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## Summaries

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### **Telepac: Why to connect and what equipment to link**

J. Pitteloud, Berne

Telepac is the Swiss public switched network dedicated to the transport of data. Its structure allows to select either centralized or decentralized information processor. It offers a very safe transfer of data. Its operation is ensured by the PTT. Telepac utilizes the proven packet switching technique based on international standards. The users can share dynamically the resources of the network at a high performance rate. Telepac offers some of the new benefits at an interesting price in areas such as change of transmission rate, of topology or automatic reconfiguration of the teleinformatics network. In the first chapter the article presents the essential characteristics of telepac. The following chapters deal rather with telecommunications aspect and inform more precisely on the large range of equipment connectable to telepac.

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### **Transmission Characteristics of M-ary PSK and QAM Digital Radio Equipment**

K. Leuenberger, Berne

The M-ary PSK and QAM types of digital modulation techniques will be increasingly employed in the present and in the near future for PTT radio-relay microwave networks. The paper presents an overview of the configuration of the digital microwave systems. In addition, it treats several basic aspects of the transmission techniques of the PSK and QAM signals. The required amplitude and phase characteristics of Nyquist Channels, the resultant power spectra as well as the spectral efficiency are especially outlined.

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### **Automatic Switch-Over of Supergroups (First Part)**

J. P. Boegli, E. Plüss, Berne  
and H. Fischer, D. Wild, Zurich

The dedicated leased circuits in the trunk routes constitute the backbone of private customer networks that require a high availability. Such circuits of the highly meshed analogue public telephone network are routed through the supergroup (312 to 552 kHz, CCITT Rec.G.233) with

assigned priority. These circuits lead on to amplifier centres over remotely controllable switching matrices. A central computer supervises the states of all the supergroups with assigned priority. In case of failure of the pilot signal (frequency at 547.920 kHz), the computer automatically commands instantaneous switch-over from the affected to a free supergroup according to a predetermined plan. The author describes the main characteristics of the central computer, the command network and the remote switching centres. Special emphasis is put on hardware and software to assure high reliability of the system.

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### **Operational Experience with Tunnel Radiocommunications Equipment**

R. Erb, Berne

The author describes the operational experience gathered with both radiocom-

munications equipment at St. Gotthard and Seelisberg motorway tunnels. The operation under actual environmental conditions showed pilot alarm signals due to large attenuation in the radiating cable. This took place especially in winter and in the area of the tunnel entrance and the ventilation equipment and was caused by the high relative humidity (70 p.c and more) of the air. The performance was improved by the installation of regulated wideband amplifiers instead of the unregulated ones as well as by the increase of the distance of the cable from the tunnel wall in the portal areas. The paper further reports on the reliability of the RF head ends, the maintenance centres and the employed wideband amplifiers.

## News Items

### **Telephone**

The number of subscribers on the **3-month-plus waiting list** at the end of 1983 amounted to 3898, which was 889 less than the year before.

The new **3rd antenna** took over traffic of the Atlantic ocean region from the **1st antenna** on 17 February 1984 at the **Leuk earth station**. At the beginning of May, the 1st antenna will carry traffic of the Indian ocean region.

Between **Switzerland and Canada**, 2 additional **satellite circuits** came into operation via Leuk earth station.

### **Teleinformatics**

In 1983, **6730 telex SP 300 sets**, of which 5949 connected to the telex network, were delivered to the PTT district offices. This is 44.6 pc of total SP 300 sets delivered until then. 82 pc of the total have message storage capabilities.

The **mobile telegram office** was used during 81 days on 21 occasions in 1983. It carried out 5226 pages of press information with telex and facsimile service as well as 3343 telephone messages.

Since 1 March 1984, all **Swiss telegram offices** have been equipped with facsimile machines. The Group 3 machines are placed at the centres of the PTT district offices and all others are served with Group 2 machines.

Since 20 February 1984, **Bureaufax service with Japan** has been led via the public telephone network instead of Radio Suisse Ltd.

The **Bureaufax service between Switzerland and Denmark**, where 92 offices are equipped with facsimile machines, is available to customers from 15 March onwards. Thus, 34 countries are now served from Switzerland.

### **Radio, Television**

In 1983, the PTT staff inspected 717 (1982: 634) **outdoor antennas** which were erected by the certified installation firms. 25 pc (1982: 26 pc) of them were recalled.

### **Miscellaneous**

The **PTT's 1983 accounts** closed with an income of 7018 million francs and an expenditure of 6898 million francs. From the profit of 120 million francs, 90 million francs will be turned over to the federal treasury and 30 million francs will be kept in the PTT's reserve.

**Intensive snowfall and severe avalanches** during 6 to 12 February 1984 had great impact on the telecommunication services, especially in the canton of Grisons. District and local cable equipment were affected, transit circuits were cut off, transmitter equipment was damaged as well as several power lines were broken down. Services were interrupted due to heavy snowfall also in the cantons of Neuchâtel, Vaud, Uri and Wallis.