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## Fifty years of PTT and Radio Broadcasting in Switzerland

### From regional to national broadcasting and the division of responsibilities between the SBC (Swiss Broadcasting Corporation) and the PTT

As early as 1928 the broadcasting associations of Zurich and Berne submitted proposals for the reorganization of Swiss radio services, which since 1922 had been provided by five local stations broadcasting over low-power transmitters. In the absence of any consensus, and with foreign stations growing in strength and numbers, the telegraph authority set up, in 1929, two commissions to examine the situation. They arrived at the joint proposal that the PTT should establish a powerful national transmitting station in each of Switzerland's linguistic regions, and that a controlling body be set up to coordinate the regional organizations. Also in 1929, the federal parliament authorized the credit for the building of the national radio stations; in 1931 the Swiss Broadcasting Corporation (SBC) was founded, and it received its broadcasting licence on 1 March. The stations at Sottens and Beromünster began transmitting on 23 March and 1 May 1931 respectively, and the one at Monte Ceneri on 21 April 1933. To complement the wireless services the PTT introduced wire broadcasting over its telephone lines, while private wire broadcasting networks were set up in six Swiss cities.

With the reorganization of 1931 the SBC and its component companies took responsibility for the planning and content of radio programmes; the PTT would henceforth see to the transmission of the programme from microphone to transmitter, as well as representing Switzerland on technical issues at international conferences, levying licence fees, organizing frequency coordination, protecting the frequencies allocated to Switzerland and upholding reception quality. The costs incurred in connection with radio services are met by the 30 pc portion of the licence fee currently allocated for these purposes. Today the PTT has invested Sfr 105 million in radio installations, as much as 70 pc of this in transmitting installations and 30 pc in studio equipment. In addition to this the PTT operates a 20 000 km music line network for the transmission of radio programmes.

### From national transmitting stations to VHF stereo networks

The *transmitting locations* at Sottens for French-speaking Switzerland, Beromünster for German-speaking Switzerland and Monte Ceneri for Ticino ensured adequate reception in most cities for the unsophisticated receivers of the time. Additional local stations were established at Basle and Geneva. The earliest

transmitters were of foreign origin and were rated at 60 kW (Beromünster), 25 kW (Sottens) and 15 kW (Monte Ceneri). Transmission was effected over T- or L-antennas between pairs of steel-lattice masts over 100 m high.

In 1939 the Beromünster station was uprated and provided with a new self-radiating antenna, in order to improve reception quality in eastern Switzerland. After the war all three national transmitting stations were re-equipped and uprated, particularly in view of increasing interference from foreign stations in the 1960s. Thus Beromünster (in 1969) and Sottens (in 1970) were equipped with 500 kW transmitters, whilst in the Canton of Ticino a new station with 300 kW capacity and a 250 m mast was opened in 1979 on the Cima di Dentro.

Special lines which had to be lightly loaded, equalized and screened were required for the transmission of radio programmes over the telephone network from one studio to another and to the transmitters. Capable of transmitting frequencies between 50 and 8500 Hz, they sufficed until the introduction of VHF transmitters. From the mid-1950s special carrier-frequency systems (50 to 10 000 Hz) were installed and these were supplemented in the 1970s with a new, 30 to 15 000 Hz system capable of accommodating stereo signals. Today this connects the studios and VHF transmitters. The national transmitting stations' *music line network* was for a long time integrated into the wire broadcasting base network, in which a number of repeater stations acted also as switching centres. In 1967/70, SBC switching centres were established at Berne, Lausanne and Lugano, which have since handled most switching work. Each centre distributes the two radio programmes of its linguistic region over a star network that is independent of the wire broadcasting system. For outside broadcasts there are circuits which can be switched into the studios for short periods; a recently established permanent OB network, with feed-in points at intervals of about 15 to 20 km, is undergoing trials.

For many years *wire-broadcast* programmes from abroad were received over metallic circuits; since 1963, however rebroadcasting reception has been used. A wire-broadcast switching centre at the SBC's Berne headquarters assembles the current six programmes. Some years ago a working party investigated the possibility of stereophonic wire broadcasting, but for a number of reasons came to the conclusion that this was not feasible.

The *transmission of short-wave foreign broadcasts* goes back to the year 1933, and from 1935 onwards a monthly broadcast for North and South America was

transmitted over the League of Nations radio station at Prangins. From 1939/40 onwards — during a troubled period — the SBC had its own «voice», in the form of the Schwarzenburg short-wave transmitter. This station was successively rebuilt and updated, and in later years was joined by short-wave transmitters at Beromünster, Lenk and Sottens. Replacement of the obsolescent antenna at Schwarzenburg has run into as yet unsolved difficulties and, as a result, overseas broadcasts have been particularly hard hit.

After initial VHF propagation tests in 1945/46, experimental equipment was installed at a number of locations between 1948 and 1951. Switzerland's first regular VHF transmitter — at St-Anton in the Canton of Appenzell — was put into operation as early as 1952 because of deteriorating medium-wave reception and demands for improved quality. Full development of the VHF network, however, only went ahead in 1956, when the SBC decided to launch a second radio programme. In 1978 around 50 pc of listeners benefited from a further improvement as stereo broadcasting became available over part of the network.

Channel allocation to Swiss radio stations is based on the *Stockholm plan* of 1952/61 and the *Geneva LW/MW plan* of 1975. At the 1975 conference Switzerland was obliged to cease night transmissions over its Beromünster frequency in return for the exclusive use of its other medium-wave frequencies. Nevertheless, the 1st programme of Radio DRS (German- and Romansh-speaking Switzerland) can still be heard throughout Switzerland and the surrounding area, even during the night, thanks to a vertical-radiation transmitter which began operating on 1566 kHz as early as 1968.

The PTT is required to present a separate, balanced *radio account*. Income is obtained from a portion — currently 30 pc — of the radio licence fee, and amounts to about Sfr 41 million a year. Expenditure can be broken down as follows: staff costs 42 pc, capital costs (depreciation and interest) 38 pc, and external costs (eg electricity) 20 pc.

### Radio broadcasting, present and future

In recent years the emphasis in radio broadcasting has shifted increasingly towards VHF. The existing VHF network, however, was planned in the fifties for fixed mono receivers. In the meantime *listening habits have changed fundamentally*: people take radios with them wherever they go; the receiver has become portable. There has also been the introduction of local stations and stereo broadcasting. Networks have to be adjusted to all these changes. Furthermore, there is demand for an increased number of stations.

The *World Administrative Radio Conference* in Geneva (1979), by extending the VHF band from 87.5–100 MHz to 87.5–108 MHz, created the basis upon which the new demands can be satisfied. It is now possible not only to adjust the existing network to the new listening habits, but also to establish new chains of broadcasting stations on national, regional or sub-regional level, as well as local transmitters. First, however, it must be decided whether the greatest possible number of stations should be permitted to transmit their own programmes, or whether operating areas should be the

main criterion, in which case the number of stations would be more limited.

Finally, the *Broadcast Satellite Conference* at Geneva in 1977 established the use of the 12 GHz band, and other parameters relating to direct reception from satellites. No agreement was reached as yet on a European norm for radio transmissions. It is, however, certain that while the 12 GHz band will enable signals to be supplied to fixed receivers practically everywhere, this does not apply to mobile equipment. In addition to the public broadcasts, coded programmes for reception over an attachment against payment of extra charges could also be sent out over the radio broadcasting satellites.

To adapt the VHF network to the present-day requirements the following approximate sums would have to be invested: Sfr 7 million for closing the remaining supply gaps; Sfr 3.5 to 4 million for adaptation to local broadcasting from studios in the German and Romansh-speaking area; Sfr 1.3 million for extending stereo capability by 10 pc up to 60 pc; and Sfr 15 to 20 million for a third national transmitter chain. Given that the radio account is already in deficit, and that the PTT is obliged to keep this account balanced, it is a matter of conjecture how such sums are to be raised to meet the additional operating costs. Since the saturation point has already been reached, the number of licence-holders is unlikely to increase much further, even if the range of services is extended. This means that there will be no further growth in revenue. A solution to the problem of balancing income and expenditure must therefore be sought elsewhere, and this presupposes largely political decisions. Indeed, all the decisions concerning radio broadcasting which have to be made in the near future raise fundamental political and economic questions. It is the resolution of these issues, first and foremost, which will shape the next fifty years of radio broadcasting in Switzerland.

### From the crystal set to the Hi-Fi stereo system

At the same time as the medium-wave national transmitting stations were ushering in a new era of radio broadcasting in Switzerland, receiver technology was on the point of transforming the wireless from a technological miracle to an article of everyday use. Straight-detection receivers, which were complicated to use, were superseded by the more efficient and simpler superhets; battery gave way to mains supply and headphones to loudspeakers. Up to the postwar period further improvements centred above all on controls and reception.

Radio reception was revolutionized by the invention of the transistor and the introduction of frequency-modulated VHF broadcasting: interference was largely eliminated and receivers could now be made portable. There were also, parallel to the development of television, a number of innovations in other fields of audio technology, such as gramophone microgroove, high-fidelity and, later, stereo records and magnetic sound recording and reproduction. The cassette recorder became extremely popular and made the individual «music programme» portable just as the transistor had made the radio portable.

With the advent of microelectronics, traditional radio receivers have in recent years undergone radical change. New, compact forms — and also new combinations of quite different types of audio equipment — have come into being, transforming the «steam radio» into a versatile audio system.

After once occupying a dominant position in the field of electronic mass communication and entertainment, radio has become but one of many means and its role will continue to change as the range of competitors increases even further.

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## News Items

### Post

Recently the PTT has introduced into its **regular postal passenger service** a new coach with **alternative fuel** for limiting air pollution.

### Telephone

The demand for the important PTT **service numbers** increased last year compared to the previous year as follows: Inland information service (7.5 pc), international information service (3.6 pc), international manual telephone service (-9.8 pc), mechanized information services (2.6 pc).

**Cavardiras mountain hut** (2649 m) of the Swiss Alpine Club above Disentis has recently been connected to the public network by a wireless telephone with solar cell batteries.

Swiss subscribers used **ISD facilities** on 98.3 pc of their international calls in 1980.

The **international telephone circuits** to European (81) and to extra-European countries via satellite (27) from and to Switzerland were opened in the months of February and March.

### Telegraph, Telex

**Public facsimile service** was extended to Thailand on 1 April 1981.

The delivery of **electronic telex SP 300-MSR 16** with 16 kbyte extended message storage capability began recently for the first time.

The first **64 kbit/s wideband data link equipment** of a new universal modular design is now in operation over the PCM network.

### Radio, Television

Since 1 March **Radio DRS** (German and Romansh speaking) of the Swiss Broadcasting Corporation has been transmitting a **night service** over its 1st and 2nd FM networks as well as over the 5th programme of the wire broadcast service.

### Miscellaneous

For the **pilot Videotex trials** 114 subscribers are connected to the public telephone network. The information user and provider occupied this system 315 hours during the month of February.

The introduction of **summer time** at 02.00 o'clock on 29 March had implications on the PTT telecommunication services such as the MW radio broadcasting and especially, the mechanized telephone information services.