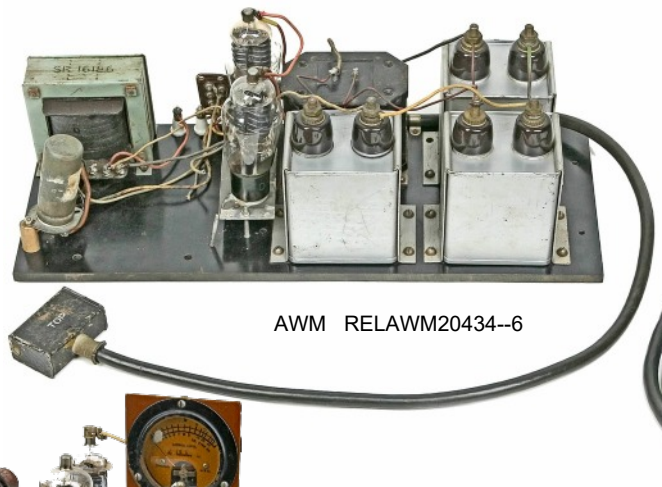


AWM RELAWM20434--6

AWM RELAWM20434--1

AWM RELAWM20434--2

'Winnie the war winner' (Pt. 2) Country of origin: Australia.

In this second and final part of 'Winnie the War Winner' are development and technical details of this makeshift station, which eventually led to contact Darwin on 19 April 1942. As can be read in the official report by Capt. G.E. Parker (See pages 4-6 of part 1 in Chapter 328), there were several development versions of 'Winnie'.

The photographs are courtesy of the Australian War Memorial, individually marked with their AWM serial number.

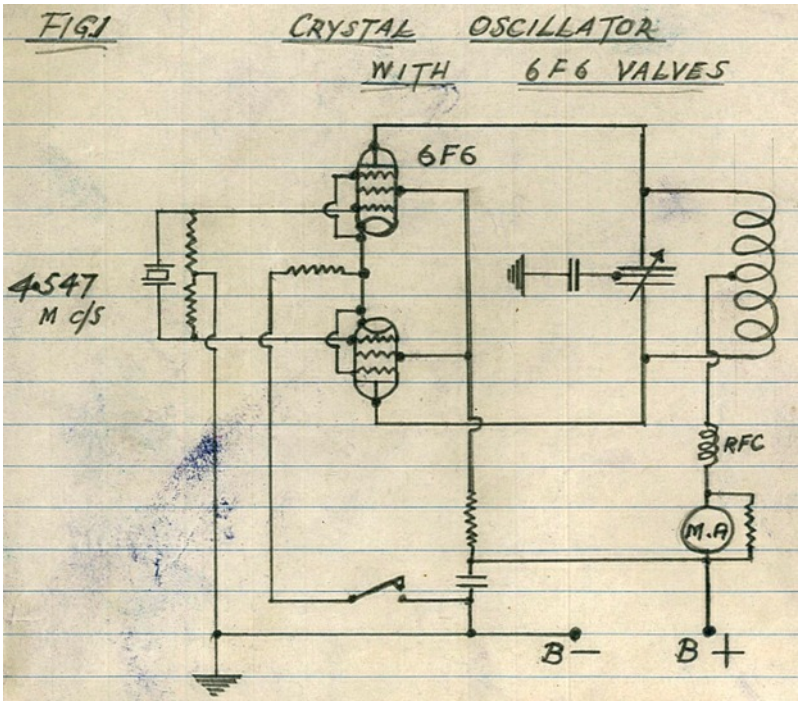
First attempt

The first, and unsuccessful attempt to contact Darwin was by building a push pull crystal controlled oscillator using a couple of 6F6 valves, taken from a Portuguese broadcast receiver (See part 1, page 4, note 2).
There were as far as known no pictures of this arrangement, but it seems quite likely that the mechanical arrangements, such as a chassis being half of a kerosene can and the push-pull circuit, were used during the various later stages of building the transmitter.
A next attempt was by using the the same circuit and mechanical construction replacing the crystal by a tuned circuit acting as a TP-TG oscillator. This arrangement was tried and a few days later with a No. 101 Set employed as a driver to the 6F6 valves, but both without results.

Third and successful design

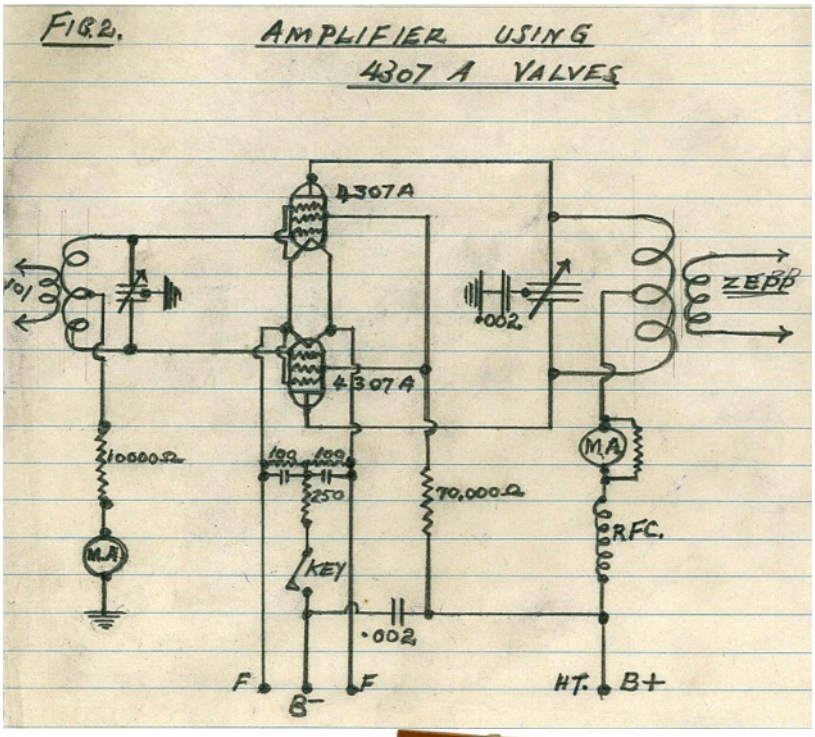
The last and successful version was by replacing the 6F6 valves by 4307A's, salvaged from a broken down WS No. 109. A complete and functional WS No. 101 was linked to the tuned grid of the push-pull circuit, used as RF amplifier coupled to a half wave Zepp aerial.

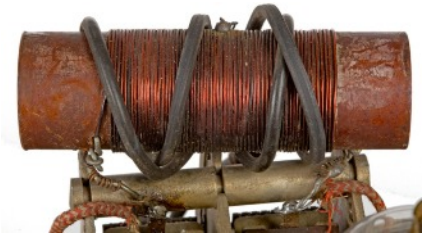
The receiver for listening to Darwin was, according the Report on Special WT Section Sparrow Force, (see Chapter 328, page 6, note 6), the receiver section of the salvaged broken down Australian WS No. 109.
This was believed used separately from the transmitter, having its own aerial and accumulator.



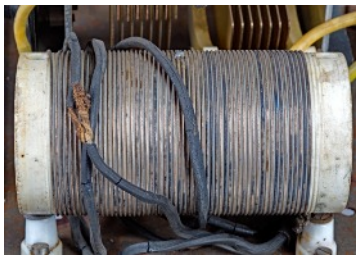
Circuit diagram of the first transmitter with two 6F6 valves connected in push-pull (AWM54 571/4/27)

Circuit diagram of the RF amplifier connected in push-pull with two 4307A valves, driven by an Australian Wireless Set No. 101 (right). This configuration led to a successful contact with Darwin on the 19th of April 1942. The meter drawn in the grid circuit was probably removed at a later stage. The directly heated filaments required a special keying arrangement and the use of a galvanically isolated 6 V accumulator. (AWM54 571/4/27).



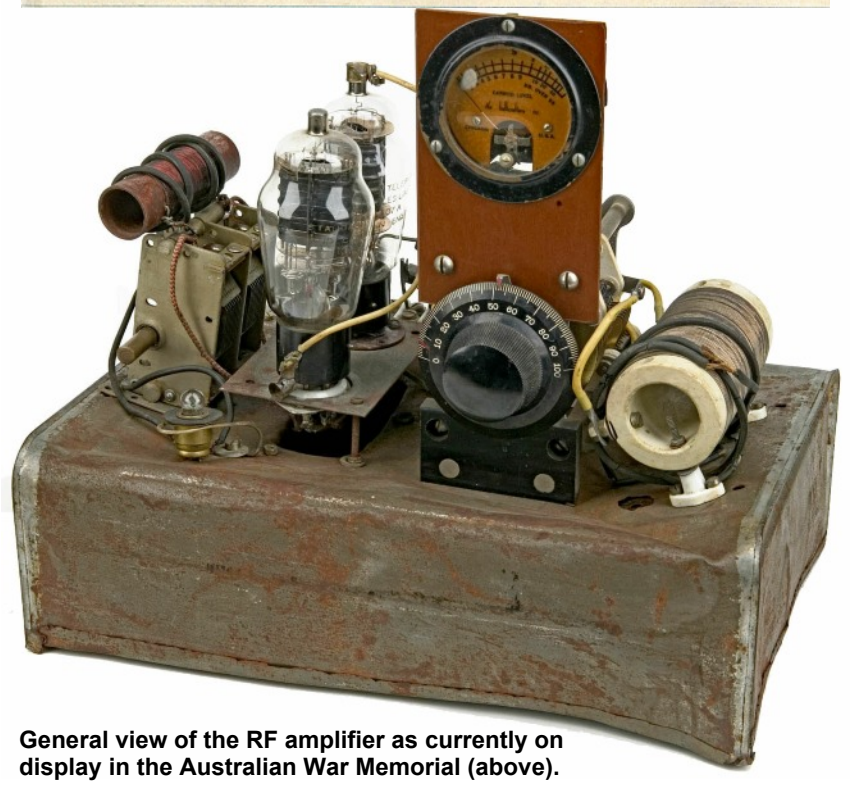


Detail view of the amplifier's grid coil with coupling to the WS No. 101.
AWM PAIU2011_165_08

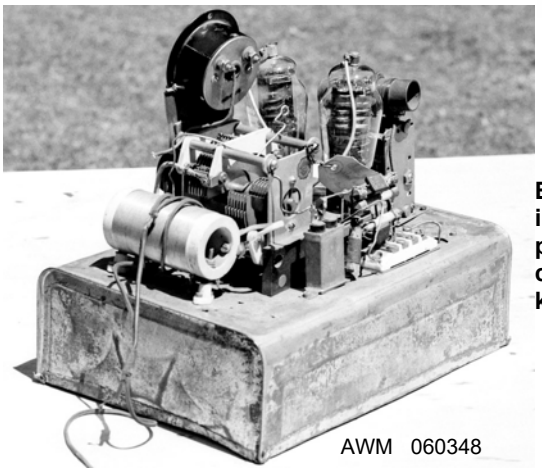


Detail view of the RF output coil with coupling winding to the Zepp(elin) aerial.
AWM PAIU2011_165_07

Anode current meter in the push-pull RF amplifier. This meter was originally a 'S' meter from an American Hallicrafters Model S-36A communications receiver.
AWM PAIU2011_165_38

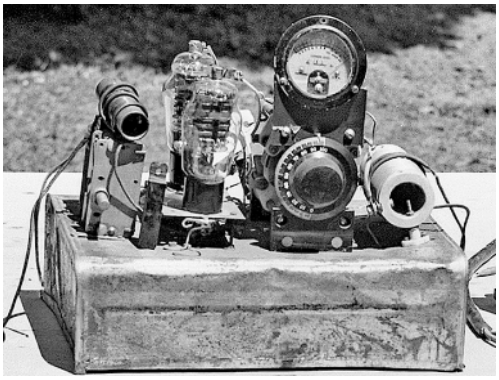


General view of the RF amplifier as currently on display in the Australian War Memorial (above).
AWM RELAWM20434--1



AWM 060348

Black-white photo's taken in 1942 of the 'Winnie' push-pull RF amplifier constructed on half of a kerosene can.



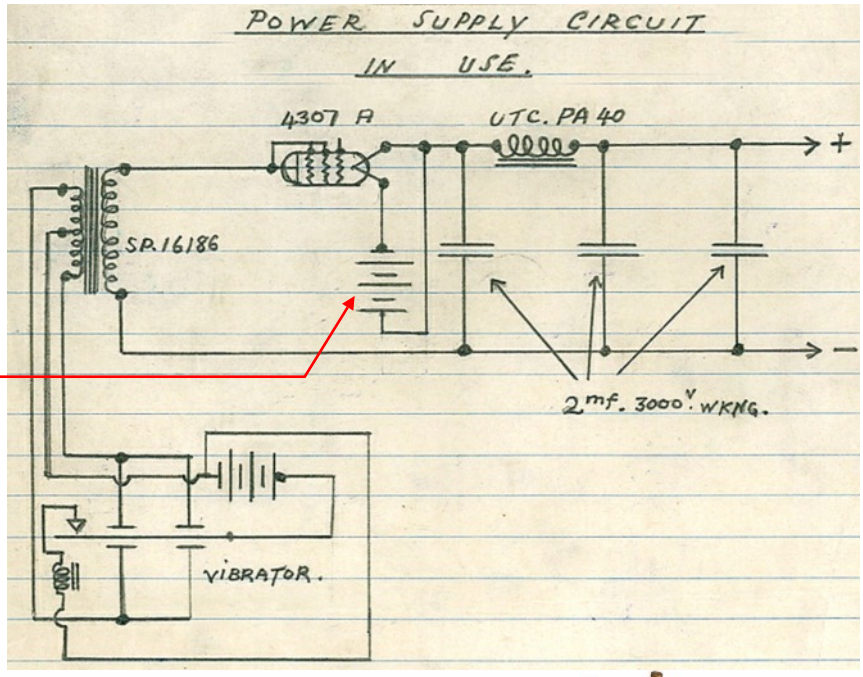
AWM 060349

Power Supply

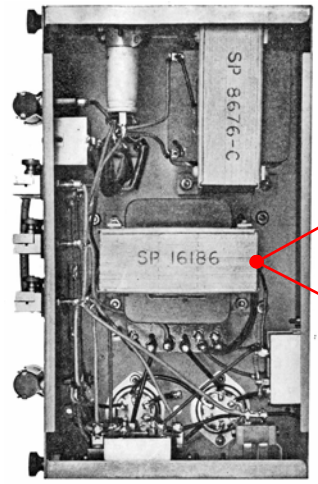
Power supply unit circuit diagram constructed to provide HT for the RF amplifier of 'Winnie the War Winner' (right). It was comprised of the spare vibrator of a WS 101, and the transmitter vibrator step-up transformer from a WS No. 109 salvaged power unit (See photograph below). This replaced the broke down power supply from the 'Portuguese' receiver which was used in earlier attempts.

As there was not a suitable rectifier valve available, two 4307A valves connected in parallel were used. This necessitated the use of a galvanically isolated 6V accumulator as these valves had directly heated filaments.

(AWM54 571/4/27).



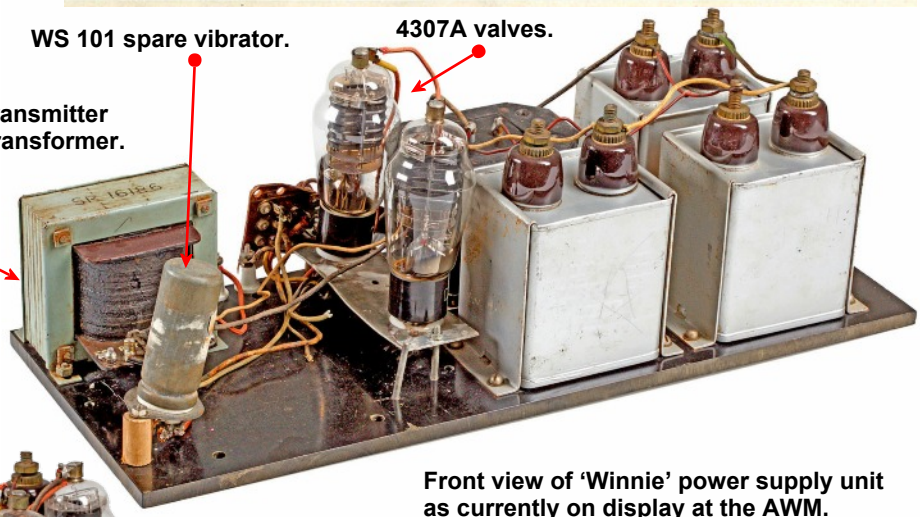
Bottom view of a WS No. 109 power unit showing the SP16186 transmitter step-up transformer (below). (The latter identifies as a WS No. 109 Mk.II* power supply unit).



WS 101 spare vibrator.

4307A valves.

WS 109 transmitter step-up transformer.

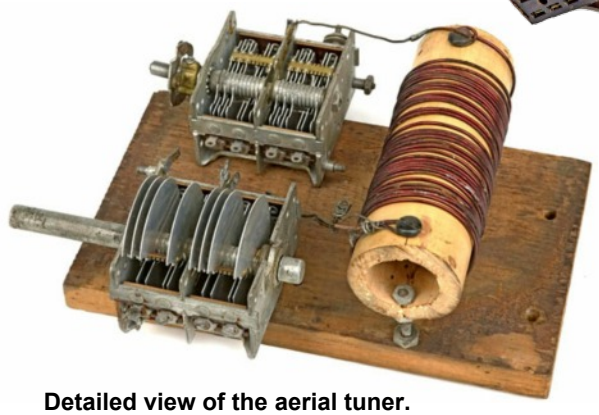


Front view of 'Winnie' power supply unit as currently on display at the AWM.

AWM PAIU2011_165_29

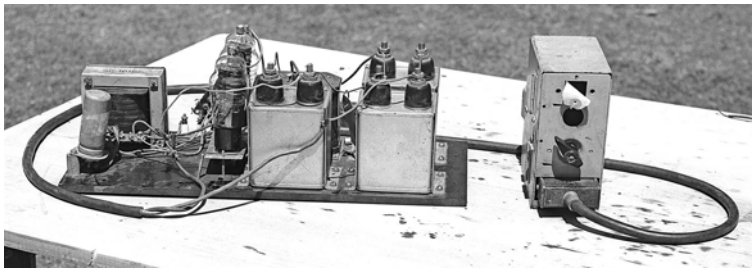
Rear view of 'Winnie' power supply unit as currently on display (left.)

AWM PAIU2011_165_24



Detailed view of the aerial tuner.

AWM RELAWM20434--4



Black-white photo of the 'Winnie' power supply unit and switch box, taken in 1942.

AWM 060349

Functional block diagram of 'Winnie the War Winner' transmitter part.

4307A valves in 'Winnie'.

Valves for the RF amplifier and power supply unit, taken from a No. 109 Set, were type 4307A, roughly comparable with an 807, but with directly heated filaments and the G3 separated for suppressor grid modulation.

Similarity to 807

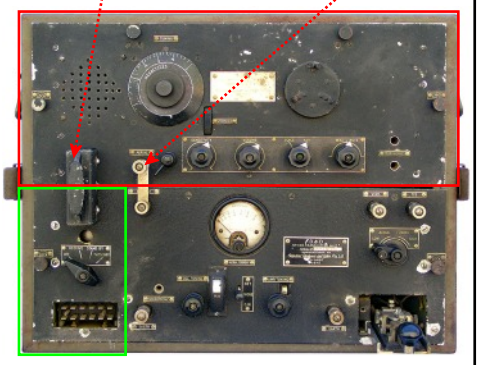
If the pin out of the 4307A is compared to that of the 807 the similarity is striking. All pins are assigned equivalent electrodes with the exception of pin 4, which is the suppressor grid g3 in this type, but in the 807 pin 4 is connected to the equivalent of a suppressor grid, the 'beam plates' and also the separate indirectly heated cathode. It is possible to interchange the two with the relatively minor alteration involving the linking of pins 4 and 5 and ensuring the heater supply is floating (not connected to other heaters). If the heater is supplied from an A.C. source, linking pin 4 to the centre of that source and the cathode bootstrap minimizes hum pickup.

The STC/Brimar-made SY4307A was used extensively during World War II by the Australian armed forces. These valves were marked on the Bakelite collar of its base with the 'D broad arrow D', commonwealth Department of Defence mark. Two SY4307A's were used, connected in push/pull, as RF amplifier, and another two in the rectifier of a transmitter constructed by the Australian soldiers of Sparrow Force in Japanese occupied Portuguese Timor in 1942.

STC/Brimar 4307A.

Australian Wireless Set No. 109.

4-pt power socket. **Aerial connection.**



Australian Wireless Set No. 109. Parts of the transmitter section of this set were used to built 'Winnie the War Winner'. The receiver part (top section, principally a separate unit, outlined in red) was used with a separate power supply for listening to Darwin.
The 'Winnie' power supply unit switch box (outlined in green) was the original WS No. 109 system switch.