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## Telephone

The *telephone enquiry service, No. 111*, began *charging according to length of call* in order to cover costs in this competitive service as is required by the telecommunications law. In addition, the offer of services will be expanded.

Five voice circuits and one telex connection of the SSTDMA (Satellite Switching Time Division Multiple Access) type were put into operation in the *Intelsat network* with *Kenya*. An additional temporary SMS satellite connection with a capacity of  $2 \times 2.048$  Mbit/s was put into operation in the *Eutelsat network* with *Macedonia*. The connection is via the Basel-Grosspeter satellite earth station and the PTT Telecom mobile satellite earth station in Skopje, which has been in place since September. Thus there are 120 voice circuits in operation in Macedonia at present.

## Teleinformatics

The *DNT128 baseband modem* made by Nokia has been successfully tested and will be introduced by the PTT. At the line side, it uses an ISDN-U interface with 2B+D structure; the line code is 2B1Q, and echo compensation is implemented. The operational distance is between 6 and 10 km, according to the wire size. All current interfaces (V.28, V.35, V.36 and G.703) are available in the form of small plug-in cards and can be exchanged. There are two slots available, which can be differently equipped and configured. The *PMD 9602* modem will be replaced by the *ECM 14 400* in the first quarter of 1993. The new modem operates according to CCITT V.32bis, V.32, V.22bis and V.21. The terminal speed can run up to 57 600 bit/s. Its outer appearance is the same as the *PMD 9602*, and its operation is slightly changed only as far as is necessary for the new functions.

The *Lausanne-Savoie EDW Telex Central Office* was put out of operation as a result of the restructuring of the Swiss Telex network. The affected subscriber lines from the telecommunications areas of Lausanne and Sion were switched to the *Geneva-Mont Blanc EDW Central*.

Recently, the *Telex traffic between Switzerland and the mobile Inmarsat C stations in the Indian Ocean region* has been rerouted from the Australian satel-

lite earth station of Perth to that of *Burum (NL)*. Thus the dialing procedure is simplified from two-stage to one-stage. The traffic proceedings are now the same in all four Inmarsat C regions.

There were 23 digital leaselines ( $8 \times 64$  kbit/s,  $4 \times 128$  kbit/s,  $3 \times 256$  kbit/s,  $1 \times 384$  kbit/s,  $2 \times 512$  kbit/s,  $1 \times 768$  kbit/s,  $2 \times 1024$  kbit/s,  $1 \times 1984$  kbit/s) and one analogue line put into operation by the *leaseline control centre (LCC)*.

## Radio, Television, Radiocommunications

The following FM stations were officially put into operation in the Ticino: *Crana* (RSI 3/94.7 MHz, DRS 1/98.7 MHz, RSR 1/100.9 MHz) for supplying Mosogno and Russo; *Dalpe* (RSI 1/92.9 MHz, RSI 2/96.0 MHz, RSI 3/104.4 MHz, DRS 1/101.1 MHz, RSR 1/107.1 MHz) for the upper part of the Leventina; *Intragna* (RSI 3/99.0 MHz, DRS 1/102.5 MHz, RSR 1/106.0 MHz) for Ponte Brolla, Tegna and Verscio; *Monte Morello* (DRS 1/98.8 MHz, RSR 1/87.8 MHz) for the Mendrisiotto. Thus the expansion by the 4th and the 5th FM broadcasting chain in the Italian-speaking part of Switzerland is complete. Altogether, 21 stations were extended by the additional DRS-1 and RSR-1 programmes.

*FM transmitters* were installed and put into operation in the newly set up R thi (Rheintal) multipurpose station.

The following *fixed microwave radio links* were put into operation: *Baden-Wohlen/AG, Basel-Berne* and *Berne-Geneva* for the toll network with a transmission capacity of 140 Mbit/s each; for the connection network *Maggia-Pizzo Castello, Pizzo Castello-Robiei* and *Safien-Thal kirch* with a capacity of  $4 \times 2$  Mbit/s each; for the feeding of multipurpose stations a link at *Sch pfheim* (34 Mbit/s) and *Cardada-Intragna* ( $4 \times 2$  Mbit/s); and for the supplying of Natel C base stations *Allesse-Vernayaz, Chabrey-Neuch tel, Chevroux-Neuch tel* and *Delley Port-Neuch tel* ( $4 \times 2$  Mbit/s each). In addition, the following *temporary radio links* were set up with a transmission capacity of  $4 \times 2$  Mbit/s each: *Ulmizberg-Berne-G terstrasse* (cable restoration/9 months), *Br ttisellen-Glatt Shopping Centre* (Swissnet primary connection for 8 months) and *Bantiger-Belp* (leaseline for 10 months).

A further station for the Swiss *Speedcom trunking radio system* was put into operation in *Grand-Saconnex*. Thus the coverage of the Canton of Geneva can be improved.

The following 17 towns were newly made accessible in December with one transmitter station each for the *Citycall B: Blitzingen, Breitenbach, Ch teau d' Ex, Hofstetten, La Forclaz, Le Day, Martisberg, M zi res, Murten, Puidoux-Chexbres, Ravaisch, Rougemont, Stalden, Tramelan, Ulrichen, Vaulruz* and *Wasserfluh*.

*15 new Natel C base stations* were put into operation.

50 years ago the first *microwave radio link* was put into operation in a hotel room on the *Chasseral* after several propagation tests, and three years later it was moved to a building at the location of today's station. In those days the lack of raw-material forced the search for alternatives to the hardly available copper cable. Since then the station has been continuously expanded, and from 1975 to 1979 a new building was erected. Apart from the many radio link installations the building also accommodates four television transmitters and installations for various radio telephone and radio paging systems.

## Miscellaneous

The multifunctional *Biel-Bienne post card* has been actively used as a *cashless means of payment*: Almost 13 000 chip cards are in operation already since the beginning of the experiment a year ago. The microchip can always be revalued in public telephone booths by the card owner. The card can be used to pay without cash at 71 terminals in Biel and surroundings. In addition, it offers the same functions as the customary post card.

The biggest ATM (Asynchronous Transfer Mode) zone of the research programme *Race* of the EG will be put into operation in *Basel* in 1993 under the label *Exploit* as research and test environment. Recently, within the framework of the project, ATM cells could be transmitted on a satellite link and decoded again. The responsibility of the project *Exploit* is assigned to a joint working group of PTT Telecom and *Ascom*.