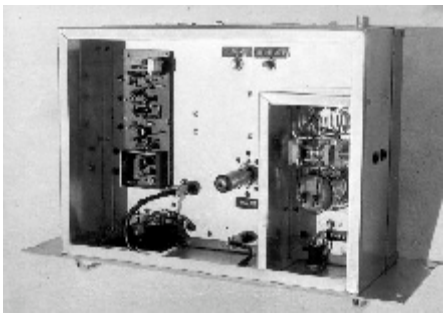
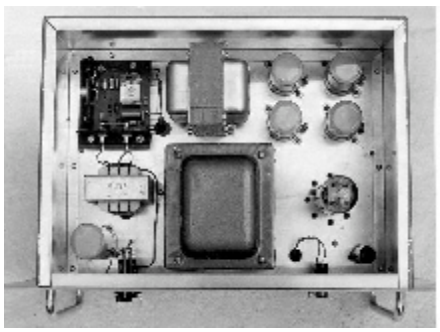
WAIKATO VHF GROUP
(HISTORICAL)

FIRST 2-METRE BEACON

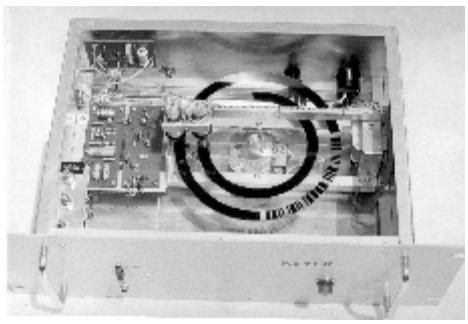
Soon after commissioning our first repeater (Ch."D", only the second amateur VHF repeater on the air in NZ), the Waikato VHF Group turned its attention to providing a beacon transmission for propagation monitoring on 2-metres. Our 144.150MHz beacon went on the air in 1972, operating initially from a site 300m above sea level on the western side of the Kaimai Range, approximately 3km N/W of the lookout on SH29. The antenna was a horizontally polarised "clover leaf" mounted 14m above ground.



Equipment for this first beacon comprised four rack-mounting units; Transmitter RF, Antenna Band-Pass Filter, Power Supply, and Keyer, together occupying 14RU (24.5") of space in a four-foot high 19" floor mounted rack (see photo). It was sited at the power line terminal for a disused quarry, where we were able to use the hut originally housing the main switchboard. We arranged to have the power restored and (one phase) supplied from the 100kVA transformer which had remained on site. No doubt the magnetising current drawn from the 11kV supply to this transformer probably cost the Power Board more than our small load on one phase of its secondary ever earned them in revenue!



This beacon was a hybrid design (incorporating a transistorised Tx exciter and keyer plus part of the power supply, and thermionic valves for the higher powered sections). In the "Transmitter" module, a solid-state exciter delivered approximately 1.5W of RF to drive a QQEO6/40 (valve) final amplifier, which (loafing along) produced approximately 10W via the output filter to the antenna feeder. Power to this transmitter consisted of 12v and 24V DC supplies for the exciter, plus 500V and –105V DC for the PA and screen modulator/clamp, together delivered from the separate "Power Supply" module.



The beacon's keyer was an "opto electronic" device, employing a perspex disc with the keying code painted black in two concentric circles inside its perimeter (see photo). An electric clock motor turned this disc through one revolution every minute, so an incandescent light (6.3V radio dial lamp, run on reduced voltage to promote reliability) shone through the disc to be interrupted by the painted code sections. These code rings were read off by photo transistors to create the keyed control output, the outer ring keying the carrier (CW), and the inner ring keying the tone oscillator (MCW). The keying sequence was 15 seconds of unmodulated carrier, followed by 15 seconds of tone amplitude modulated on the carrier, then another 15 seconds of unmodulated carrier, then the callsign sent by keying the carrier, before repeating the sequence. The keyer unit was self contained with its own internal power supply.

Propagation east into the Bay of Plenty from this original site was very restricted, and in 1978, the VHF Group gained approval to establish its beacons on a central Hamilton site (still used today by our 144.256MHz, 432.256MHz, and 1296.256MHz beacons). New all solid-state transmitters with an all electronic keyer (together occupying only half the rack space occupied by our original 2-metre beacon) were constructed for these Hamilton beacons, and our first beacon's equipment was retired.

Article by: Ian Brown ZL1TAT
Based on original records of our first beacon installation.