

AWA and the Teleradio

by

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Part 2 - The Teleradio at War

With the growing clouds of impending war, the Government through Navy Intelligence appointed approved personnel such as patrol officers, plantation owners and missionaries as coastwatchers to report on Japanese activities in their respective areas. Many of the organisations employing such people were using AWA Model 3A sets (frequently on a hiring basis) and permission was given for these sets to be used to report activities, AWA staff coordinating the traffic. In parallel with this AWA saw the need to further upgrade the Model 3A set to the 3B, so it is no surprise when Eric Feldt was mobilised and appointed Staff Officer, Port Moresby, his task to extend the existing Coat Watching Organisation, the new AWA Teleradio Model 3B was employed [8]. Other service organisations such as the “Spotters”[9] also used the Model 3 range of Teleradios.

a) The Teleradio Model 3B (1939)

A new receiver was designed [10] that used 6 volt independently heated cathode valves, and the transmitter and new receiver were housed in pressed steel cases (L = 16 ¾”, H = 10 ½”, D = 12 ¼”) with tops and bottoms held in place by spring clips, readily removed for servicing. All corners were rounded. Where the units were to be portable or transportable a close fitting steel cover, enclosed all the control knobs, meters and dials to protect them. Again this cover was held in place by steel spring clips. As discussed in more detail later three versions of the receiver were produced, two operating from 6 or 12V DC supply and the third from either a 105/130V or 200/260V, 40-60 Hz supplies. The 3A transmitter, which was powered by a 12V DC supply was simply rehoused in the new pressed steel case. Thus the original 3B Teleradio consisted of the following units.

Teleradio 3B installation Type J6800 [11]

Transmitter Type J6798

Two crystals mounted in type R583B holders

Hand microphone type R1484

Transmitting key with cable type R688A

Superheterodyne communications receiver type, C6770 or 3C6770,

Complete with vibrator power supply unit type H6499

Crystals mounted in type R5587 holders (3C6770 type only)

Ericsson headphones

Loudspeaker Unit with cable type D6799

Cables - Battery (x2), battery link and charging

200' 7/20 aerial wire

6, Bull-nose insulators

Lead in insulator
2, 6V, 120 AH accumulators
12V engine charger (Briggs and Stratton engine)
Instruction book No. 6800R

Figure 1 show the 3B set including supporting units such as antenna tuner.

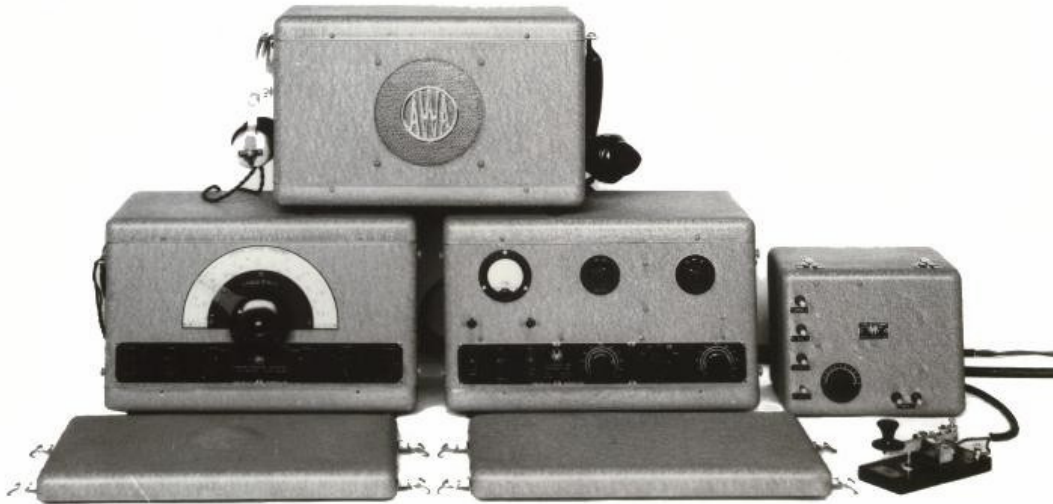


Figure 1. The Teleradio 3B set. Speaker box on top of the receiver (LHS) and transmitter (RHS). On the RHS of the speaker is the R1484 microphone and on the LHS the Ericsson headphones. The Morse key type R688A and optional antenna tuning unit type J8992. The front protective covers are in the foreground. [12]

The three versions of the communication receiver were [13] –

Type C6770 a battery operated 6 or 12V input receiver covering the frequency range 0.2 to 30MHz in 5 bands (A variant, the 1-C6770 was also made).

Type 1C6770 an AC mains operated 105/130V or 200/260V 40-60Hz receiver covering the frequency range 0.2 to 30MHz in five bands. The 2-1C6770 and 3-3C6770 were versions of the same receiver housed in slightly different cases.

Type 3C6770 a battery operated, 6 or 12V input covering 0.2 to 11.1MHZ in four bands, the fifth position being for crystal locked operation.

A further type was initially proposed the 2C6770 operating from 240V DC, but it appears this set was never produced.

For all three receivers the controls are as follows. Lower row (L to R) volume, tone, off/transmit/receive switch, phone/MCW/CW, wave change, RF volume. Central knob and dial is tuning. Figure 2 gives the circuit schematic for the C6770 receiver.

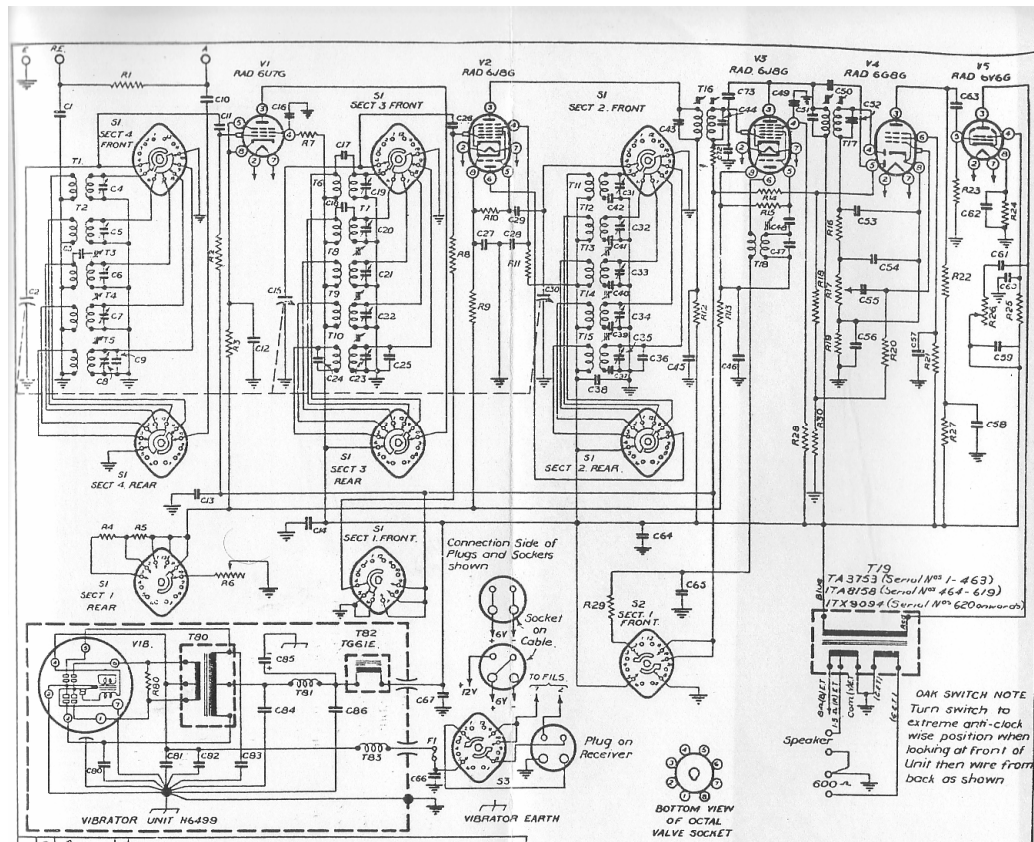


Figure 2. Circuit schematic for the C6770 receiver which operated from 6V or 12V DC. Frequency range 0.20 to 30 MHz in five ranges.

The transmitter (type J6798) [14] is a carry over of the 3A transmitter packaged differently. Controls are –

Across the top (L to R) – Meter, Oscillator crystal switch, PA coil tap switch

Across bottom (L to R) – LT switch with pilot light above, Key/speech switch, HT switch with pilot light above, Osc tune, Meter switch, PA tune.

The circuit schematic for the transmitter is given in Figure 3.

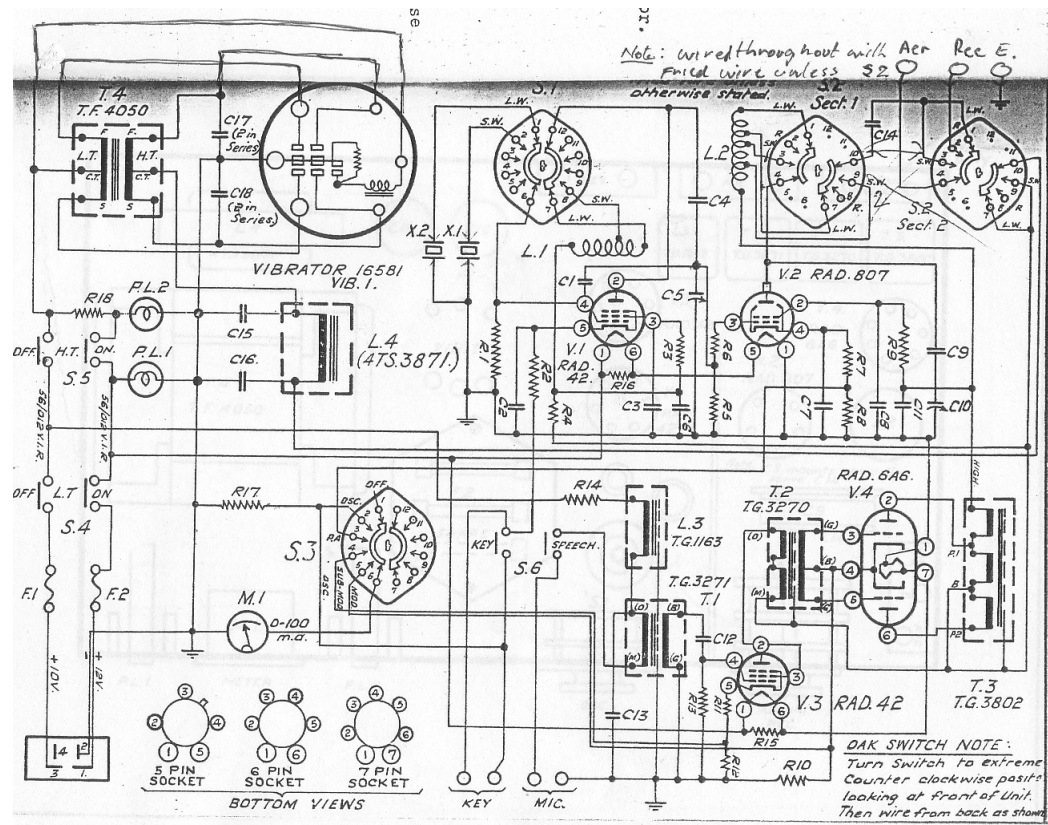


Figure 3. Circuit schematic of Models 3A and 3B (version 1) transmitters [14].

A year later the 3B transmitter was upgraded, the type 42 and 6A6 valves all replaced by type 6V6 and given the designation type 8J6798. The 3B installation was now called the type 8J6800 and the Instruction Book the 6-6800R [15]. The new circuit is given in Figure 4.

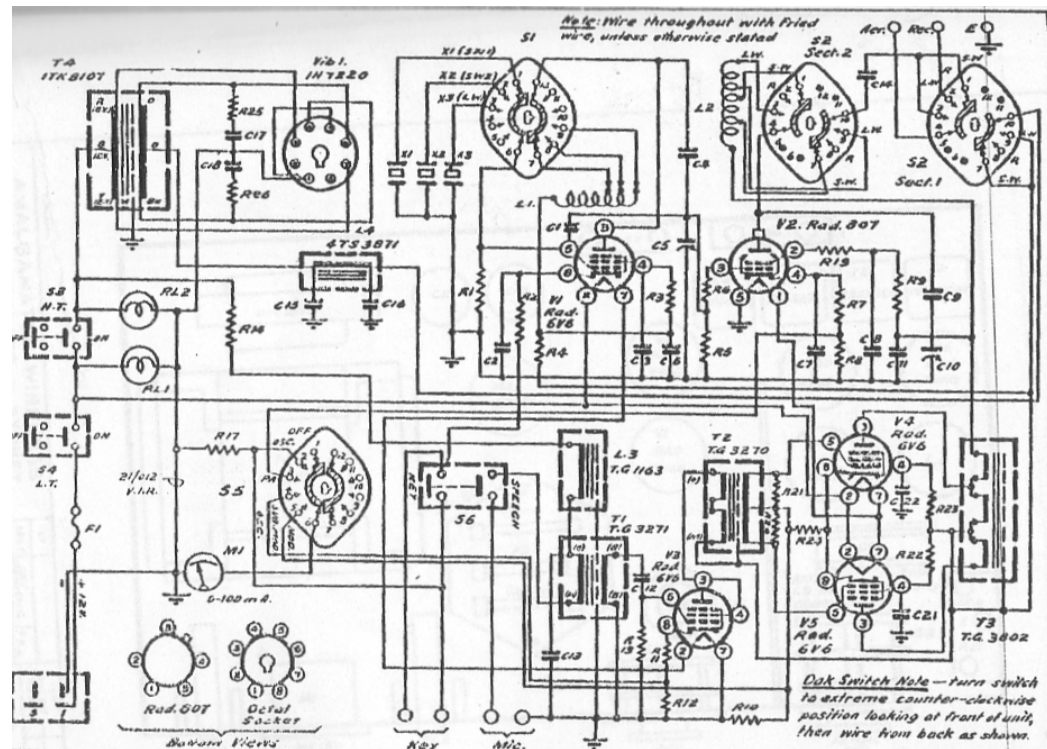


Figure 4. Version two of the Teleradio 3B transmitter, type 8J6798. [15]

It is interesting to note that New Zealand also contributed to coast watching activities and at some point designed their own 3B style transmitter [16]. A photograph taken in a coastwatchers wireless hut shows the unit with antenna tuner on top, a standard 3B receiver with the two accumulators under the table. See Figure 5.

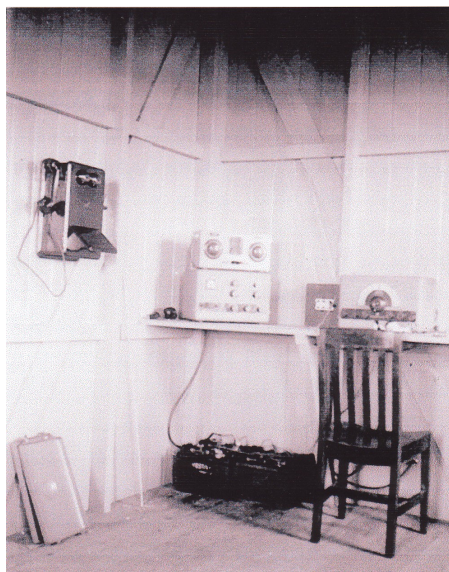


Figure 5. Equivalent New Zealand 3B set-up. It is not known who manufactured the system.

b) The Teleradio Model 3BZ (1941)

A further upgrade of the Type 3 transmitter occurred in 1941 and the receiver transmitter combination was assigned the designation Model 3BZ (version 1) [17]. The option of a smaller speaker enclosure, the type 1D13503 being 8" square and 4 ½" deep was made available. Figure 6 shows the new 3BZ transmitter, while Figure 7 gives the circuit schematic. Notice that the push pull 6V6 modulator circuit of the 3B (version 2) set, has been replaced by operating the two 6V6 valves in parallel. While this may have allowed an AM signal to still be generated even when one 6V6 valve filament went open circuit, it had the disadvantage that the maximum percentage modulation would not exceed more than 80%.

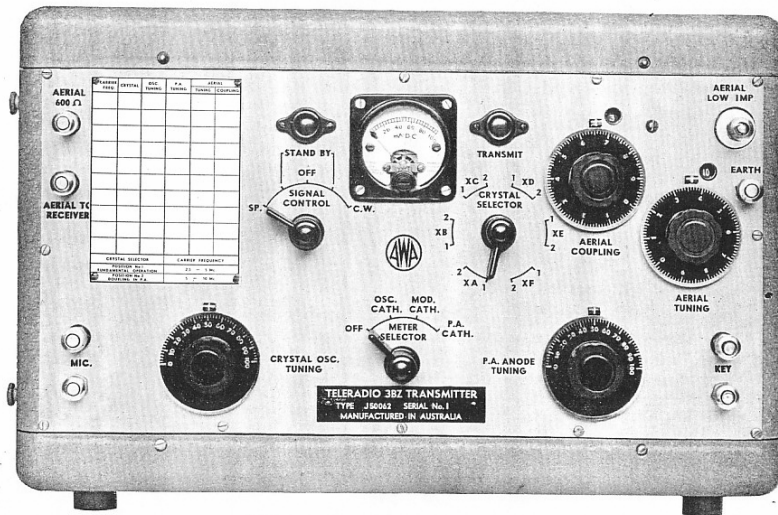


PLATE 1. TELERADIO 3BZ TRANSMITTER—FRONT PANEL.

Figure 6. A 3BZ transmitter (version 1), type J50062, having an inbuilt antenna tuning unit (top RH corner). The white Celluloid table allows dial settings to be noted [17].

The new transmitter includes an inbuilt antenna tuning unit that enables low impedance antennas to be fed. The R1418 microphone was retained, but a new key, type 3R2018 was employed.

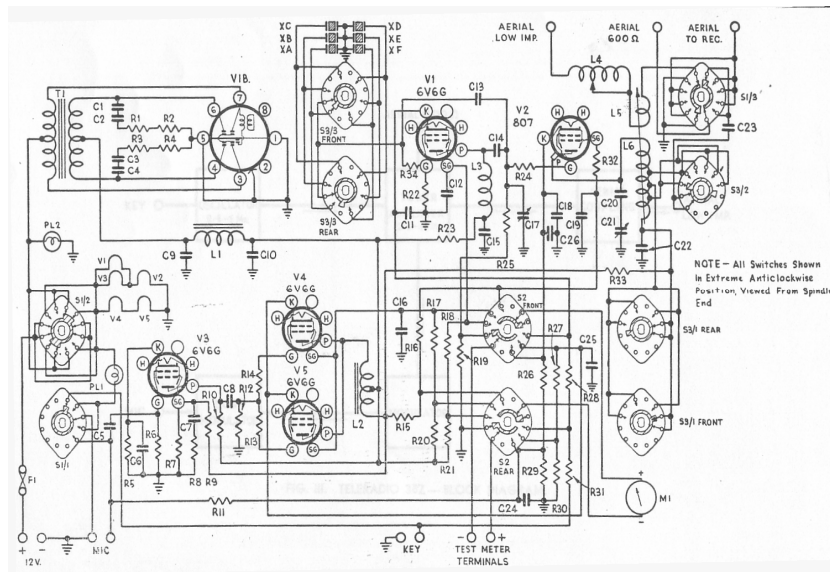


Figure 7. Circuit schematic of the 3BZ transmitter (ver.1) Type J50062.

The 3BZ Teleradio set, Type J50061 is built up from the following units [17]

Transmitter type J50062

Microphone type R1484

Transmitter key type 3R2018

Crystals, AWA type R7847 (1 to 6 off)

Receiver type C6770

Loudspeaker unit, either type D6799 (large) or 1D3503 (small)

Headphones

Aerial kit

200' of 7/22 wire

6, Bull-nose insulators

Birnbach lead in insulator, No. S6937

2, 130 AH 6V batteries

Battery, key, and other leads

Instruction book No. 50061R

A further modification was made to the 3BZ transmitter (version 2) the type 1J50061, where the two terminals for the R1484 carbon microphone were replaced by a three pin socket that allowed a type 2E7522 microphone with change over switch to be employed. A change over relay was added to both the transmitter and receiver (receiver now Type 15C6770). The instruction book for this 3BZ version was upgraded to No. 1-50061R [18].

A further modification to the receiver, was the inclusion of a bezel on the LHS and for those supplied to the US under the Reciprocal Lend-Lease agreement an engraved brass type plate on the RHS of the receiver, the complete set

designated Model AMC – 145 (Figure 8).



Figure 8. The Teleradio Model AMC-145.

Two different crystal holders were used in the type 3 series transmitters, early sets employing the R583B style and the later ones the plug-in R7847 style. This meant that during WW II some clandestine operators had to carry both types of “X” crystals. Figure 9 shows the two types.

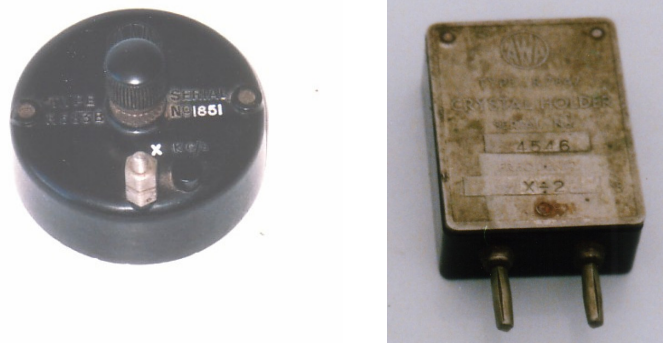


Figure 9. “X” frequency crystals used by coastwatchers. LHS shows the type R583B used in the 3A and 3B version 1 sets. RHS shows the type R7847 used in the 3B version 2 and later 3BZ sets. Note the divide by 2 stamped on the crystal to remind operators to switch in the frequency doubler.

Besides Coastwatching the 3B and 3BZ Teleradios also found use in many other areas of the Armed Forces. For example, they were used at Company Headquarters of the North Australian Observer Unit (NAOU) for communications between Companies and with mobile patrols using the AWA FS6 Wireless Set. The spotters in the islands to the north of Australia also employed them. Small Naval ships used the Teleradio, either alone or in conjunction with other wireless sets. It is suspected that the

Reciprocal Lend-Lease version of the late 3BZ, namely the AMC-145, was used by the U.S. Army for communications between islands as the forces hopped towards Japan.

During the two decades that followed WW II there were major advances in technology and so in Part 3 of the series we will examine the impact these had on the Teleradio.

To be continued – Part 3

References

- [8] Feldt E (1946) *The Coast Watchers*, Oxford University Press, Melbourne.
- [9] Perrin A E (1990) *The private War of the Spotters*, NGAWW Publications Committee, Foster, Vic, 3960.
- [10] Stacy J B & Holloway F S (1940) *An Economical Commercial Receiver of Wide Application*, AWA Technical Review, Vol 5, No.2, pp61-75.
- [11] Instruction Book 6800R. AWA Teleradio 3B installation.
- [12] Photo AWA Teleradio Model 3B, courtesy of the NSW Mitchell Library.
- [13] Instruction Book 6770R, AWA Superheterodyne Receiver Types C, 1C, 3C6770.
- [14] Instruction Book 6798R, AWA Teleradio 3B Transmitter Type J6798.
- [15] Instruction Book 6-6798R, AWA Teleradio 3B Transmitter Type 8J6798.
- [16] Correspondence with Dale Williamson, Porirua, New Zealand.
- [17] Instruction Book 50061R, AWA Teleradio 3BZ installation Type J50061, Transmitter type J50062 and Receiver type C6770.
- [18] Instruction Book 1-50061R, AWA Teleradio Installation 1J50061, Transmitter Type 1J50062 and Receiver type 15C6770.

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