

Unit 5

Basic Radio Communications

5.1.0 Unit Goal: Summarize protocol involving radio communication techniques.

5.1.1 Learning Objective: Identify methods for using phonetic alphabets.

- Law Enforcement Phonetic Alphabet:

A	Adam	N	Nora
B	Boy	O	Ocean
C	Charles	P	Paul
D	David	Q	Queen
E	Edward	R	Robert
F	Frank	S	Sam
G	George	T	Tom
H	Henry	U	Union
I	Ida	V	Victor
J	John	W	William
K	King	X	X-Ray
L	Lincoln	Y	Young
M	Mary	Z	Zebra

5.1.2 Learning Objective: Identify methods for using numeric codes.

- Numeric pronunciation
- Numbers are an important part of the message.
- Some numbers sound alike over the radio; example: 15 and 16
- If numbers are transmitted collectively, follow up by transmitting numbers individually, 1-5, 1-6 in order to clarify
- Follow department procedures regarding transmissions
 - Example: Texas Driver License 12345678
 - Texas DL 12,34,56,78
 - Follow with clarification 1-2-3-4-5-6-7-8

5.1.3 Learning Objective: Identify methods for using plain language.

- Plain Language:

Avoid	Preferred
Want	Desire
Can't	Unable
Buy	Purchase
Send	Forward
Do you want	Advise if, Confirm
Find out	Ascertain, Advise if

Call and see	Check
Be on the lookout for	Attempt to locate

- Dispatching names by first pronouncing the complete name; then spelling the first name, giving the first letter of the name phonetically; then pronouncing the last name and then spelling it phonetically.
 - Example: John Smith
 - J-John-O-H-N
 - Smith, S-Sam, M-Mary, I-Ida, T-Tom, H-Henry
 - John Smith
- CYMBALS is the acronym for describing motor vehicles.
 - C=Color
 - Y=Year
 - M=Make/Model
 - B=Body Style
 - A=And/Additional Identifiers
 - L=License
 - S=State
- The **24-hour clock** is a way of telling the time in which the [day](#) runs from midnight to midnight and is divided into 24 [hours](#), numbered from 00 to 24. It does not use a.m. or p.m. This system is also referred to (only in the US and the English-speaking parts of Canada) as **military time** or (only in the United Kingdom and now very rarely) as **continental time**.
 - Under the 24-hour clock system, the day begins at midnight, 2400, and the last minute of the day begins at 2359 and ends at 2400, which is identical to 0000 of the following day. 1200 can only be mid-day. Midnight is called 2400 and is used to mean the end of the day and 0001 is used to mean the beginning of the day. For example, you would say "Tuesday at 2400" and "Wednesday at 0000" to mean exactly the same time.
 - 24-hour clock time is used in computers, military, public safety, and transport. In many Asian, European and Latin American countries people use it to write the time. Many European people use it in speaking. Many models of digital wristwatches and clocks are available that display the time of day using the 24-hour clock.
 - In railway timetables 2400 means the *end* of the day. For example, a train due to arrive at a station during the last minute of a day arrives at 2400; but trains which depart during the first minute of the day go at 0000.
To write shop opening hours until midnight use, for example, "0000–2400", "0700–2400".
 - Advantages over the 12-hour clock system:
 - Fewer confusions between morning and evening; e.g. 7 o'clock in the evening is called 19:00.
 - People do not have to figure out if noon is 00h00.m. or 12h00.m.
 - It is easier to calculate duration.
- Military Time=24 Hour Clock:

24 Hour:	12 Hour:	24 Hour:	12 Hour:
2400=Midnight	12:00 a.m.	1200 twelve hundred hours	12:00 p.m.
0001 zero zero zero one	0:001 a.m.	1201 twelve oh one	12:01 p.m.
0100 zero one hundred	1:00 a.m.	1300 thirteen hundred	1:00 p.m.
0200 zero two hundred	2:00 a.m.	1400 fourteen hundred	2:00 p.m.
0300 zero three hundred	3:00 a.m.	1500 fifteen hundred	3:00 p.m.
0400 zero four hundred	4:00 a.m.	1600 sixteen hundred	4:00 p.m.
0500 zero five hundred	5:00 a.m.	1700 seventeen hundred	5:00 p.m.
0600 zero six hundred	6:00 a.m.	1800 eighteen hundred	6:00 p.m.
0630 zero six thirty	6:30 a.m.	1830 eighteen thirty	6:30 p.m.
0700 zero seven hundred	7:00 a.m.	1900 nineteen hundred	7:00 p.m.
0800 zero eight hundred	8:00 a.m.	2000 twenty hundred	8:00 p.m.
0900 zero nine hundred	9:00 a.m.	2100 twenty-one hundred	9:00 p.m.
1000 ten hundred	10:00 a.m.	2200 twenty two hundred	10:00 p.m.
1100 eleven hundred	11:00 a.m.	2300 twenty three hundred	11:00 p.m.
1200 twelve hundred	12:00 a.m.	2400 twenty four hundred	12:00 p.m.

- The definite time specified instead of indefinite; example: September 10 instead of today, day of the week, yesterday, or tomorrow.
- A definite hour and minute time used, example: zero, three, forty-five hours = 3:45 a.m.
- The number “0” pronounced “zero.”
- Originally formulated by Illinois APCO members in 1935, ten signals or codes were officially adopted in 1940 by National APCO. The historical purpose of “ten signals”:
 - To achieve reliability and speed
 - Still used today by some agencies, plain language is slowly replacing ten-codes, and NIMS training suggests using plain language in large incidents. Refer to your agency procedures regarding these codes or signals.

5.1.4 **Learning Objective:** Identify common radio communication techniques.

- Standard Descriptions of Persons: Top to Bottom, Outside-In.
 - Name
 - Sex
 - Race
 - Age
 - Height
 - Weight
 - Hair
 - Eyes
 - Complexion
 - Physical (scars, marks, tattoos, limp, etc.)
 - Clothing (description is given head to toe, outside/in)

- Hat
- Shirt (including a tie)
- Coat
- Trousers/Pants/Jeans/Shorts
- Socks
- Shoes
- Memorize the sequence, use for radio, phone, and call-taking descriptions.
Seconds count. Break frequently on long descriptions.

Law Enforcement Phonetic Spelling Alphabets. A National Training Manual and Procedural Guide for Police and Public Safety.

<https://archive.org/stream/nationaltraining025505mbp#page/n41/mode/2up>

5.1.5 **Learning Objective:** Identify standard radio procedures and protocols.

- The Federal Communications Commission (FCC) governs radio discipline and the operations of the U.S. Radio Systems. The FCC has the authority to monitor, review, and issue fines, suspend and/or revoke radio system licensees who violate regulations. The rules relating to public safety telecommunications must be understood and followed. Though the FCC is ultimately responsible for the frequencies utilized, the Association of Public-Safety Communications Officials (APCO) is the overseer for assigning and monitoring the frequencies.
 - Licensees are responsible to maintain control over the stations licensed to them and to ensure they are functioning and operating properly. However, operators who do not own such frequencies are not responsible for stations and do not need to be licensed by the FCC.
 - Only calls authorized by the rules governing radio systems may be transmitted. False calls; fraudulent distress signals; unnecessary or unidentified communications, obscene, indecent or profane language; and the transmission of improper call signals is prohibited. Licensees are authorized to transmit communications directly related to official public safety activities for the protection of life and property.
 - Operators are required to monitor the transmission frequency for at least 2 seconds before transmitting ensuring the transmission will not cause harmful interference to others who may be using that frequency.
 - All radio transmissions must be restricted to the minimum practical time of transmission. In other words, do not chat or be too wordy. Telecommunicators may monitor multiple frequencies at once.
 - Communications involving the safety of life or property are always a top priority for all first responders.
- Radio broadcasting techniques – best practices for using the radio.
 - When using a radio to transmit information, the pitch, volume and speed of delivery should be consistent over the course of a shift, regardless of the type or

intensity of activity. Responders should attempt to keep a normal, level tone to increase understanding and limit the possibility of distortion. Use a normal speed of delivery to ensure understanding thus limiting the request for repeating transmission that ties up additional airtime.

- Most people can understand the spoken word at a very fast rate. However, when dealing with critical information and written information, a fast rate decreases understanding and causes details to be missed. Avoid speaking faster in response to stress or excitement, or because everyone else is talking faster. When messages must be repeated, the advantage of talking faster is completely lost.
- Mispronounced words and names or drawled or lazy speech are common causes of a request for repeats. Phonetically spelling a word or name that you are uncertain of is much better than trying to pronounce it, but make sure the receiver knows they will be receiving a spelling phonetically. Again, voice quality should remain consistent throughout the course of a shift and most certainly through each transmission, regardless of the message's importance.
- Voice clipping is a common radio error. A radio does not know you are going to talk until you tell it you are going to talk by depressing the push-to-talk (PTT) button. Then the radio must prepare itself to send your voice to the receiver. To allow your radio to prepare, hesitate after you depress the PTT button. The hesitation should be a rule-of-thumb of 2 seconds. For example, if you clip the beginning of the phrase, "don't shoot," the receiver actually hears, "shoot." A big difference! Remember that you can clip the end of your transmission also, so pause before releasing the PTT button after speaking.
 - Key > Hesitate > Talk
 - Stop talking > Hesitate > Release
- The ability to speak clearly and concisely in an adverse condition often is something you must practice. Anger, frustration, boredom and other emotions are clearly conveyed through your voice. Limit emotions as much as possible to avoid giving the impression that the person on the other end of the transmission is the focus of the feelings.
- Before pressing the PTT button, think about what you are going to say and make sure the information is accurate. Then, clearly and concisely, transmit that over the radio. Always speak in short and complete sentences. If it is a long transmission, such as a "Be on the Lookout" (BOLO), you can insert a break (or breaks) to allow others to take down information. Do not use "ums" and "ahs" over the radio. If you lose your thought, simply say "standby" to collect your thoughts and continue. The basic rule is "keep it simple."
- Although appropriate for everyday conversation, personal comments like "Thank you" and "I'm sorry" do not belong on the radio. If you follow good radio discipline and practice professional etiquette, those who you communicate with

on the radio will know that you appreciate them, and they will appreciate you in return.

- Noise is common to the responder's environment. Raising your voice will most likely distort your transmission, making it hard to understand. Likewise, whispering also will be difficult to understand. Always speak in a normal, conversational tone. It is instinctive for us to turn away from noise, but this makes the problem worse. Facing the noise points the microphone away from the noise. This will eliminate some of the interference of background noise.

5.1.6 Learning Objective: Identify key elements for dispatching calls for service to field units.

- Unlike other forms of communication, radios require you to notify someone of your wish to communicate and inform them of whom they will be communicating with by using call-in signs or unit numbers. The flow of basic radio communication is shown here:
 - Center: "4810 Dispatch." Unit: "4810."
 - Center: "Central Adam 210." Unit: "Adam 210."
 - Center: "Headquarters Traffic 180." Unit: "Traffic 180."
- Dispatching call sequences: Center "40010 East Carpenter Road, Theft Report. Meet with Clark Kent regarding wallet theft. 4-0-0-1-0 East Carpenter Road." Unit: "4810, received (copy)." Notice how the dispatcher repeats the address and how the officer acknowledges the call. Note: CAD systems today eliminate the need for some information such as the complainant's name and what was taken, that information will present on the mobile data terminal in the unit, however not all agencies have CAD systems.
- Acknowledging a transmission correctly is critical to ensure sender and receiver understanding. The method of acknowledging for the unit is responding with the unit number or call sign. When the Center responds, the dispatcher also should respond with the unit number or call sign of the calling unit. The purpose is always to ensure that the Center is communicating with the correct unit. In other words, it verifies understanding. Note the acknowledgment of "10-4" or "copy" is important to verify that the communication was delivered and understood by the receiver.
- Pre-alerting is a step to prepare responders for what they are going to be asked to do, whether it is to copy information, enter data or take certain actions. Pre-alerting tells responders what they are going to need so they can prioritize the various tasks they are doing. Center personnel use pre-alerting techniques to prepare field personnel to receive information, BOLOs, telephone numbers and more. It provides the opportunity for the responder to grab paper and pencil, stop their vehicle or ask the sender to wait if they have something more important to complete. Then, when the responder is ready, he/she can give the sender full attention.
- The three general categories of pre-alerts are:
 - Inquiries – We need to ask you a question or have you run information.

- Information – We are going to tell you something you may need to write down or note.
- Details – We are going to dispatch you to or are initiating a response to an incident. The intent of this process is to prepare receivers for what is going to be asked of them. This greatly enhances the receiver's ability to prioritize their tasks and provide the highest level of service. If receivers know what will be asked of them, they can make a decision to delay one task to ensure the more important task is completed first, and then return to what they knew was less important because they were pre-alerted.
- When a 9-1-1 or emergency call comes into the PSAP, the dispatcher determines the nature of the call, where it has occurred and the appropriate responding agency, then dispatches the responding agency, such as Fire, EMS or Law Enforcement. The dispatcher needs to continue receiving information from the responder when the page (call) is received; when the responder is actually en route to the scene, and when the responder arrives/leaves/becomes available from the call. In addition, dispatch personnel needs the unit number of the responding entity relayed to them for documentation purposes. This is especially important for some of the new reporting requirements, for EMS calls. The times also are important, so this is a step responders should remember when they are dispatched. In the event of a large-scale emergency with multiple responders, use plain language to state your department.
- PSAP personnel is instructed to begin repeating responder radio traffic when the radio channel becomes too busy. However, this should serve as a message to the units in the field that they need to slow down. When this occurs, remember these three things:
 - Confirm receipt of correct information
 - Reinforce the information in the dispatcher's mind
 - Prevent other units from calling before the dispatcher is ready to take the next message.

Basic Radio 101. An Emergency Responder's Guide to Effective Radio Communication. ND Department of Emergency Services. October 2009, Page 14-23.

<https://www.slideshare.net/bkoch/basic-radio-101-trainers-guide>

5.1.7 **Learning Objective:** Identify methods for obtaining and broadcasting descriptions of motor vehicles, persons, and events.

- Broadcasting Descriptions of Motor Vehicles – CYMBALS (color, year, make/model, body style, accessories or all other descriptors (tinted windows, body damage, spoilers, mag wheels, etc.), license plate number/letters, state of issuance.
 - For example, BLK, 82, HONDA, ACCORD, 4 DR., TINTED WINDOWS, ABC123/ WA
Call Takers should provide the vehicle description in this manner. Dispatchers should broadcast the information in this format every time.

- Even if the Dispatcher is unable to obtain specific vehicle descriptors, the CYMBALS format may still be used. For example Dark color, large, older model 4 door with shiny wheels, unknown license.
- Break up phonetic letters into groups of three. For example, spelling the word “MOTHER”: MARY, OCEAN, TOM (slight pause), HENRY, EDWARD, ROBERT. This is especially important if someone is copying the information as you say it.
- Precede the phonetic spelling with a warning that you will be spelling. For example, “Last name spelling – SAM, MARY, IDA, TOM, HENRY”. If you do not warn that the spelling is forthcoming, when you say, “Last name, SAM”, the other person may begin writing the last name as Sam.
- DO NOT duplicate effort when pronouncing letters or spelling a name. It is not necessary to spell phonetically the word using the phrase “as in” for each letter. For example, “TOM” – T as in TOM, O as in OCEAN, M as in MARY. It is redundant to use both the letter and the phonetic designator.
- When reading numbers, several methods are most useful, particularly when a responder has to write down the information. These are:
 - The number 0 is read as “zero” and not O (oh) the letter. Writing the number 0 with a slash through it helps avoid confusion.
 - Numbers that sound alike, such as “thirteen” and “thirty”, are sounded out by individual digit to avoid confusion. Example: “Thirteen- One Three- Street”.
 - When reading lengthy series of numbers and/or letters, such as vehicle identification numbers (VIN) or serial numbers, read the numbers and letters in groups of three. A slight pause after every three characters gives the person writing the information a chance to keep up and is easier to hear than a long string of letter/numbers quickly read off. This is especially useful when transmitting license plate numbers.
 - Follow your department’s procedures regarding transmissions
- License Plates - A license plate of 123ABC is transmitted as “One, two, three (slight pause), Adam, Boy, Charles”.
 - A plate of “67894W” is read as “Six, seven, eight (slight pause), nine, four, William”.
 - When a plate has seven or more characters, there are a couple of ways it can be read. For example, A33146B can be read: “Adam, three, three, (pause), one, four, six, (pause), Boy” or as: “Adam (pause), three, three, one, (pause), four, six, Boy”.

Vehicle Descriptions. Washington State Criminal Justice Training Commission, Telecommunicator Program Office; Telecommunicator 2 – Basic Call Taker Page 17-18, Student Resource Guide 2011.

- Broadcasting Descriptions of Persons - Get complete descriptions using standardized formats and descriptors. Head-to-toe, outside-to-inside!

- Descriptions of people are obtained in the following order: race, gender, height, weight, hair color, eye color, scars, marks, tattoos, facial hair, glasses, and any other pertinent information such as amputated limbs, etc.
- Use NCIC abbreviations for descriptors:
 - Racial Descriptors: W, B, A, I, O (Hispanic or Latino if policy dictates)
 - Gender: M, F
 - Age: Actual age/DOB if known, or A/Adult J/Juvenile
 - Height: 5'5" = 505; 6'2" = 602, etc., or "thin, medium, or heavy build"
 - Weight: three digits, i.e., 95 lbs. = 095, 135 lbs. = 135
 - Hair and eye color abbreviations: refer to NCIC codebook
- Clothing descriptions are obtained from HEAD to TOE and from the OUTSIDE to the INSIDE:
 - Hat or headgear
 - Coat, jacket, sweater
 - Shirt, blouse, top
 - Pants, shorts, skirt, leg coverings
 - Shoes
 - Accessories or other
- For multiple suspects, have the caller describe one at a time, for example, #1: WMA 6'03", #2: BMA male 5'11"
- Other important details should also be transmitted
 - Any weapons involved; knives, firearms, crowbar, hammer
 - State of mind of the involved parties; angry, depressed, delusional
 - Any existing contributing factors; alcohol, medication, narcotics

Descriptions of Persons. Washington State Criminal Justice Training Commission, Telecommunicator Program Office; Telecommunicator 2 – Basic Call Taker Page 78, Student Resource Guide 2011.

- Broadcasting Descriptions of Events – Generally, addresses are provided in whole, then in part. Regular practice is to provide locations by using common location names when available. This is an acceptable practice when it is a universally known location. When used, the common location is provided along with the street name to eliminate issues with multiple sites.
 - For example, when giving out "4320 3rd Street East," the address should be provided a second time as "4-3-2-0 3rd Street East." This helps eliminate the transposing of numbers and ensures that the receiver is able to copy the correct address. If the location has a common name, then say that, such as, "Discovery Middle School."

Basic Radio 101. An Emergency Responder's Guide to Effective Radio Communication. ND Department of Emergency Services. October 2009, Page 22-23.

<https://www.slideshare.net/bkoch/basic-radio-101-trainers-guide>

5.1.8 Learning Objective: Identify methods of microphone and headset placement and techniques to achieve effective broadcasting.

- People wear a headset to free their hands while talking on the phone. Another reason to wear a headset is to listen to the conversation and hear it with no distractions from the noise in the room. Choose the type of headset most comfortable for your ear and wear it whenever you answer your phone or transmit over the radio. Choose the type of headset you want to wear. There are three basic types:
 - Over the head:
 - Grasp your headset that goes over the head with two hands. If this headset goes over both ears, hold the headset by the two earmuffs.
 - Pull the earmuffs apart until there is enough room to put it around your head. Place each earmuff completely over each ear. Make sure the headset is not too tight or too loose.
 - Adjust to wear on your head by pulling the band out far enough to fit both ears or sliding the band back for a snug fit.
 - Place the earmuff over only one ear if you choose the headset that goes over the head but has one receiver.
 - Grasp the headset by the one earmuff and grasp the other end. Place it on your head and make sure the one earmuff fits directly over whichever ear you want to use.
 - Adjust the band looser or tighter as needed.
 - Around your ear:
 - Take the over the ear headset in one hand.
 - Place the earpiece against whichever ear you want to use.
 - Now take the semi-circle attached to the earpiece, and place this around your ear
 - Earbuds that go inside the ear:
 - Select the earbud type of headset.
 - Pick it up with one hand and insert the bud directly into whichever ear you want to use.
 - Do not force it into your ear but make sure it is in far enough that it will not fall out.
 - It is important to test the headset types in order to determine which type best fits your needs. You may not be comfortable with an earbud even though they are convenient.

How to Wear a Headset. Techwalla Editor, Retrieved May 21, 2018.

<https://www.techwalla.com/articles/how-to-wear-a-headset>

- Microphone Placement - To get the best performance from your radio mics, you should experiment with the placement of the microphone in relation to the mouth. If the microphone is too close, then the sound may distort during loud passages. If it is too far from the mouth, then the microphone will pick up a lot of background noise. There is also an increased risk of feedback (the high-pitched squealing that occurs when microphones are too close to loudspeakers).
 - The sensitivity of the microphones can be adjusted up or down.

- All microphones pick up sound from all directions, and not from where the microphone is pointing.

Tips for Getting the Most Out Of Your Radio Mics. Radio Facilities, Microphone Placement.

Retrieved May 21, 2018. <https://www.radiofacilities.com/radio-mic-guide/>

Unit 5 Basic Radio Communications Resource

- SACRAMENTO POLICE DEPARTMENT DESCRIPTION PAGES. Retrieved May 21, 2018.
<https://www.cityofsacramento.org/-/media/Corporate/Files/Police/Resources/Suspect-Description-Form-SPD.pdf?la=en>

Glossary/Acronyms

Military Time – a method of measuring time based on the full twenty-four hours of the day rather than two groups of twelve hours; the twenty-four-hour clock.

Phonetic Alphabet – a set of symbols or codes used to show what a speech sound or letter sounds like.

Phonetic Spelling – Of or relating to phonetics. Features of pronunciations that are not distinctive are represented by a speech sound or symbol.

Plain Language – language designed for easy, quick understanding. Avoids verbose, convoluted language and jargon.

Ten Signals – brevity codes used to represent common phrases in voice communications.

Voice Clipping – not allowing time for the radio system to recognize that a transmission is taking place, thereby “clipping” off part of the transmission or message.