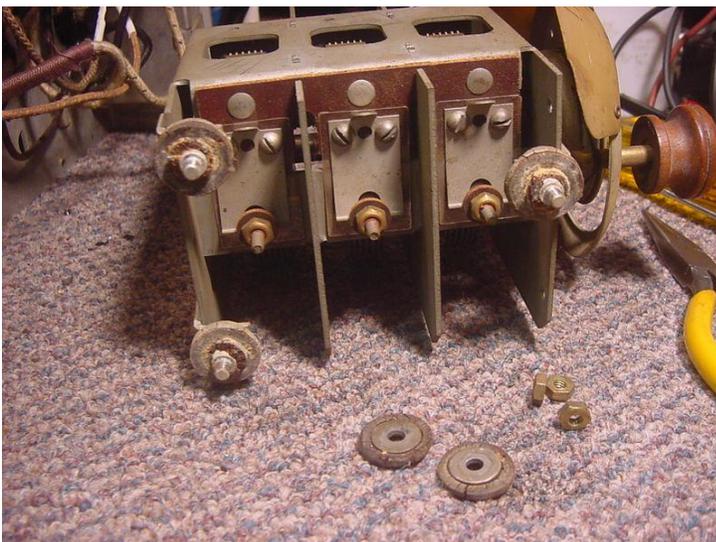


## Restoring a General Electric 'Color Radio' Model K-106 – Gerry O'Hara

An interesting repair job here carried out for a customer at the SPARC museum - a General Electric 'Color Radio' K-106 chassis (unfortunately the cabinet was not brought in to the museum – the owner is a furniture restorer). The Broadcast Band-only superheterodyne chassis, hailing from around 1933, is a 10 tube heavyweight. The circuit is of an advanced design for the early-1930's – a real 'top-of-the-line' set. Features include:

- RF gain control (actually termed a 'Silent Tuning' control in the instructions);
- tuning meter;
- variable-mu Pentode RF amplifier and IF amplifier stages;
- separate local oscillator and mixer tubes;
- amplified AVC;
- push-pull output using a pair of 2A5 tubes;
- separate bass and treble tone controls with colour indicators;
- tone-compensated volume control.



On arrival, the chassis looked very 'tired' and very dirty, with many loose and frayed wires, ancient sticky-tape covering poorly-soldered connections and crumbling rubber insulation on top-cap (grid) wires to several tubes. The chassis bore the scars of some previous repair work – many decades old judging by the components used. Where to start?

The first thing to do on a chassis in this condition is to remove all tubes and test the most expensive component is



functional – the power transformer, together with checks on the mains wiring to check it is safe to apply voltage to the set when other repairs have been effected. Coupling an AC voltmeter to the transformer HT secondary, and the primary to a Variac, the transformer

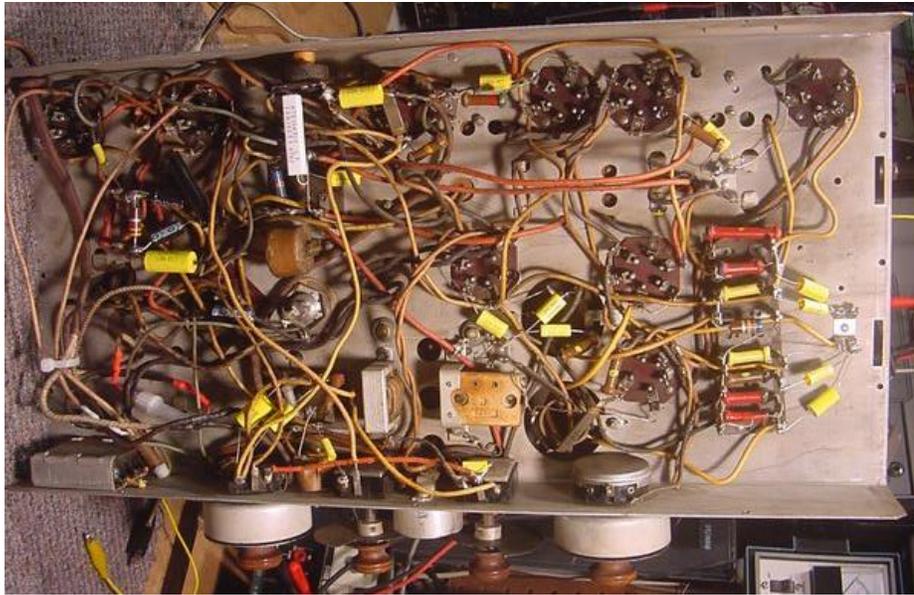
proved to be in good order (the transformer on this chassis is a very large and robust-looking unit). If the transformer had proved to be burned-out or otherwise damaged, the owner would have been contacted to advise that a replacement transformer was needed and to obtain approval before proceeding.

I cannot stand working on a dirty chassis, so the next job was to clean things up a bit – alcohol-soaked cloths and Q-Tips removed most of the



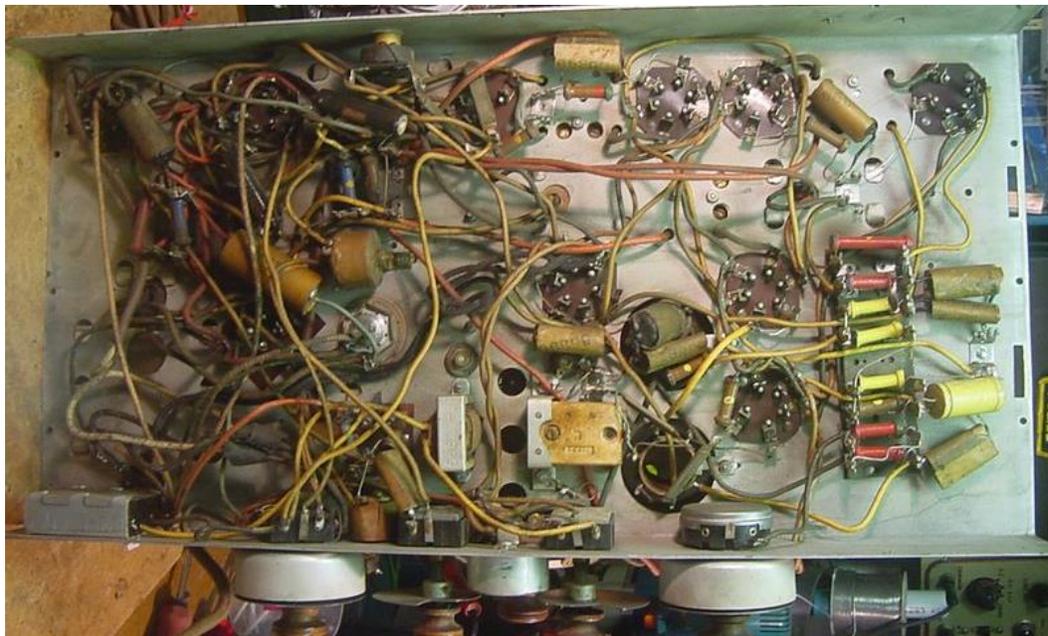
grime. Next, the nasty-looking tarry-paper capacitors were all replaced (all tested leaky), as was the single 10uF electrolytic (which had been replaced previously in the dim distant past). The lower-value

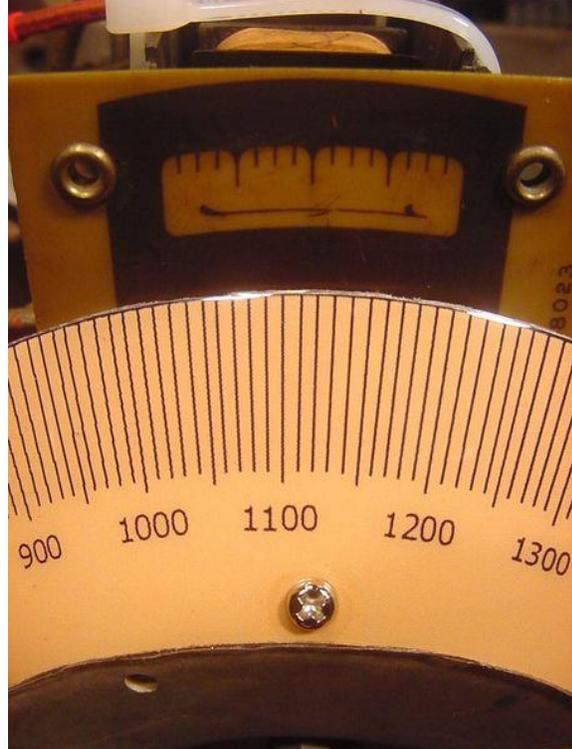
(mica) capacitors were tested and were within tolerance, so were left in circuit. The metal-can potted multiple capacitors were tested and two sets of these were replaced as they were all leaky (with individual capacitors, ie. the cans were left in place but not re-stuffed). The third set (twin 1uF) tested ok and was left in-circuit. Two resistors were also changed-out as these tested out of tolerance during random checking of resistors. The main tuning gang was noted to be loose – due to perished mounting grommets – these were replaced. The wires with the perished rubber insulation were covered with heatshrink sleeves. Poorly-soldered joints were repaired and insulated with heatshrink. An in-line fuseholder was



installed in the power transformer primary (2A fuse fitted). The translucent dial was very worn and a replacement had been purchased – this was fitted. The tuning meter was sticking and the needle was

bent – this was carefully straightened. All controls and the tuning gang contact points were cleaned with De-Oxit. Finally, three





dial bulbs were replaced – time to see if it worked...

The speaker was connected using a connection block and some minor repairs to the insulation on the speaker lead was undertaken using heatshrink. The tubes were cleaned and replaced in their sockets and power applied gradually using a Variac. A DC voltmeter on the HT line measured zero: the #80 rectifier tube was cold, its heater testing as open circuit. Fitting another #80 tube soon solved the HT voltage problem, and a slight noise could now be heard from the speaker – touching the mixer tube grid increased the noise level, but no stations could be heard – I suspected the local oscillator was not working. Checking around the circuit I found there was no HT on the local oscillator (#56 tube) and the screen voltage on the RF and IF stages was also missing. This fault was traced to an open-circuit power resistor in the power supply circuit. This replaced, the set sprang to life, although the dial settings were quite a bit out. The IF (175kHz) and RF stages were aligned and the set proved to work very well indeed – including the tuning indicator.

