Telephony 101 – Automatic Electric Anti-sidetone Circuits February 28, 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/telephony-101/.

Please start reading on page 141 and finish Chapter 17.

AE's engineers showed their maverick nature with a crazy circuit that incorporated an induction coil in the receiver. I have several handsets with these induction-coil receivers and tested them in the normal way: one transmitting with the other receiving, and then switched. I am not sure how to interpret the sidetone results from these measurements, but this circuit did put a little bigger voltage on the line than a straight series circuit. Because of this and the fact that it never became as important a circuit as the WE AST or Kellogg's Triad, I did not put the measured results in the book or pursue an understanding further. Sorry, one has to cut off somewhere. But if you run across an AE receiver with 3 terminals, you will know how to wire it up in your AE handset desk stand or similar step-base phone (pictures on page 67).

For their more normal telephones, AE borrowed circuits from Kellogg and Western Electric. Kellogg's Triad circuit was used in early AE AST subsets, the AE 34 "Shirley Temple" phone, and the AE 35 "Juke Box" phone. The WE AST circuit was used in the later Type 43 subset, the beautiful AE 40 desk phone, and the gorgeous AE 50 wall phone. Wiring details were, of course, different from those of Kellogg and Western Electric, and wiring diagrams for these AE phones are shown in this chapter along with all coil properties – and the wiring diagrams are laid out in a way that still can be compared with the basic circuit diagrams shown earlier.

As a general note, I would not expect readers in Telephony 101 to plow through all the wiring diagrams for various applications of any circuit such as the WE AST or the Triad. Rather, I would hope that you could understand how the basic circuit works at the beginning of each chapter (or section) and then just be able to recognize the flow of that circuit in the various wiring diagrams. If you have one of the phones for a particular wiring diagram, then you might want to dig in. Otherwise, enough is enough.

By the way, when I wrote the book I didn't think there was a patent on the Western Electric AST circuit because it was based on a mathematical analysis that was published in the open literature in 1920. But it is curious that S-C and AE both started using the WE AST circuit in 1940, and only WE used it before then as far as I know. The timing is about right for a patent lifetime of 17 years, and George Campbell did work for the Bell System when he did the analysis. Remember that a similar situation existed with the booster circuit, which the rest of the industry

started using in 1918 when its patent expired. If anyone knows about a patent on the WE AST, I would be very interested to hear about it.

If there are any questions about Chapter 17, we will deal with the questions before moving on to the next reading assignment.

Ralph