

Northern Electric and Northern Telecom
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Anik Likely to Launch Communication Changes

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OTTAWA (CP) — The men who helped pioneer the world's first commercial space venture, Canada's Anik satellites, believe it will launch a communications revolution linking the remotest corners of the world.

Anik, the Eskimo word for "brother," already is bringing television to the Canadian North where surface systems are not feasible.

Officials of Northern Electric Co., which manufactured the Aniks' communications equipment, say other equally inaccessible areas of the earth can also be reached by bouncing electronic signals through outer space.

Eventually, "we will go to the ultimate when every homeowner has a receiving 'dish' on his house," predicts Maurice Beresford, manager of the Northern Electric plant that makes the equipment at nearby Lucerne, Que.

The "dish" is a specially designed antenna to pick up voice and picture transmission from space satellites. Northern Electric produces the communications equipment under sub-contract with Hughes Aircraft Co. of Segundo, Calif.

The Anik equipment, the first of several Northern Electric satellite contracts, has 12 channels. Each can carry one color television picture or 500 to 1,000 voice circuits, says William Barrie, Northern's marketing manager for satellite communications.

CBC leases three of the channels from Telesat Canada, the government-industry firm that financed the Aniks, and beams many programs through a combination of satellite and surface microwave.

A CBC spokesman said the network uses the three Anik channels full time and that some complaints from the North about poor service were due to a shortage of equipment for receiving stations.

Beresford believes most land circuits one day may be obsolete, with satellites carrying virtually the entire load of world communications.

The chief advantage of the satellite system is that a television or other electronic sig-

nal can be beamed straight into space to the satellite relay station and straight back down to an "earth station" that can be located anywhere without the need for hundreds or thousands of miles of land circuits. It is also far less subject to interference.

The Canadian Anik system has 25 earth stations in the North and eight in the South. "Every school will have a small receiving dish, every train, every ship will have one," Beresford says in his projection of the future.

Once a satellite is launched it costs relatively little to build small earth stations to pick up its signal, he says. A station to serve a small town now costs about \$50,000 and this might be reduced to \$25,000 with expanded production.

"For every \$10 million in the air (the cost of a space satellite), you can service \$100 million worth of space stations on the ground. You can afford to put a lot of technology into that satellite."

And technology is what Northern Electric's satellite team packs into each of its 234-pound communication cylinders that look like giant spools, six feet in diameter

and about three feet thick—and cost \$1.5 million each to build.

"That's \$64,000 a pound," notes Barrie matter-of-factly.

Beresford says Northern Electric cut its bid to the bone to win the first contracts and is just beginning to show a profit.

Work on the equipment is so exacting that welding, soldering and assembly must be done under microscopes and large magnifying glasses.

"If we got one extra drop of solder on a wire, they would not be able to launch the satellite because of the weight," Barrie says.

The work is done in a "clean room" where workers and visitors must brush the dust from their shoes and don a sanitized nylon gown and a gauze cap to guard against contamination of the delicate equipment. Visitors and even company officials are warned repeatedly not to touch anything on the assembly line.

The wiring must be exactly balanced and secured to withstand a satellite's spinning 100 times per second in orbit.

"If it isn't, it would start wobbling like an off-balance washing machine," Barrie says, "and you can't send any repair man up there to fix it."

"This is the jewel," Barrie told a visitor on a tour of the plant, pointing to a gold-plated box 10 by 14 inches that contains the core of the electronic "ears, brain and heart" of the satellite.

The golden box, holding \$250,000 worth of space equipment, does look like a jewel box. Exhaustive records are kept of every stage of the work and when completed, the records weigh as much as the equipment itself.

When the satellite communications packages are ready for shipment to Hughes Aircraft in California for assembly into the satellite, they are carted slowly to the airport by truck in a thick steel container, cushioned in styrofoam and escorted by a fleet of police cars. A small mountain of production records is shipped with them.

Barrie shudders at the thought that even a slight traffic collision on this trip might result in a \$1.5 million accident.

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