## Electronic pollutants battle new standards

Researchers at the Bell Northern Research Laboratories Ltd. (BNR) in Ottawa, the research and development arm of Northern Telecom of Mississauga, Ontario and Bell Canada, a subsidiary of Bell Canada Enterprises Inc. of Montreal, test various products to reduce electronic pollution.

Although electromagnetic interference (EMI) is often not noticed, all electronic equipment gives off undesirable signals that may interfere with other equipment. For example, electric appliances can produce audible interference, or noise, on a stereo set.

To curb electronic pollution from business telephone switches and exchanges, the United States Federal Communications Commission (FCC) developed a set of standards in October 1983 and the magnetic product group at BNR are working to ensure that Northern Telecom and Bell Canada products meet the rigorous standards.

**Canada to increase standards**

The FCC standards are expected to be adopted by Canadian authorities in 1985. That will mean all Northern Telecom equipment will have to be certified at the BNR lab, said Stan Xavier, manager of the BNR magnetic product group.

EMI testing begins under controlled and isolated conditions in BNR's anechoic "echo chamber", dubbed Jaws 3. The room is like a large vault, shielded by two steel panels behind each wall, underneath the floor and above the ceiling. The chamber keeps out all electromagnetic energy so that engineers can measure exactly what is being emitted from a particular product inside.

The laboratory is equipped with instruments that span almost the entire range of the electromagnetic spectrum — from low frequency 20 Hertz to super-high frequency waves at 40 Gigahertz.

**Testing in the environment**

Once the EMI characteristics of a product are known and are within acceptable limits, it is tested under less-isolated conditions to measure its susceptibility to external EMI sources in the environment and its relationship with other external frequency levels. The environment is full of EMI; the background level includes emissions from power lines and broadcast transmitters.

This part of the testing is done in a special EMI laboratory in an all wood and glass fibre shed that is completely grounded. The background EMI from outside the shed is measured and additional emissions can be produced by a neighbouring antenna. Engineers measure the interaction between the product's signals with these outside signals to discover possible interference.

The lab can also be used to test communications-security equipment that is used by government and military agencies to transmit and receive classified information. EMI emissions can compromise classified information if detected and intercepted.

As one constraint for the BNR engineers is the limits of theoretical knowledge, they have a number of co-operative programs with university researchers to help develop new theories.

## First digital telephone exchange in Turkey

Northern Telecom International Limited of Mississauga, Ontario, recently announced that the Post, Telegraph and Telephone (PTT) Administration of the Republic of Turkey has inaugurated the country's first fully digital telephone exchange at the PTT central office in Kavalidere in Ankara.

The switch, a Northern Telecom DMS-10M, is portable and is designed specifically for small, growing communities. It can handle from a few hundred to as many as 8 000 telephone lines.

The inauguration marks the beginning of a program by the PTT to introduce fully digital telecommunications technology to the Turkish telecommunications network. "The installation of the switching system launches the country into the era of fully digital telecommunications, and will help provide the people of Turkey with the most advanced telecommunications services available in the world," said General Servet Bilgi, general manager of the PTT.

In 1967, Northern Telecom and PTT established Netas, now the largest telecommunications manufacturing company in the Middle East. Over the past 17 years the Netas plant in Istanbul has manufactured and supplied some 1.8 million telephone lines of telecommunications products to the PTT.

In 1983 Northern Telecom signed a licensing agreement with Netas to enable Netas to manufacture and market DMS digital telephone exchanges for domestic and international markets. The agreement is expected to result in the installation of some 250 000 telephone lines of fully digital switching systems in Turkey by the end of 1985.

## Railway cars for Mali

Hawker-Siddeley Company of Trenton, Nova Scotia, has been awarded a contract for the manufacture of some 100 railway cars for the West African country of Mali.

The contract is being funded by the Canadian International Development Agency (CIDA) as part of a support program for Mali's national railway system. Canada has contributed $8.5 million to this program since 1973 for the purchase of railway equipment, the provision of technical services and the training of personnel.

Hawker-Siddeley is a leading Canadian manufacturer of railway cars and the country's only manufacturer of axles for railway cars and locomotives. It has been actively involved in producing railway equipment for developing countries for some years.

In 1980, Hawker-Siddeley supplied 14 ballast cars and 18 tank cars to Mali under the first phase of the current program. The company has produced more than 1 000 railway cars over the past ten years for various railway projects in Indonesia and in several African countries.

## Co-operatives assisted

Minister for External Relations Monique Vézina recently signed an agreement to provide $2.5 million in the form of block funding to the Co-operative Development Foundation (CDF) for 1984-85.

The sum which, in addition to the $1.6 million already committed by the government to support more than 140 projects run by the CDF in 34 developing countries, is being provided through the Canadian International Development Agency (CIDA). The additional sum will allow for the support of a larger number of projects

The CDF is the international development arm of the Co-operative Union of Canada (CUC), the national association of co-operatives in English Canada. In the co-operative movement, co-operatives in one country help co-operatives in other countries through the provision of technical assistance and financial contributions.

The projects of the foundation range in size from $7 000 to construct a co-operative bakery in Dominica to $1 million for the multi-year development program of the Caribbean Confederation of Credit Unions. Other examples include co-operative education and the purchase of equipment for members of a fishing co-operative in Zambia, and training in co-operative management for women in Bangladesh.