Telephony 101 – Other Local-battery Anti-sidetone Circuits March 7, 2013

Hello All,

As always, please send any questions about the reading assignment directly to me at oldtimetelephones@goeaston.net. I will bundle questions if necessary, repeat the questions, and give answers in an e-mail to the TCI List Server before moving on to the next reading assignment. This way everyone will benefit from these questions and answers. By sending questions directly to me, we will avoid unnecessary clutter on the List Server. Previous reading assignments, notes, questions, and answers are available in the TCI Library at http://www.telephonecollectors.info/index.php/telephony101 (this is a new URL, but the old one will eventually get you there).

Please read the rest of Chapter 18 starting near the top of page 157.

I don't know if Automatic Electric had a name for it, but I call it their Isolation Circuit. It is so simple and so effective that I don't know why it wasn't used more widely. The telephones that I tested had AE41 receivers, which have the same impedance at 1,000 cps as the WE HA1 receivers, so the test results in Figs. 18-15 and 18-16 can be compared directly with the results in Figs. 18-3 and 18-4 for the Western Electric bridge-type LB circuit. This Isolation Circuit is fantastic!

The next LB circuit involves a trick that AE used, but it could be applied to any common-battery (CB) phone. The trick was to build a local battery loop around the transmitter, incorporating a retardation coil in this loop to prevent shorting out the ac voice signal. In AE's Type 40 and 50 phones, the retardation coil was put in a magneto box. With one change in a wire connection, these phones could be converted from LB back to CB usage when CB service became available on the line. It's really quite simple and is explained in the book.

The final circuit discussed in this chapter is in the WE 331B portable phone, and this circuit also uses the trick. But I had not yet come across the AE phones with the local battery loop, so I was flying blind when I worked on the WE 331B. Its circuit was on a little printed circuit board, and I could tell that it was nothing like the circuit in the WE 331A. I was accustomed to seeing three coil windings in the AST circuits, and this phone had five windings! Five windings was puzzling, but I had seen a 5-winding coil before – in the most recent Trimline with light-emitting diodes (LEDs). Based on measurements, the coil in the WE 331B was, in fact, exactly the same coil as used in the Trimline. Then I realized that the designers had simply removed the LEDs and their voltage-regulating circuitry and put batteries in that location to create a local-battery loop. You can hardly imagine the rush I felt when I made this discovery – like an archeologist discovering King Tut's tomb. Anyway, to fully appreciate this circuit, you will probably have to wait until we discuss the Trimline circuit in Chapter 19 and then come back to Fig. 18-20. What a really clever piece of engineering!

If there are any questions about the current reading assignment, we will deal with the questions before moving on to the next reading assignment.

Ralph