

# Decoding Numbers Stations



Exploring these mysterious transmissions and how their strong following has created a niche in the community.

12705	161	115	0425	0427	0430	перестр	Соловьев
6779	183	124	0520	0522	0530	резерв	Дергачев
14440	163	114	0525	0526	0526	перестр	Дергачев
10104	165	118	0630	0630	0640	резерв	Дергачев
14092	181	118	0640	0642	0642	перестр	Дергачев
7038	181	120	0700	0700	0710	резерв	Дергачев
12847	181	120	0710	0711	0711	перестр	Дергачев
4471	182	183	0750	0751	0751	резерв	Дергачев
4489	182	183	0750	0752	0800	резерв	Дергачев
12705	182	183	0750	0752	0800	резерв	Дергачев
17454	182	183	0750	0756	0756	перестр	Дергачев
7859	182	183	0750	0757	0757	перестр	Соловьев
7977	182	183	0750	0757	0757	перестр	Дергачев
4009	182	183	0800	0810	0810	резерв	Дергачев
6356	182	183	0811	0811	0811	перестр	Дергачев

## Allison McLellan

Scanning through the bands on AM, you stumble upon something odd. It might be the last few notes of a folk song, a sound clip from an old cartoon, or phrases in a different language. A voice cuts through the static, methodically calling out, "Mike, India, Whiskey, One, Four..." But this isn't a fellow ham announcing their call sign. These are numbers stations, an eerie subset of radio stations that has intrigued hams and non-hams alike for decades.

### Behind the Voices

Numbers stations are shortwave AM radio stations that transmit messages via voice or Morse code, believed to be coded in one-time pad (OTP) cryptography. In OTPs, the message is comprised of strings of numbers or letters assigned to the letters of the message, based on a pre-determined, randomized key shared between the transmitting and receiving parties. This is the simplest method of "perfect" encryption, which means mathematically, it is unbreakable.

There are some rules that define one-time pad encryption: the randomized characters must be the same length as the plain text of the message so none of it is reused, and only two copies of the OTP exist (one for the transmitter and one for the receiver), which are used once and then destroyed immediately. These keys were named after the pads of paper they were printed on, and the user could tear off the top sheet after use and dispose of it.

The randomization of the one-time pad for each new transmission leaves no pattern, so a listener would not be able to analyze multiple transmissions to figure out a key. In order to decrypt the message, this third party would not only have to get hold of the OTP, but also know which key was used in the transmission.

### Famous Stations

Most numbers stations were first heard throughout the Cold War era, and some were so consistent or idiosyncratic that they become popular among those who monitored them. The Lincolnshire Poacher, first identified in the 1970s, became known by playing a few notes from the famous British folk song of the same name before each transmission. It is thought to have been run by the British Secret Intelligence Service, and Amateur Radio direction finding (ARDF) tracked its transmissions to a Royal Air Force station in Cyprus.

Another significant station was called Yosemite Sam, which began in 2004 across 3700 kHz, 4300 kHz, 6500 kHz, and 10500 kHz. Each broadcast was primed by a data burst believed to contain encrypted information, followed by an audio clip of the cranky Looney Tunes character Yosemite Sam. In February 2005, ARRL member Mike Langner, K5MGR, along with Mike Stark, WA5OIP (SK), had the unique experience of investigating the numbers station for the Federal Communications Commission (FCC). Their ARDF equipment led them to the Mobility and Assessment Test and Integration Center, an electronic testing facility operated by the Laguna Native American tribe outside of Albuquerque, New Mexico.



Urban explorer Egor Evseev visited the Buzzer's original streaming location in Russia. He described his visit online and posted photos, including this view of an antenna at the military complex. [Egor Evseev, photo]

Photo in lead graphic courtesy of [www.radioscanner.ru/forum/topic12415-61.html#msg833346](http://www.radioscanner.ru/forum/topic12415-61.html#msg833346).

After sending the information to the FCC Denver Field Office, Langner stated, "It turned out that a government contractor was testing what it called a 'self-organizing mobile field wireless data network' for field deployment." The station has since stopped sending.

Perhaps the best-known is the Russian UVB-76, a misheard version of its first call sign, UZB-76. Transmitting on 4625 kHz, it was first noticed around the late 1970s, earning the nickname "the Buzzer" because of its 24-hour droning hum. Due to sounds similar to banging or snippets of conversation that occasionally cut through the buzzing, many believe that the hum is made by placing a speaker next to a microphone, and that the sounds are background noise — an intriguing theory that allows the listener to believe they are being clued in to the anonymous source creating the messages. However, serious monitors of the station have posited that it is created by a small analog circuit board connected directly to the transmission channel, and interruptions are actually caused by channel separation.

In 2010, UVB-76 began drawing increased attention, leading to more monitors reporting on its activity, just in time for a new announcement across the waves. "Mikhail Dmitri Zhenya Boris," spoke a male voice — the station's new call sign, MDZhB.

Following this change, the original streaming location for UVB-76 was identified to be an abandoned military complex near Povarovo, Moscow Oblast, Russia, about 20 miles outside of Moscow. Attempts have been made to triangulate the Buzzer's new signal, but it is more difficult now as it uses multiple transmitters. In 2015, the Buzzer's call sign changed again to ZhUOZ, and in 2019, it began using ANVF.

## The Conet Project

In 1992, England-based Akin Fernandez had just picked up decoding weather maps using a small adaptor when, while tuning for a utility station, he came across the odd transmission of a numbers station. "How was it that these very powerful stations could transmit all day and all night and no one knew anything about their origin?" he said, adding that it is illegal to listen to numbers stations in the United Kingdom, even today.

He decided he would compile numbers station recordings to create a public record of their existence. In 1997, Fernandez released a four-disc set called *The Conet Project* through the Irdial-Discs record label. Now also available in the iTunes store, this compilation brought numbers stations into the mainstream consciousness.

Their unsettling sounds have gone on to inspire many, including director Cameron Crowe, who used clips from *The Conet Project* in the 2001 science-fiction psychological thriller, *Vanilla Sky*. The band Wilco also popularly sampled the recordings in their 2001 album *Yankee Hotel Foxtrot*, the title of which comes from the fourth track of *The Conet Project* entitled "Phonetic Alphabet Nato."

"A written description of what a numbers station sounds like does no justice to their sound," Fernandez said. "This is why *The Conet Project* has struck a chord with so many people; they are some of the most unusual manmade audio artifacts, ever."

## Shortwave in the 21st Century

As attention on the Buzzer grew, several different smartphone apps were made for those without proper listening equipment, and Estonian technological entrepreneur Andrus Aaslaid created a dedicated website ([www.uvb-76.net](http://www.uvb-76.net)) that became very popular, bringing listenability to a whole new generation.

After the original location of UVB-76 was abandoned, urban explorers began posting about their visits to the area online, with photos showing abandoned buildings, trenches from dug up and cut cables on the property, and a large transmission tower. They also found documents, including a sample logbook for transmissions and a document ordering the cessation of operation at the base. Message boards and forums filled with people asking questions about the mysterious activity and analyzing photos. The heightened attention and online accessibility prompted journalist Peter Savodnik to assert in a 2011 *Wired* article<sup>1</sup> that this event contributed to a rejuvena-

tion in shortwave radio listening for the 21st century.

This began with the chat box available on [www.uvb-76.net](http://www.uvb-76.net), where a unique community came together. Users began recognizing more numbers stations and similar phenomena outside of UVB-76 and decided to pursue their wider study as a hobby.

In 2010, [Priyom.org](http://Priyom.org) was formed as a public collection of current and historical information on "on-air enigmas," according to the site. To continue the communal discussion, the website uses a new chat channel called #priyom.

One core member of the team is Pierre Ynard, who develops and maintains software tools for Priyom. He described their goal of "providing technical solutions and fostering a vibrant, complete ecosystem," for anyone to be able to listen to a numbers station with just a click.

The Priyom community is rather diverse, from electronic hobbyists, military buffs, conspiracy theorists, and licensed radio amateurs. "We

## The Conet Project

Recordings of Shortwave Numbers Stations /1111



The Conet Project is available on iTunes at <https://itunes.apple.com/gb/album/conet-project-recordings-shortwave/id1203164588>. [Photo courtesy of Akin Fernandez]

have members of all ages, but a lot are under 30 years old, or even teenagers,” Ynard said, crediting this to the fact that the community formed around online chat rooms.

With their background, the community takes a more digital approach to radio listening, utilizing remote web receivers like WebSDR ([www.websdr.org](http://www.websdr.org)) and KiwiSDR ([www.kiwisdr.com](http://www.kiwisdr.com)) to “promote awareness of these modern possibilities and...increase the levels of understanding and monitoring,” Ynard said.

### Theories

Given that numbers stations transmissions can’t be deciphered, many have developed their own theories on what they are for, from practical study to conspiratorial weaponry. Some choose to believe these transmissions couldn’t be something secretive in the public eye, posing that they are signals from tools measuring changes in the ionosphere, oceanographic buoys that monitor marine environment information and transmit via radio communication, or the testing of radio equipment.

However, those most prominent in their monitoring say that numbers stations are used for spy communication. After the Buzzer became very popular, monitoring communities like Priyom and [www.numbers-stations.com](http://www.numbers-stations.com) were able to establish that it is a Russian military channel marker. That would explain the increased activity in 2010, which coincided with reorganization of the Russian military. In 2013, the station sent out its first command: “Objavlena komanda 135,” which translates to, “Command 135 announced,” a drill message for full-combat readiness.

In fact, not long after the 1997 release of a compilation of numbers stations recordings called *The Conet Project* (see the sidebar, “*The Conet Project*”), the government publicly acknowledged numbers stations and their link to covert operations for perhaps the first time. In 1998, the FBI arrested the “Wasp’s Network,” a group of five Cuban intelligence officers who were spying on Cuban exiles in southern Florida under the command of the Castro government. News reports described how the

men were using shortwave radios to receive encrypted number messages from Cuba. Using software seized during the arrest, the FBI decrypted the messages and presented them as evidence in trial. In 2001, the five men were convicted of espionage.

Then, in June 2010, the FBI arrested 10 Russian agents across the United States accused of gathering intelligence on the US government under false identities as part of a long-term operation the Department of Justice dubbed “The Illegals Program.” The Guardian reported<sup>2</sup> that court papers described how they used “many methods to exchange information with each other, including brush-passes, short-wave radio operation and invisible writing, [and] codes and ciphers, including the use of encrypted Morse code messages...”

### Conclusion

While many have spent years following numbers stations, it appears that their meaning will not be made clear to anyone except the two parties that the transmission is made for — and perhaps for the better.

It is their mystery that has drawn a following of eager detectives and serious monitors in a range of ages and careers. If we confirm for sure what numbers stations are they may not be so interesting anymore.

#### Notes

<sup>1</sup>P. Savodnik, “Inside the Russian Short Wave Radio Enigma,” *Wired*, Sep. 27, 2011, [www.wired.com/2011/09/ff-uvb76](http://www.wired.com/2011/09/ff-uvb76).

<sup>2</sup>R. Adams, “Russian spy ring claim — 29 June,” *The Guardian*, June 29, 2010, <https://www.theguardian.com/world/richard-adams-blog/2010/jun/29/russian-spy-ring-live-updates>.

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