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Numbers Stations

The intrigue of listening to so-called “numbers stations” is, for many, a hobby within a hobby. While some espionage-buffs may be aware of these stations, having experience in radio is a great help in catching the signals. Here, we can determine two layers of interest.

First, these transmissions are made (except for a very few) within the shortwave band, which was once an area of technological discovery where radio was developed and used in the early and mid 20th century. Most people today, particularly those in developed countries, consider shortwave radio a dinosaur and many would not even be able to identify where the band is on the radio spectrum. Indeed, the popularity of shortwave has been paved-over with FM radio, internet radio, satellites, and other new technologies. Shortwave offers low-quality and inconsistent reception of far away stations, which simply turns most people off. The others, known as SWLs (ShortWave Listeners) and DXers (DX = Distance) enjoy shortwave radio for its content. SWLs can vary from the listener who grew up with shortwave and enjoys the nostalgia of AM radio to the hard core DXer trying to catch the elusive signal from half a world away.

Second, numbers stations provide very little to the average SWLer and DXer. The content of broadcasts are a mechanized voice reading lists of seemingly random numbers, which are very unentertaining to the person tuning around for Latino music or the BBC world service. The DXer would quickly

realize that these stations do not identify themselves, say who runs them, where the transmitter is, or give any relevant information. Although both audiences may listen for a minute, simply because it's an odd signal, the SWLer will quickly become tired of it and the DXer will not be able to determine the distance of his/her catch, so both will tune away from numbers stations then and in the future, most of the time.

While we have eliminated a vast majority of the world's radio listening public, there are those who actively listen to these mysterious signals. Many have had an existing interest in espionage that led them to the shortwave band, for many others, it seems, the situation is reversed. The mystery is what attracts them and keeps them, the who, what, where and why.

Before we dive into shortwave radio's stranger side, we should establish what it is to the normal listener. The HF, or "High Frequency," band is a more technical term for radio between 3 and 30 megahertz, in which the shortwave band lies. The conventional AM band ranges from 530 to 1700 kHz, which can be seen from looking at a normal radio dial. Going up past the AM band's upper limit, we get to shortwave's first stations around 2500 kHz (or 2.5 MHz).

The SW band is large enough and low enough to exhibit a variety of behaviors, depending on where in the band one is. Generally, the lower stations (below approx. 6 MHz) are best heard and most used during the winter and/ or at night. Propagation (the method that radio waves use to get from the transmitter to the receiver) in these lower bands is better in the winter and at night, when the ionosphere's "D" layer is weak and does not absorb the radio energy, allowing it

to be reflected to earth by the higher “E” layer. The radio signal bounces between the Earth’s surface and the “E” layer until it has received so much interference that it can no longer be received. A typical signal will be maintained for thousands of miles, which is why shortwave is known as “World Band Radio.” As we move past 6 MHz (this boundary is not precise and varies heavily based on factors such as sun spots), our radio signals become less subject to the “D” layer and bounce even when it is present in the daytime. Signals beyond 12 MHz (again, approximate) suffer from the opposite problem from those below 6 MHz: The “D” layer does not effect these frequencies, but the “E” layer is not strong enough to reflect them. Due to this, on winter nights, the higher SW frequencies are limited to “line-of-sight” propagation, which means that the signal does not bounce at all, but simply radiates out into space.

Due to the science behind shortwave propagation, very low frequencies are used only on winter nights and very high frequencies are used only on summer days. The middle frequencies are used in most cases, even then, trying to maximize propagation by compromising between what the “D” layer will absorb and what the “E” layer will reflect.

There are a variety of “normal” things heard on shortwave radio, from licensed ham-radio operators trying to make contact with other hams from all reaches of the globe to stations designed to enlighten and entertain a wide audience. Shortwave stations exist in virtually every country and transmit news, music, and other programming in a wide variety of languages. English is used very frequently, even on stations that typically use another language. A lot of

stations actually devote different parts of their broadcast day to different languages. Anyone who enjoys radio and likes to explore can get into it, all one needs is a radio and a little patience. More elaborate and sensitive radios will perform better, but cheaper models are fine for starters.

Once a SWLer gets used to the band and comes to enjoy it, he or she may discover what lurks around within it. The SWLer may ignore it, and that's just fine, or perhaps our listener will catch the intrigue. Here is where we depart from the mainstream and see what "they" don't want people listening too much to.

So what are these "numbers stations"? Most of the time, the description is in the name. Throughout the globe, one, or several organizations are spending money to maintain shortwave transmissions that transmit lists of numbers in any number of languages to who-knows-who. The voice is normally computer generated, using either gender, and a number of languages including English, German, Spanish, French, Yiddish, Czech, Italian, Portuguese, Arabic, Russian, and Mandarin (Chinese). The formats vary by the station, some open with a number being repeated, others with tones, and still others with an entire song or anthem. The transmissions can occur anywhere in the shortwave band, from 1.7 to 30 MHz, at any time of the day. Most occur between 4 and 12 MHz during the local evening hours, from five to fifty minutes in length, usually beginning on or near the top of the hour. Some stations use morse code instead of verbal numbers, others use the phonetic alphabet (alpha, bravo, charlie...), still others simply transmit cryptic strings of letters in morse code (example: SHFWO, TIFDK, FISKE...).

Let us begin with the most commonly heard station in North America, known as "V2." "V2" is not a name used in the station's transmissions or dropped by anyone thought to be behind the broadcasts, it is an identifier assigned to the station by ENIGMA (European Numbers Information Gathering and Monitoring Association), a group of ordinary DXers who actively monitor mysterious transmissions and who have named their association after the encryption machines used by the Germans in World War 2. Their letter/ number identifiers are used to distinguish more easily between stations with distinct behaviors. The letter indicates language, "E" is used for stations that transmit in English, "G" is used for German, "S" for Slavic, and "V" for various others. Those that do not use voice are identified with an "M" for morse code or an "X" for digital and unknown methods. The number is simply used to distinguish different stations within the same group.

"V2" fits into the "various" category in it's ENIGMA ID, the language used is Spanish. Normally, V2 uses a computer generated female voice to transmit groups of five numbers over a period of 40 to 50 minutes, starting at the top of the hour. Variations are noted frequently, such as three-digit numbers being paired with two-digit numbers (known as the 3/2-digit station), male voices, live transmissions, short messages, long messages, jamming (another station transmitting noise on the number station's frequency so the recipient will not be able to copy the message), and other formats than the usual, including the one known as V2a. Signal quality varies, but even strong signals frequently have poor quality audio. Popular belief is that these stations are controlled by the DGI,

or Cuban Intelligence, since they originate in Latin America and are occasionally caught making a “boo-boo,” such as playing the intro for Radio Havana and, when the person transmitting notices the mix-up, having the audio abruptly cut off. Some believe that the V2s share transmitting facilities with Radio Havana.

Another station, known as E5, an English-language station, has been credited to our own Central Intelligence Agency. These transmissions are caught frequently and many are believed to be transmitted from northern Virginia. Like V2, this station usually uses a computer generated female voice, starts at the top of the hour, and goes on for 40 to 50 minutes before going off the air. E5 transmits 3/2-digit messages and is known as the “Counting Station” because it signs on by giving a three-digit identifier and “1 2 3 4 5 6 7 8 9 0” repeatedly. Years ago this station was also heard using groups of four digits, this was known as “Count Control,” with the ENIGMA ID of E14.

While not technically a numbers station, E10 is counted all the same. E10 is a station believed to be operated by Israel's MOSSAD, transmitting letters from the phonetic alphabet (Alpha, Bravo, Charlie, etc.) instead of numbers. While E10 primarily transmits from the Middle East, many locations around the world are used, particularly, as ENIGMA believes, Israeli embassies. E10s can be found at various times of the day at varying signal strengths. This station signs on by repeating a three-letter identifier, which may indicate the recipient, such as “Echo Zulu India” for the first few minutes. If the three letters are repeated alone, there will be a message; however, a “2” often follows each

repetition, indicating that there is no message and the station will simply go off after a short time.

First reported in the 60's and 70's, E10 is among the oldest stations and is also among the most interesting. Different identifiers have different behaviors, any given identifier, such as "EZI," will be used repeatedly for different transmissions. Some identifiers are used very frequently, some are only reported a few times. Sometimes a popular identifier will stop being used, or a new one will show up. Long call ups will include the identifier, then a short series of letters and numbers, resulting in something such as "CIOTIBIBI4ZIIZ55" being repeated. The purpose of these call-ups is unknown. Furthermore, E10 does not seem to go by the rules of many numbers stations: transmissions may begin at :00, :15, :30, or :45 into the hour and could take anywhere from 5 minutes to 5 hours. These stations are frequently caught in North America, Europe, and the Middle East.

The British MI6 operate two popular stations, both following similar formats. The first is E3, referred to as the "Lincolnshire Poacher" because that is the old English folk song this station airs when it signs on. The transmissions begin at the top of the hour and last exactly 45 minutes: the tune is played 12 times and is followed by a five-digit identifier (indicating the recipient?), then six musical notes, 200 groups of five-digits each, musical notes, and one more repetition of "Lincolnshire Poacher." The station may sign off or stay on (with dead air) until the process begins again at the top of the next hour. E3 is transmitted from the Mediterranean and it is difficult but possible to receive E3 in

North America with mediocre equipment. E4 is the sister station of E3 and transmits from the western Pacific Ocean. The format of the two stations is the same, but E4 uses "Cherry Ripe" instead of "Lincolnshire Poacher" as its interval signal.

Although the cold war is over and the Soviet Union has fallen, we can take a look back at the wide variety of interesting stations used during that time. Our first example is still heard today. E17 was one of the stations operated by the KGB, when the Soviet Union fell, traffic on this station was reduced but not stopped. The "English Lady," as well as its many variants, repeatedly transmit a three-digit identifier from the top of the hour, followed by, if there is a message, groups of five-digit numbers, going down with "0 0 0 0 0." When an E17 transmission is made, it typically repeats the next day at the same time and on the same frequency.

Once upon a time, there was a network of primarily German-language numbers stations transmitting throughout Europe. In the early 90s, G14, G15, G16 and E16 faded away, but not without a long history and numerous logs and recordings. These stations, which date back to the 60's and 70's, were highly believed to be sponsored by West Germany. The transmissions begin with two letters from the phonetic alphabet being repeated with a series of tones following each repetition, this went on for five minutes and then went into a three-digit identifier and group count, then the five-digit blocks were sent. Over the decades, over 80 call signs were reported at times spanning all times of the day;

however, these transmissions concentrated between 1800 and 2000 UTC, indicating that the transmissions were meant to be heard within Europe.

Of the two letter stations, one stood out to the point where it got its own ENIGMA ID. G15 was known as "Papa November," since that was the call sign sent by the station. G15 was extremely active with daily, predictable transmissions that did not re-transmit the same message for long periods. This station's last known transmission was made in October 1992.

Still in the same family as Papa November and the other two letter stations, G14 represents two very similar stations, two of the few stations to use actual call letters. Officially, "DFC37" and "DFD21" are operated by the Deutsche Bundespost (the German Post Office), but that never seemed to be the case, these stations have never been positively tracked down. DFC37 operated on 3370 kHz from 1500 to 2200 UTC, while DFD21 operated on 4010 kHz at the same times. Similar behaviors and a mix-up on one occasion has numbers buffs at large convinced that DFC37/ DFD21 and "Papa November" were the same station. DFC37 and DFD21 made their final transmissions two months after "Papa November" left the air.

The preceding were examples of relatively popular stations, but only a small chunk of the variety out there. Other stations are and were around that exhibit any number of behaviors. Stations such as V1 use music when they come on the air, V1 is commonly called "The Skylark," but others have nicknamed it "The Mad Fiddler." A Czech station has been reported playing Taps (The Last Post), V8 uses eastern music, and V9 opens and closes with a

musical introduction from the album "Magnetic Fields" by Jean-Michel Jarre. Other stations use sound effects or tones, such as the letter "N" repeated in Morse code (E12 - NNN station), clock chimes (G3 - Stasi Gong Station, which left the air May 9, 1990), three notes rising in pitch (G4 - Three Note Oddity), or any number of anthems. Some stations are only known to appear once, "The Jazz Player" is one example of a "one-off" numbers station. Some stations, such as "Oblique" (E11) seem so pointless that even numbers buffs consider them a waste of time, that is, they never transmit a message, or have only been reported once or twice with one.

Furthermore, many transmissions do not use voice. Stations that use Morse code can also follow a wide variety of formats similar to voice stations, these stations' ENIGMA IDs use the letter M. Also, unidentified digital transmissions take place that are encrypted, such as phone calls. Other eerie sounds are unexplained noises that occur. XM, the backwards music/ whales station, fascinated many SWLs until they were linked with computer-generated noise from Navy vessels. "The buzzer" (S28) simply transmits a series of slow tones, once a message has been reported on this station. The purpose of some of these noises is believed to be to hold the frequency for when the organization needs it.

The accused organizations and those related to them usually reply "no comment" when asked about numbers stations. Nevertheless, numbers buffs are convinced that most, if not all, numbers stations are set up to deliver encrypted messages to spies or other parts of the organization. Embassies are

popular users of numbers stations, using them to deliver messages to their country or other embassies. The concept is reasonably simple, a message is composed and sent to a secret area for encryption and transmission. Words may be encrypted using a book or a dictionary that the recipient has a copy of, each word is converted to a page number and position (usually counting from the top-left corner of the page). It is believed that the three/ two-digit transmissions use this kind of encryption. A more secure method is to use "one-time pads," small pieces of paper that are used to convert the message and can promptly be destroyed once the message has been read. No two pads are alike, and IDs would be contained within the transmission (before or after the actual text) telling the recipient which pad to use. Relatively few messages would be dramatic, like "assassinate the president tomorrow," but would be more like instructions for meeting places, drop points, or perhaps mundane news or greetings that the spy wouldn't find worth his/ her time decoding. Although there are some attempts by numbers buffs to decrypt these messages, successes are few and far between.

An ordinary SWLer can listen in using an ordinary shortwave radio, after all, that's what the actual spies are probably using (their cover might be blown with a \$5,000 radio and built in decryption software). Just tune around slowly and listen for a mechanized voice reading numbers, it doesn't really blend in that well with normal stations and once one hears a transmission for the first time it gets easier because he/ she knows what to expect. In addition to numbers, listen for phonetic letters and eerie music (being familiar with what tunes are linked to numbers stations helps). These stations are usually just outside of the

standard shortwave bands, where normal stations cluster, so try there first.

Remember to use the internet and other resources to find out who caught what recently, this may help you find a future broadcast.

When listening to a numbers transmission, or an eerie noise, or some other artificial phenomenon on the shortwave band, a cold chill might go up your spine. It's the intrigue that drives the SWLer to listen, perhaps copy text, and determine new patterns by watching old ones. Who is transmitting it? Who is receiving it? How is the message encoded? These messages may be "dummy traffic" or it may be preventing world war from happening next week, the numbers listener does not know which, but finds the question fascinating.