

of activity. Here's a guide to the frequencies and times (in GMT) to particularly check:

Frequencies	Times
3200-3400	0200-0500
3800-3900	0300-0430
4300-4700	0300-0730
6700-6900	0600-0900
7300-7500	0230-0700
7800-8150	0300-0600

In addition, the frequencies of 3060 and 3090 kHz have been used for five digit transmissions for several years during the early evening hours.

Much more elusive are Spanish "numbers" stations using four digit number groups. You may find yourself catching one four-digit station for every ten five-digit stations you hear—the four digit stations are that rare.

You'll also hear "numbers" stations in English and German from time to time. These pop up in the same frequency ranges where Spanish stations are heard, but they are usually heard in the 2000-0300 time period. The five digit stations predominate in English and German, although you may catch an occasional four digit transmission.

There are some clear differences between the Spanish "numbers" stations and their English and German counterparts. The signals from the English and German stations are usually weaker than those from the Spanish stations. The English and German stations are more likely to use SSB. And German stations are prone to begin transmissions with various sounds, such as guitar music or electronic tones.

"Numbers" stations have also been heard in French, Arabic, Czech, and Serbo-Croatian. However, these are relatively rare.

"Numbers" transmissions are also made in Morse code. These messages stand out because they are in AM with the Morse code produced by a keyed audio oscillator! Most messages consist of groups of five letters and digits. Each transmission opens and closes with a series of three "dahs" (TTT TTT TTT). Signal strength, frequency ranges, and times of operation are the same for the Spanish stations.

A major question—where are the "numbers" stations located? From the signal strength and propagational patterns, it seems clear the English, German, and other non-Spanish language stations transmit from somewhere in Europe. The Spanish and Morse code stations transmit much closer to North America—perhaps from the United States itself!

For many years, Cuba was considered the most likely source for these transmissions. The "numbers" stations began in the early 1960s shortly after Fidel Castro aligned Cuba with the Soviet Union. There were scattered reports that some Spanish "numbers" transmissions were heard opening with the interval signal of Radio Havana Cuba. In 1975, several listeners reported hearing audio from Radio Havana Cuba in the background of the Spanish "numbers" stations, indicating both shared a common

transmitter site and audio from the two were getting mixed together. And, in 1978, a listener wrote the FCC and asked about the location of a five digit station he'd heard on 3090 kHz. The FCC said direction-finding efforts had placed the station in Cuba.

However, there is much evidence pointing to locations in the United States. Sometimes English and German "numbers" messages have been heard in the dead air following the end of a Spanish "numbers" transmission. This could mean that all "numbers" transmissions originate from a single "studio," and Cuba would be unlikely to be transmitting messages in Czech from a European location. Spanish stations are often extremely powerful. Listeners in such diverse areas as southern Florida, Washington, D.C., Ohio, and Oregon have noted solid, fade-free reception of numbers stations, which would be impossible if the stations were in Cuba.

One listener in southern Florida drove around in his car with a portable receiver tuned to a "numbers" station. In several locations, the receiver overloaded. This meant the transmitter had to be quite close—perhaps a few thousand feet or less. Finally, several listeners equipped with directional receiving antennas cooperated in making direction-finding measurements. Their evidence places the locations of these stations on the Gulf Coast of Florida, near Portland, Oregon, in Puerto Rico, and near the Guantanamo Naval Base in Cuba.

So who is responsible for these transmissions? It is very tempting to conclude that some agency of the United States government is, but that does not automatically exclude the possibility that some of the transmissions could be originating from Cuba. It could well be that both the United States and Cuba are the sources for these messages, perhaps even engaged in an on-the-air game of double-cross as they try to mislead each other's agents!

But are these transmissions really related to espionage? It has been discovered that some of the five digit transmissions are repeated—word for word and number for number—several days, weeks, and even months apart from their first transmission! Moreover, such repetition occurs within the same general time period, frequency range, and even day of the week.

The five digit transmissions are less technically sophisticated than the four digit transmissions. (Often, there is a distinctive "hum" in the background of the five digit station audio.) The clues linking the "numbers" stations to Cuba (such as the Radio Havana Cuba audio) are found only on the five digit stations. And the five digit transmissions are much more numerous—almost as if they were trying to call attention to themselves! One theory has it that the five digit messages are for training, or as a "smoke screen," while the four digit transmissions are the actual messages to spies in the field.

Whatever they are and wherever they're from, few listening experiences beat keeping track of "numbers" activity.

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