

SA Police FM System

As reported in WEEKLY, June 14, a complete radio communication system, comprising a central FM station, remotely controlled FM transmitter and receivers, seven mobile FM units, and an interstate telegraphy system is now being successfully operated by the South Australian Police Department in Adelaide.

Supplied and installed by Philips Electrical Industries of Australia, the main equipment is located on the top floor of Police Headquarters' building at Central Police Station, Adelaide. The installation comprises a 200-watt frequency-modulated transmitter operating on a frequency of 73 MC/s, a 13-valve FM receiver, a 250 watt transmitter for interstate telegraphy and two relay racks. The photograph (Fig. 1), shows (from left to right) the 200 watt VHF FM transmitter, 250 watt MF telegraphy transmitter, and the two relay racks.

The FM transmitter incorporates automatic overmodulation control, while the operating frequency is held to within 0.005%. The deviation is ± 15 KC/s and the frequency range is from 300 to 3,000 c/s. The driver stage of the transmitter is a replica of the mobile transmitter units, and delivers 20 watts to a PA stage.

The interstate telegraphy transmitter has eight available channels, of which two (4.4 and 8.8) are at present in use, the others being spare frequency assignments.

The relay racks are used to remotely control a 25-watt FM transmitter (73 MC/s) and receiver at Mount Osmond, and two telegraphy receivers situated at Police Barracks. The Mount Osmond installation is con-

trolled over landlines from HQ, and its purpose is to maintain communications with mobile units operating in the shielding sphere of Adelaide's surrounding mountains. This equipment is normally AC operated, but in the event of a power failure, relays automatically switch in an accumulator supply, while a warning signal is flashed back over the landlines to HQ, notifying the operator of the power failure.

Six police cars and a police launch are fitted with mobile FM transmitters and receivers. Fig. 2 shows the installation in the boot of a police car, the receiver being at the left, and the transmitter at the right. The mobile transmitters operate on 72.5 MC/s, and have an output of 20 watts. Sidetone is provided in the handset when transmitting.

The receivers have 13 valves in all, and comprise an RF stage, mixer, crystal oscillator, harmonic amplifier, first mixer, first IF, second mixer, second IF, two limiter stages, two audio stages, and (where applicable) a rectifier. Each receiver incorporates AFC to centre the frequency on the discriminator, while AVC is used to keep a constant signal level under various conditions. In addition electronic squelch is applied so that the receivers are silent unless a signal is

applied, thus keeping background noises completely absent. To overcome the possibility of missing signals through a dead receiver, the squelch system can be adjusted to cut out with an input signal as low as 1 μ V., or up to 5 μ V. Signals above 5 μ V. automatically operate the receiver. For test purposes a push button cuts out squelching. In addition, a "pip" monitoring system is applied, so that periodically a "pip" sent out by the transmitting station assures that the mobile unit is still in communication.

The mobile units use a quarter-wave vertical aerial, and provision is made for sounding the car horn should the occupants of the car leave the vehicle and be beyond normal hearing distance of the speaker. The receivers operate from a vibrator supply (except the main station receivers which are AC operated). The vibrator supply also supplies HT for the low power stages of the transmitter. Final stages are fed from a genemotor.

SCC ELEC. CONSUMPTION

The number of kilowatt-hours sold for various purposes by Sydney County Council for the month of May, 1948:

| | |
|----------------------------|------------|
| Domestic supply | 28,073,085 |
| Commercial supply | 9,768,191 |
| Industrial supply | 42,888,111 |
| Bulk supply | 11,191,905 |
| Street lighting | — |

| | |
|---------------------------|------------|
| Total sales to public | 91,921,292 |
| Generating Authorities .. | 3,613,170 |

Total sales 95,534,462

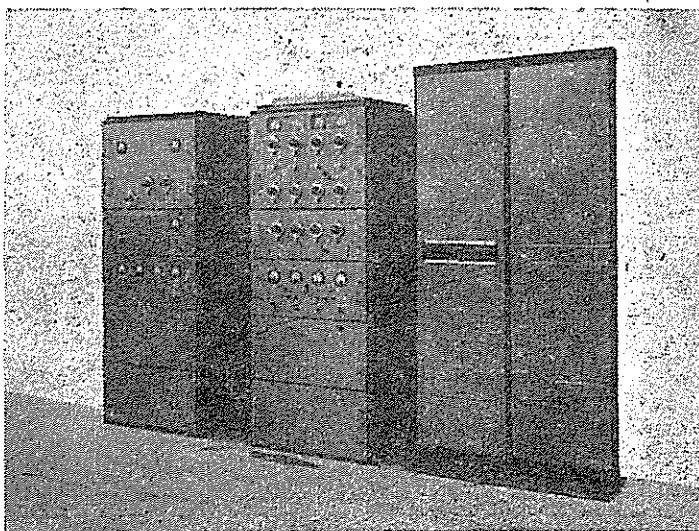


Figure 1



Figure 2

Above at left is shown the South Australian Police Headquarters radio installation, including from left to right, the Philips type 1608 200 W. F-M transmitter, the Philips type 1603 250 W. HF CW transmitter and the relay switching racks for the remote transmitter and receivers. The photo. at right shows Inspector Kilderfield of the SA Police, pointing out the location of the mobile FM equipment in the boot of one of the police cars.