

Telesat Canada, the world's first domestic communications satellite company, transmits and distributes all forms of telecommunications by satellite in Canada. Though incorporated by an act of Parliament, it is neither a Crown corporation nor an agent of the government. It is a combined venture, controlled more or less equally by the federal government and several telecommunications companies. In 1976, Telesat joined the organization of major Canadian telephone companies, the Trans-Canada Telephone System, now known as Telecom Canada.

Telesat's first spacecraft, Anik A1, was launched in 1972. From 1973 to 1983 six more Anik satellites were sent into orbit. Five of these are still operational. Two more satellites will be launched from the NASA space shuttle during 1984. Hundreds of earth stations complete the Canadian domestic satellite system, and Telesat owns and operates more than 125 of them.

Telesat's purpose is to operate a commercial system of satellite communications to serve all Canada, from the sparsely populated far North to the industrial South. Its Anik network carries as broad and sophisticated a range of voice, video, data and facsimile services as any domestic satellite carrier in the world. There have been four generations of Anik satellites; almost every one, in some way, has been a world first.

Anik A

These were the first geostationary domestic communications satellites in the world—that is, they orbited above the equator at a speed matching the rotation of Earth. This makes them always visible from any point within their coverage area, and so they are able to provide 24-hour-a-day telecommunications services.

In the case of Anik A—and its successors—this coverage area included virtually all Canada. Anik A satellites were thus the first domestic communications satellites to use less-expensive non-tracking earth terminals. This was also made possible by Telesat's development of new mini-computer techniques to keep its satellites precisely on station.

Anik A1 was launched in November 1972. Its 12 microwave channels together could carry the equivalent of 11 520 one-way telephone circuits, or 12 colour television programs. It operated on the 6/4 GHz frequencies—reception of signals from Earth at about six thousand million cycles per second (6 GHz) and transmitting back to receiving antennas at about

four thousand million cycles per second (4 GHz). Anik A2 was launched in April 1973 and was joined by Anik A3 in May 1975. All three satellites were designed to last seven years; all were identical.

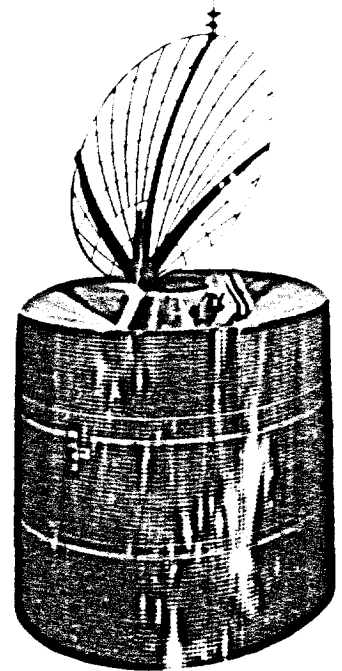
Both Anik A1 and A2 were 'retired' in 1982 after almost ten years in space. In 1981 Telesat accomplished another world first with Anik A2 and A3. The two satellites were co-located in the same orbital position, permitting the still usable channels on each to be operated as if they were aboard a single spacecraft. Anik A3 is scheduled to be retired in late 1984.

Anik B

As it became apparent that the experimental 14/12 GHz Hermes satellite would be very successful, Anik B, originally conceived as a 6/4 GHz commercial satellite to replace the Anik A series, was designed in 1973-74 and built to include six 14/12 GHz channels as well. When it was launched in December 1978, it was the world's first dual band commercial communications satellite.

The 14/12 GHz capacity was leased by the Department of Communications (DOC) so that the promising Hermes experiment could be continued over longer-term pilot projects in cooperation with industry, provincial government agencies, native groups, and other organizations. Some of these are mentioned in the sections on Telehealth, Tele-education and Direct Broadcasting by Satellite (DBS).

One of the aims of the Anik B program was to help Canadians to use new satellite technology to improve health, educational and broadcasting services. For this reason, one of the six 14/12 GHz channels was leased in 1980 to La SETTE, the Quebec cable consortium, to distribute videotaped programs across the province. In September 1982 all the remaining 14/12 GHz capacity was turned over to Telesat for commercial use, except for a small portion that DOC retained for technology trials. In January 1983, the 14/12 GHz commercial Anik B users transferred to the new Anik C3 satellite.



Anik A1, the world's first domestic communications satellite was placed in geostationary orbit in 1972.

Model of Anik D spacecraft inside 7 m x 10 m thermal vacuum chamber.