

## **Switch Descriptions**

### **by ThoughtPhreaker**

#### **Lucent 5ESS**

This, along with the DMS-100 is one of the most common type of switches you'll find in the United States Public Switched Telephone Network. One of the most distinguishing and foremost characteristics in it is the sound of dial tone coming on, which you can hear here. One of the interesting things I've noticed about this switch is that if you get dial tone, and then hang up and pick up at just the right speed, you can hear it make a slightly different sound. The same tick-tick noise that you heard at dial tone can, interestingly enough, be heard on some different calls, such as when it switches you to the recording you get when you leave your phone off the hook. Unfortunately, the only recording I have of this is one of my earlier ones, which I didn't do exactly the best job of recording. Nevertheless, it clearly demonstrates what happens on a 5ESS when you leave your phone off the hook. What it doesn't clearly demonstrate, though, is that on the 5ESS, the first ring you get from it will be for a completely random length of time. This is because the switch moved me from the ring to the recording while it was in the middle of ringing. I recorded a call going to a number telling me to dial one first while I was at it, which gives a clearer demonstration, since the first two rings are uninterrupted, unlike the third. The static you hear before the touch tones is due to the fact that the phone I was using is a cheaply made phone at my grandmother's house, and it was the best option for recording at the time. Strom Carlson has some excellent recordings of a few other things the 5ESS does, such as how it'll sound if you pick up a pay phone that is controlled directly by the 5ESS, the behavior of a 5ESS after a call hangs up on you, and other cool things. All of them can be found here in his trip through Southern California. One of the issues I've found with this system is that if you're calling a Western Electric 1AESS (covered later), you usually don't get to hear the thunk noise of the call connecting, unless you're going to an intercept system telling you that a number you've reached has been disconnected or Not In Service.

#### **Nortel DMS-100**

The DMS-100 is a great deal different from the 5ESS. Unlike it, when you pick up your phone, there will be no ticks at all, and the dial tone will seem to just be there. Like the 5ESS, though, you can get it to make a slightly different sound when dial tone comes on, but it works a bit differently. In order to get it to happen, you'll have to pick up your phone, hang it up for a bit longer and pick it up again. The noise isn't as interesting, but you can still hear it here along with my rotary dialing a one into the switch, which as you can hear, makes a burst of dial tone at the end. This doesn't exist in the 5ESS; when you rotary dial a one in a 5ESS, you'll get immediate silence. When you leave your phone off the hook, the DMS-100 will make the first pulse of off-hook tone stutter, unlike most other switches, including it's little brother, the DMS-10, which I'll also cover later. Interestingly enough, when you get a busy signal from one, it will go on for exactly thirty pulses, and a reorder will go on for exactly sixty pulses. With other switches, it will usually go on for a good while. Also, the ring in a DMS-100 and the other DMSes, such as the DMS-10 and DMS-1 has exact timing and will not be on for a random amount of time, unless it is interrupted by something picking up. Some of the DMSes software versions can make rather amusing bugs occur, such as the one demonstrated here. After a repetition of the recording telling you to unblock your caller ID, the DMS will interrupt the recording in the middle of the repetition and give me the All Circuits

Busy message. Had I not been calling a number assigned to the recording itself, and rather, blocking my Caller ID to a number that didn't accept anonymous calls, it would have started to ring in the middle of the second repetition, and would start ringing the phone number anyway! If you would like to experience this error in real-time, call 434-975-9999. Regardless of if you're blocking your Caller ID or not, it will give you that error message and then you'll get my All Circuits Busy recording. Similar things happen with other numbers as well, such as with 800 numbers, when the other person hangs up, my switch in particular will forward me to a recording telling me that to complete my call, I have to dial at least seven digits.

### **Western Electric 1AESS**

By far, this is most definitely my favorite switch in the United States Public Switched Telephone Network. I won't get into all the details of the transition between the 1ESS, or how Western Electric became Lucent eventually, as they're available elsewhere. Although admittedly, I have never, ever dialed out from one of these, I can say that it is somewhat similar to the 5ESS, but they still have their good share of differences between them. First off, the 1AESS is a ways off from modern technology. It uses magnetic-latching relays to complete calls, tell when calls supervise (answer and charge), and pretty much everything else aside from get call data from other switches, generate Caller ID tones, using it's three-way capabilities, and call waiting. I don't have any way of knowing how Caller ID works with the 1AESS, but I believe the 1A processor in the switch will input the data into a hardware device that will cut into the call before the person picks up, and use that to generate the Caller ID tones, unlike with modern switches, which will generate it entirely with software. Since it uses relays to switch calls, you get to hear a thunk noise as it lets you onto the call, as demonstrated in 804-291-9950, and another when the call charges, which isn't heard in that number, as the call doesn't charge. To sum it up shortly, these switches have a random timing on the first ring, will click and start ringing immediately when you call a ringing number, although you can't always hear it, especially if you're dialing out from a 5ESS, they'll stop the dial tone immediately after dialing a digit, and do not stutter when the off-hook tone is put onto your line. Also, if you're lucky enough, you'll get to hear crosstalk from other calls bleeding in onto the line, because of the relay that's switching your call being close enough to other in-use relays for the electromagnetic signal to be able to come through onto it. By far, the best example of this I've found is the number 214-946-9990. Calling in the daytime is recommended, since you'll have a better chance of having more numbers in use, therefore increasing the chance of crosstalk. Although this may not be true of all of these left in the US PSTN, the two closest to me are in rough neighborhoods, hence why I haven't touched one yet. They can be found in a few states in the mid-west as well as most southern states.

### **Stromberg Carlson DCO**

This little switch is used widely by the independent companies in the US and is now produced by Siemens, along with the lesser known Siemens EWSD. Although I haven't dialed out from one, I'm positive this switch has random timing on it's first ring.

### **Nortel DMS-10**

This is essentially a smaller version of the Nortel DMS-100, with different hardware to go with it. Although I have never dialed out from one, two things I am sure of is it has exact timing on it's first ring and has a strange modulation in it's off-hook tone.

**Automatic Electric GTD-5 EAX**

This is a fully digital switch that was once made by Automatic Electric, the manufacturing arm of GTE. It is currently supported and manufactured by Lucent. You'd be better off asking Strom about this one. He's dialed out from a few, as well as made recordings of it.