cranbrook will be able to dial direct to any telephone in Canada or *vice versa*.

It is estimated the complete RACE system will sell for about \$10,000, compared to \$3,000 to \$5,000 for a conventional radiotelephone.

Prototypes designed by DOC research engineers were built by three Canadian firms: Nautical Electronics Laboratory of Hackett’s Cove, Nova Scotia; Mitel of Ottawa; and Miller Communications of Kanata, Ontario.

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RACE system can provide reliable HF radio link with remote areas.

Satellite claims settled

The Soviet Union and Canada have initialled an agreement under which the Soviet Union will pay Canada \$3 million to settle claims arising from the disintegration of the Soviet satellite *Cosmos 954* over the Northwest Territories.

The payment will cover damages and costs incurred in cleaning up debris from the disintegration of the satellite over an 800-kilometre area in January 1978.

The agreement is the first to be reached under a 1972 convention on international liability for damage caused by space objects. A formal protocol will be signed early next year if approved by both governments.