BEEP...What Did That Repeater Say?

A single tone is often the only thing standing between us and chaos.

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We hear the *courtesy tone* almost every time we use the repeater. It's that innocuous beep that lets us know that the repeater is alive and, most importantly, that it has heard us. The courtesy tone also separates one person's comments from the comments of the next person. Other than that, we probably don't give the beep much thought. Too bad. There's a lot we can learn from that curious noise.

It's Called a "Courtesy Tone" for a Reason

Most repeaters have timing mechanisms which limit the lengths of transmissions. When you recall that only one person can use a repeater at a time, the idea makes perfect sense. Without some kind of limit, long-winded users would monopolize the machine for mind-numbing periods of time. The *time-out* function prevents this from happening. Basically, when a transmission ends, no one should speak again until the repeater sends the courtesy tone. The penalty for ignoring the courtesy tone can be severe. To paraphrase the late philosopher Joseph Campbell, repeaters are like ancient deities —all rules and no mercy!

Maybe you've heard someone talking on a repeater when, all of a sudden, their transmission stops. The repeater resets, beeps, and the next person starts his comments by saying something like, "Well, Chet, you talked too long again. The repeater timed out and we missed what you said after..." (You think Chet would learn after a while!)

But thank goodness for "forced" pauses! What if you needed the repeater during an emergency? Or, what if you were sitting in your car waiting to sign off after a long commute home? Either way, you don't want to wait while Joe Ham finishes his dissertation on Darwin's theory of evolution. Courtesy indeed.

Repeaters Have Tails

You may have heard someone talk about a repeater's "tail." What is it? Why is it important? And, what does it have to do with courtesy tones?

To answer those questions, we must first discuss a bit of repeater theory. (For additional discussion of repeater theory, see "Anatomy of a Repeater" by Steve Ford, WB8IMY, in the May 1995 *QST*.) We all know that repeaters receive on one frequency and simultaneously retransmit that same information on a different frequency. We also now know that, for a number of reasons, repeaters need to periodically reset themselves. The important thing to remember is that when the repeater resets, *the time-out timer resets as well.*

The resetting process works like this:

q When you stop transmitting, the repeater senses the loss of your signal. However, you may not have actually stopped transmitting—you might be traveling through a dead spot where your signal to the repeater is temporarily blocked. So, most repeaters hesitate a bit before resetting. The length of the delay can be changed by the repeater owner, but it's generally about 1/2 to 1 second.

In addition to allowing time for your signal to "come back," the delay also ensures that there is a slight pause between the time you stop talking and the moment when the next person starts. That pause allows someone else to announce his/her call sign in order to enter the conversation, or to request use of the repeater for an emergency or whatever. Courtesy.

o If the delay comes and goes without a signal, the repeater resets. The reset is often (but not always) announced with a

beep. That's the courtesy tone.

o Finally, after resetting, the repeater continues to transmit for a specified period of time. This transmission period, called the *tail*, can also be adjusted by the repeater owner. Repeater tails can be short or long. The bottom line is that the repeater will stop transmitting entirely if it does not sense a signal during the tail period.

Listening to the Beeps—Or Not!

Usually the repeater generates the courtesy tone to let you know that it has reset and is ready for use by another person. But, not all repeaters use the same courtesy tones—and some tones are more than just simple beeps.

For example, some repeaters can change their courtesy tones to let you know the system status. A repeater courtesy tone might change from a single beep to a Morse code "N" (dah-dit) to let you know that it is in "net" mode with different time-out lengths and tails. Or, it might transmit an "L" (di-dah-di-dit) to let you know that you are using a link frequency—coming in on 222 MHz, for example, instead of the repeater's primary frequency in the 2-meter band. Or, it might just mean that the repeater owner got tired of the old tone and decided to change to a different one!

Some courtesy tones are creative. In fact, they may not be tones at all. Some repeater systems replace the familiar beep with strange sound effects or even digitized human voices. Regardless of what kind of courtesy tone (or other sound) your favorite repeater uses, the important thing is to wait for it before you start transmitting.

Do I hear you saying that your favorite repeater *doesn't* have a courtesy tone? Aha! That's where it gets confusing. There are several repeaters in my area that do not have courtesy tones. For example, one of the major Boston repeaters has no courtesy tone and doesn't reset until *after* the tail drops. This can be very confusing for the first-time user because it means that people using the repeater must wait for it to stop transmitting before the next person begins to talk.

We have another busy repeater that also lacks a courtesy tone, but it's set up in an entirely different manner. In this case, the repeater resets immediately when it senses that a signal is no longer present. In other words, it resets whenever someone stops talking. It also has an extremely long tail—30 seconds—which means that the repeater continues to transmit long after the person has stopped talking. This arrangement encourages lots of short exchanges—much like normal face-to-face conversation among friends.

Tones, tails...does it matter? No, not really. There are many ways in which repeaters can be set up. And different setups encourage different use. Repeaters are meant to be shared, especially during the busy commuting hours. So, spend a bit of time listening before you use a repeater for the first time. And remember that, beep or no beep, *courtesy* is still the key word.