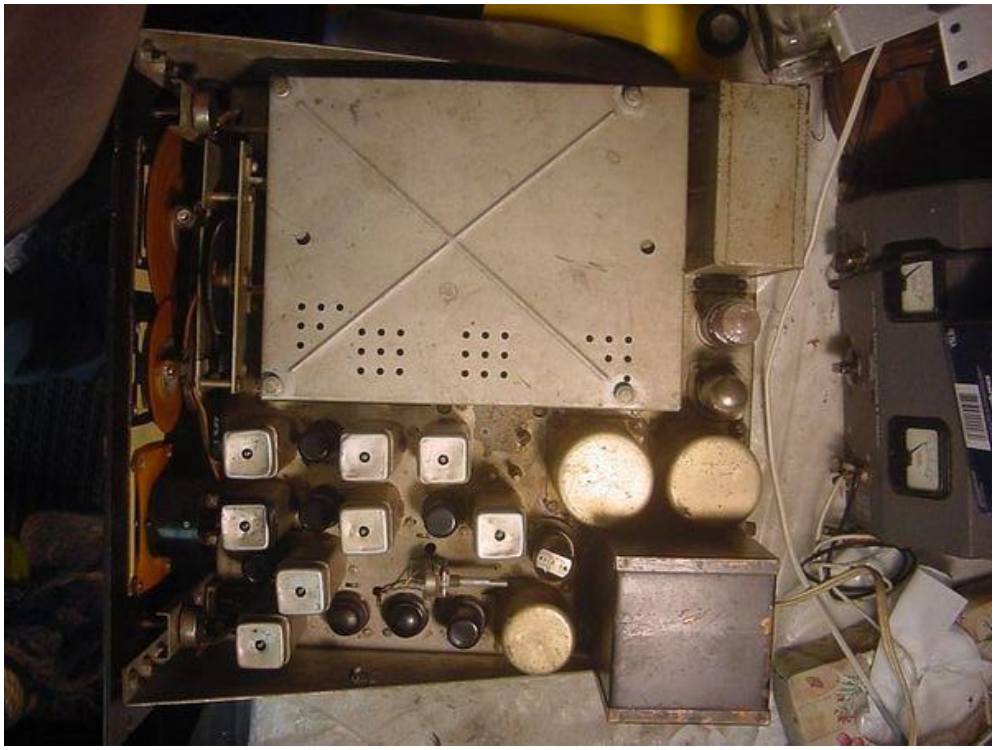
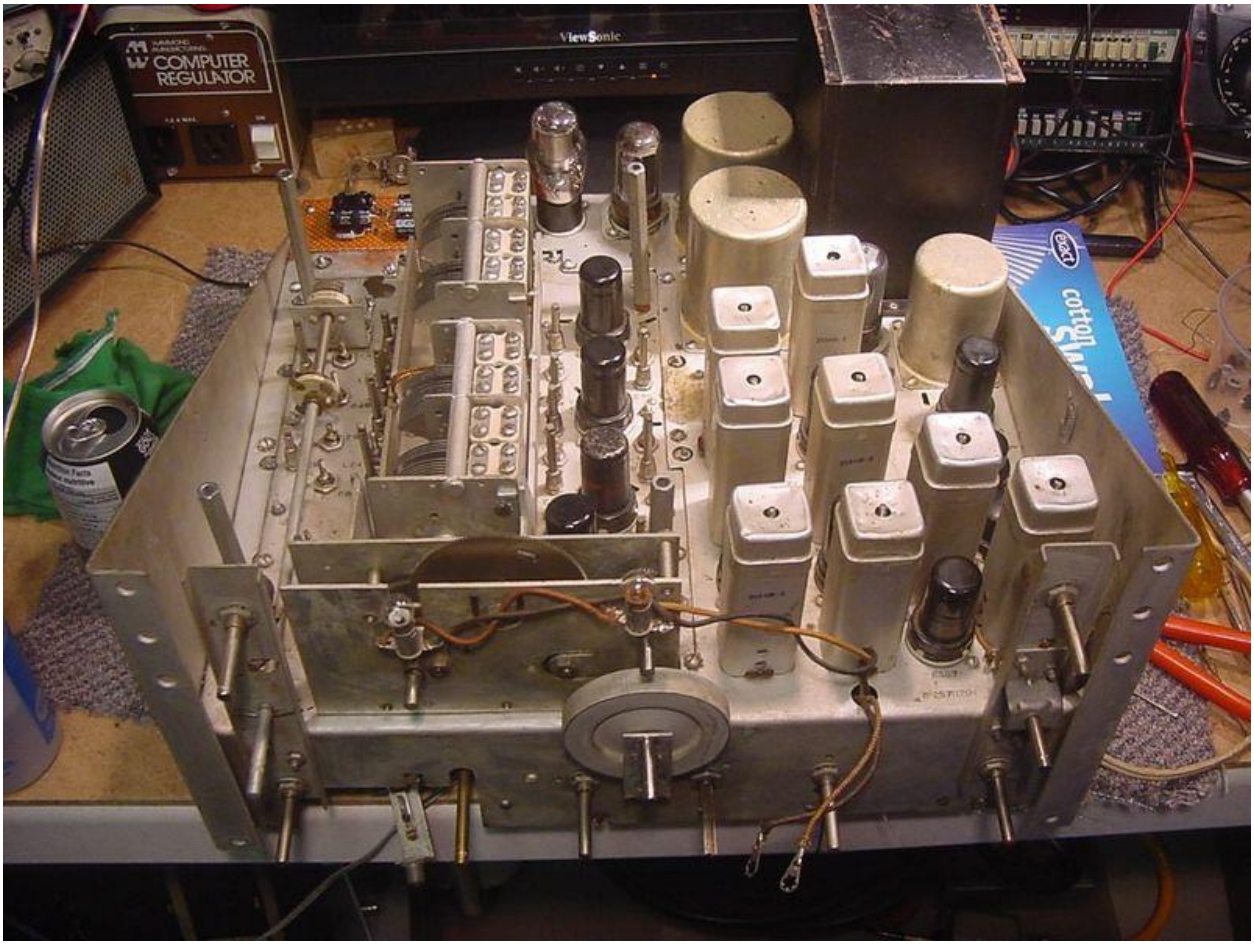
Restoring an RCA AR88LF – Gerry O'Hara

My first-ever experience of shortwave listening was using an RCA AR88LF at a scout's 'Jamboree on the air' ('JOTA') around 1969 at St Luke's Church, Morton Park, Carlisle in the UK. I stayed up all night with my friends listening on a pair of 'cans', keeping awake by drinking coffee and the excitement to hearing radio amateurs (and broadcast stations) from all over the world. The warm glow of the dials on that mighty radio (weighing-in at some 100lbs), the effortless way it seemed to bring in stations (2 RF stages and 3 IF stages) and the sensual smoooooth feel of its main tuning was something I have never forgotten. When my interest in things radio re-affirmed itself a few years ago, I always had it in mind that one day I would acquire an AR88LF and re-live that night…

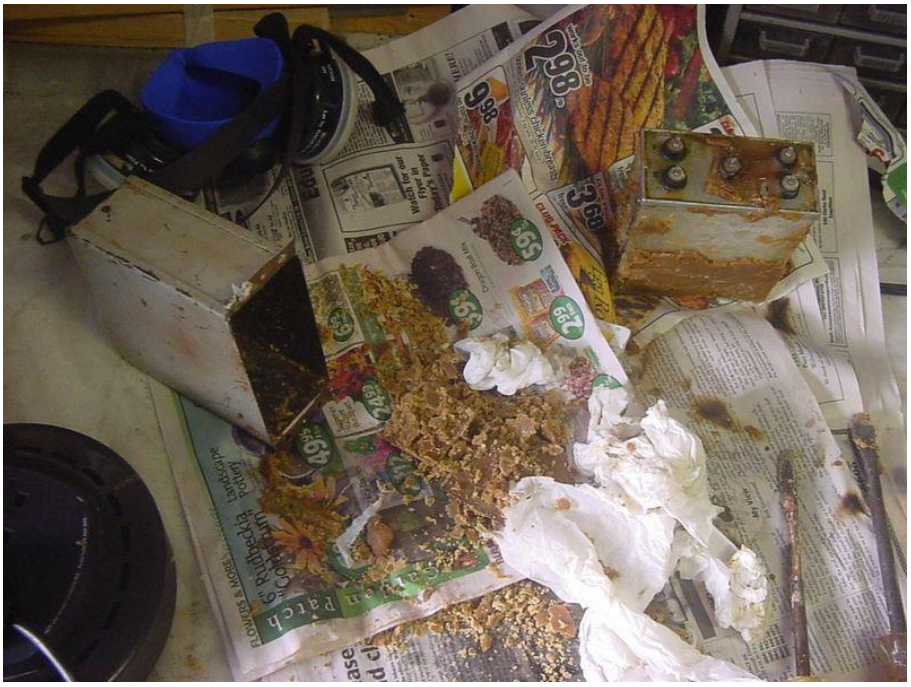


Well the opportunity finally arose this year and I became the proud owner of my very own AR88LF—in need of some TLC and restoration, but

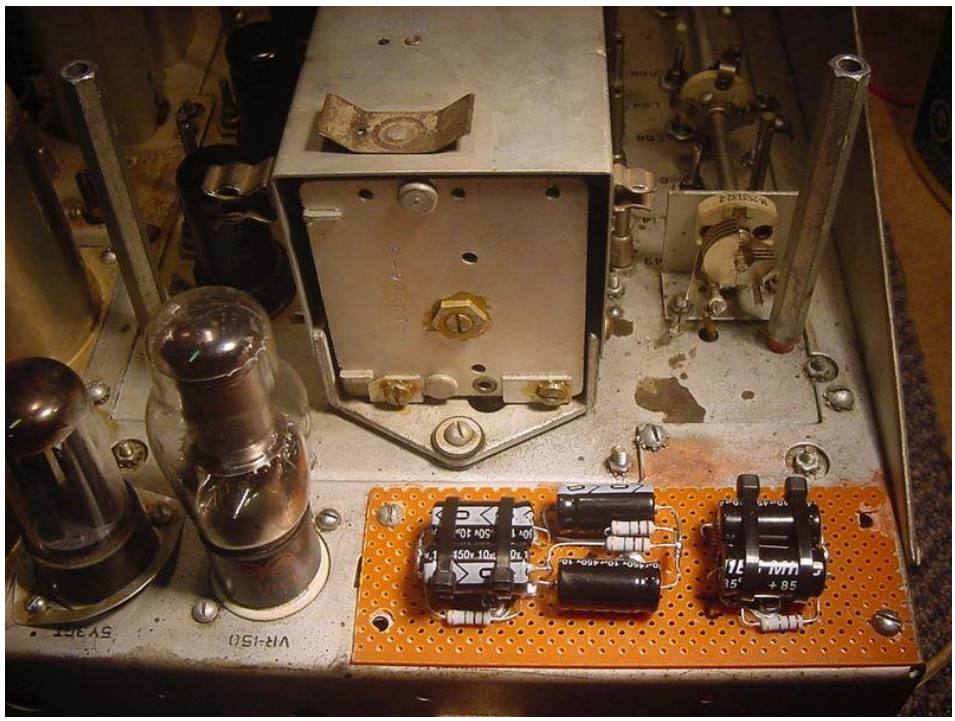
not bad for a set approaching 70 years young (and definitely 'built-to-last'!). Of course I delved into all-things AR88 in my need to gain knowledge on the set. I had known for some time that these sets were built on this side of the pond and supplied to the British under the 'Lend-Lease' scheme during WWII. But what I had not realized though was that the 'LF' (for 'low-frequency') version of this set were built in Canada—Montreal to be precise, not only in the USA as I had thought. The more common 'AR88D ('D' for 'diversity') covered the broadcast band as opposed to the two low-frequency ranges covered by the 'LF' version(covering 75 to 550kHz), in addition to 1.48 to 30.5MHz shortwave coverage.



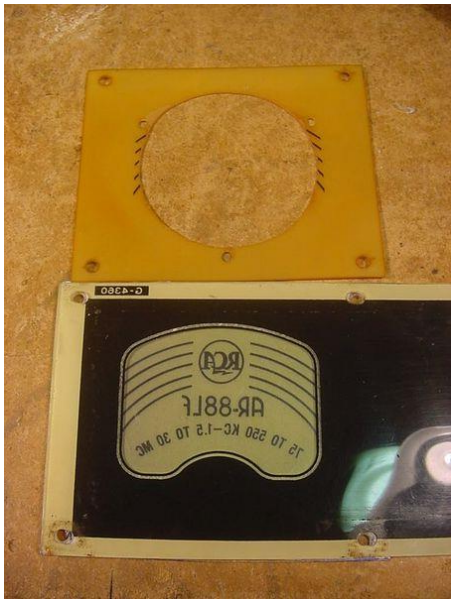
The most obvious fault with the receiver on receipt (bought from a colleague at the SPARC radio museum) was oil dripping from the case—this turned out to be from the large filter capacitor can, which is filled with PCB oil (nasty stuff—a known carcinogen—that must be handled and with caution, avoiding dermal contact, and mindful of correct disposal methods). The chassis was cleaned-up and the capacitor innards removed (3 x 4uF 550vw paper capacitors) - there was no oil left in the can, only an oily residue. The can was cleaned-up, re-painted and retained for cosmetic purposes and a new capacitor bank constructed from new

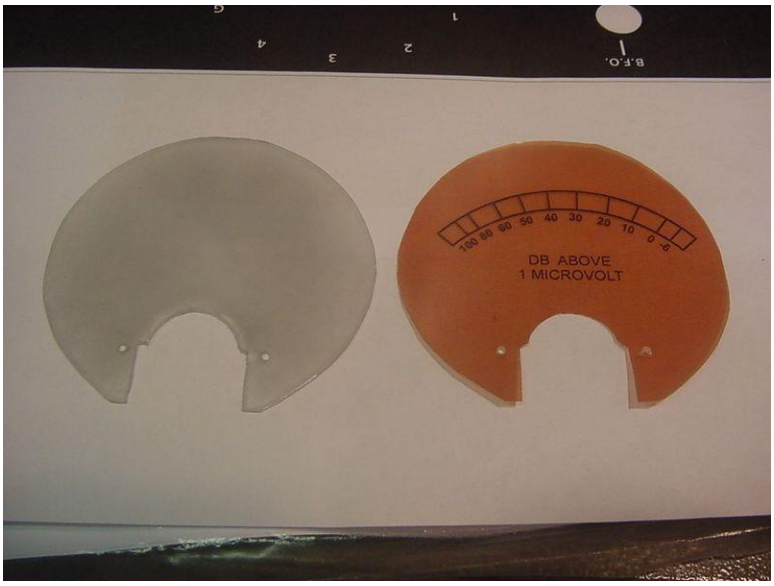


electrolytics (6 x 10uF 450vw units—3 series pairs to give 3x5uF 900vw units as the HT in the radio reaches over 500v when in standby mode). Following this, the radio was cautiously powered-up and it worked first time. A few capacitors were changed (mainly as a precaution) and a recommended minor modification carried out to the AF output stage (installed a 100 ohm resistor in the cathode circuit) to preserve the AF output transformer in the event of a problem in the output tube or inter-stage coupling capacitor (the coupling capacitor was changed out anyway as a precaution). Further cleaning of the chassis ensued, including removal of the power supply smoothing chokes and output transformer and a tarry residue removed from their vicinity (this could be leaking from the chokes/transformer casings, though likely very slowly and only if they get hot – not too likely with limited use I will be subjecting the radio too). An HT fuse was installed in the 'spare' fuseholder as an added precaution against power transformer failure and the captive power cord was replaced with an IEC line-plug pigtail for convenience.



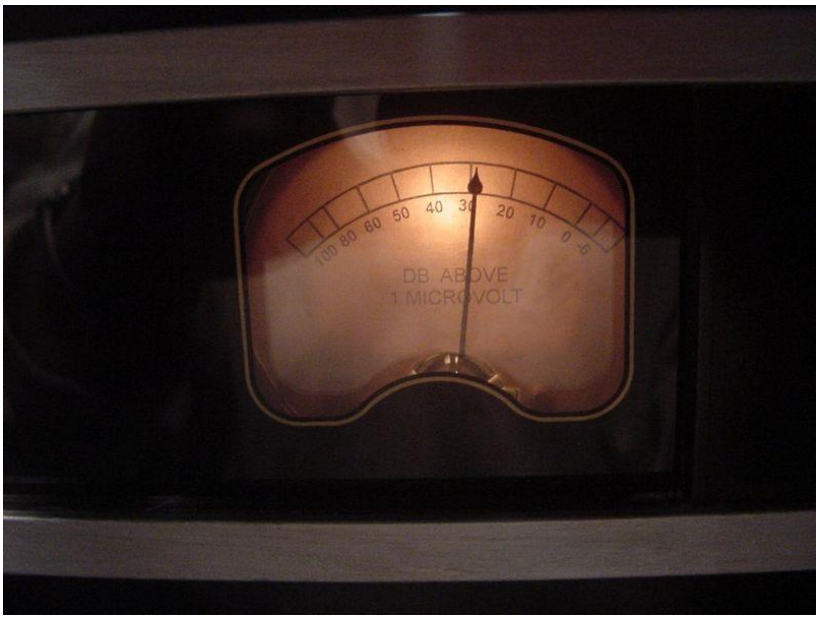
Someone had fitted a PL-259 socket as the main antenna connection – this was fitted into a hole formerly occupied by ‘V16’ (V16 was a ‘glow tube’ fitted as a protective device across the antenna socket in the event of operation of a nearby high-power transmitted). I decided to retain the PL-259 but to also re-instate the antenna terminals. A small audio transformer had been fitted to the rear apron of the set that powered the phones socket – I could not figure out





why this had been fitted – maybe high-impedance phones use, so I removed it and re-instate the original phones and speaker connection wiring.

The set as-received had an S-Meter fitted - not an original RCA-fitted one though, as these were quite rare - but one with a 'National' logo on the dial. This meter hardly moved at all, even on the strongest signals. Anyway, this meter was returned to the sets’ vendor for fitting in his HRO restoration – a better use for that meter than in my AR88LF. The SPARC museum owns both an AR88LF and AR88D models (both on display) and the SPARC AR88LF has the original blanking plate fitted in the S-Meter window on the front panel. Initially I photographed this and made a reproduction for my set - not bad, but not the same as an S-Meter. The original fitment S-Meters were right-hand zero 5mA



units that measured the cathode current of the first IF stage (ie. stronger stations cause the stage to be biased-off by AGC action and the cathode current to drop) - simple but effective. However, there are not too many right-hand zero meter movements about these days. So, three options exist: the first is to use a left-hand zero movement that would read backwards, the second would be to use a left-hand zero movement installed upside-down (so it reads forwards on powering the set up) and the third would be to use a left-hand zero meter driven from the AGC line with an FET amplifier (buffer) installed in its case - without such a buffer the meter would effectively short the AGC line to ground (this was how the National S-Meter had been wired-in, and why it did not function correctly). I found a suitable 'period' ex-Canadian military left-hand zero meter (dated 'June 15 1944') but realized that if I wanted to illuminate the meter scale with a bulb per the original, I could not mount it upside-down as a nearby (3rd) IF transformer can gets in the way. Instead, I settled on a backwards-reading meter with the scale reversed. But how to make the scale - it needs to be translucent with an 'aged' Perspex look and with non-standard markings. Well, I found a website that has the correct artwork on it for the original scale, as well as template for the mounting bracket (http://www.skywaves.ar88.net/commrx/RCA/AR-88/AR-88_Meter.html). I know someone very handy with graphics software and he re-drew the scale in reverse (thanks George!), added background colour/texture to match the translucent amber of the original and printed this onto clear acetate sheet with a colour laser printer. The metal dial was removed from the meter and used as a template to cut a thin Perspex dial, the surfaces of which were roughened-up with 600-grit emery paper to render it translucent, to which the acetate was then glued using 'Pritstick'. This scale was then fitted into the meter in place of the original scale. A hole was carefully cut into the rear of the Bakelite meter case and the lamp installed. The mounting bracket was made from eighth inch thick Perspex per the template from the website and the meter fitted to the set. The meter was wired-up per the original spec and works very well - albeit backwards.

While the front panel was off the set, the dials were removed and cleaned (carefully with warm water) and all controls were cleaned and lubricated with De-Oxit. Knobs were cleaned with hot soapy water, polished with Novus #2 and buffed-up with finishing wax. The scale glass (Perspex) on the set on arrival was cracked, however the set came with a new old stock replacement – this was duly installed and the RCA logo cleaned and fitted. The two chrome strips above/below the dial were in very poor shape and were painted silver to improve their appearance (I may have them re-chromed someday, but I fear trying to remove them may damage the front panel). On re-fitting, the front panel looked (almost) as new. All that remains to do is to re-paint the case and I will have my own AR88LF that looks much as it would have done in during WWII.