SKCC Beginner's Corner   Doc 1.1

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Welcome to the SKCC's Beginner's Corner, even if you've been licensed for a while! We've pulled together some basic information to help you join the fun of using manually generated Morse code. Feel free to scroll through this page sequentially. Or use the mini menu at the bottom of this introduction to skip to the section that looks like it will answer an immediate question. Over time, you may find you'd like to try other club-approved types of non-electronic keys. These include semi-automatic keys known as "bugs" or single-lever, side-to-side keys known as side-swippers or cooties. But for now, we'll assume you've picked up a classic straight key, have learned basic letters and numbers**, and are ready to go.

Section 1 - The Basics of Manual Morse Code

The essential difference between electronically generated and manually generated Morse code is that you and your "fist" determine the length of the short and long tones -- dits and dahs -- that make up a character's basic elements. The dit also is the basic timing element. The duration of a dah should be three times the duration of a dit.

However, creating well-timed dits and dahs is just the beginning of sending good, easily copied Morse code. Proper spacing between the dits and dahs within a letter, number, or other character is very important. So is the spacing between letters and between words. The relationship between the lengths of your dits and dahs and the spacing you provide create the "magic", "music", and challenge of manually generated Morse code.

In principle:

-- The space between elements of a character is one dit.

-- The space between characters of a word is three dits.

-- The space between words is seven dits.

In reality, very few operators create "perfect" code manually. Falling short of "textbook" duration and spacing is not necessarily a problem if the code is still easy to copy. It's quite common for experienced CW operators to identify one another by the unique way they send code.

Think of it as having a CW "accent." If someone speaks with a very heavy accent, he or she can be hard to understand. It's the same with Morse code. For example, improper spacing in Morse code could well leave the other operator unable to decode what you're sending. Few operators will want to (or be able to) hold a conversation when you think you've sent this:

TNX FER THE CALL OM MY NAME IS RON MY QTH IS MD

But you really sent this:

TN XFER TH ECAL LO MMY NAM EIS RONM YQT HIS MD

If you have a code-practice oscillator or your radio has a code-practice function that can send the tone to a speaker, send some text, record it, then play it back a few days later. If you can't copy your own "fist," it's safe to assume others will have a hard time as well.

That said, the presence of a **slight** accent also can be a delightful feature of a CW conversation.

So aim high, and be sure to take time to **listen** to well-crafted code, such as the code the ARRL transmits during its on-air bulletins and code-practice sessions.

**If you need to learn the basic characters, please check out any or all of the following recommended sources:

G4FON Koch Method CW Trainer   *Just Learn Morse Code*

K7QO's Code Course   *K6RAU's Code Course - SKCC Member #11992*

Section 2 - Basics of a CW QSO

Before you engage in your first on-air CW QSO, you should take a few minutes to familiarize yourself with some of the CW shorthand you'll hear, as well as some common QSO protocols. If you have made some phone or digital QSOs, you already know that amateurs use a variety of Q signals. You have probably run across QSY (change frequency), QTH (location), and a few others.

Prosigns, Procedural Signals, and Abbreviations

Let's face it: Even if you could send and receive at lightning speeds, spelling out every word would turn an otherwise a quick exchange into a laborious rag chew. To make more efficient use of air time, especially under marginal or deteriorating propagation conditions, CW operators use prosigns, procedural signals, and abbreviations -- more so than operators using phone and digital modes. And that's a good thing. Using these elements alone, you can conduct a basic exchange with a ham in another part of the world without having to know his or her language because precisely because you both are using internationally accepted abbreviations. There are literally hundreds of these in use today, but only a very small number are considered "common" or "must know." We review these fundamental ones in the following subsections.

What's a prosign? It's a special character made by running two characters together **without** any spacing between them. For example, the characters B (dah-di-di-dit) and T (dah) can be run together as BT (dah-di-di-di-dah) to form a new character. When written out in guides such as this one, prosigns are designated with an overscore such as **BT**.

Common Prosigns

AR = Means end of a transmission. It is not necessarily an invitation to transmit. **AR** is used after calling a station with which contact has not already been established.

AS = Wait, stand by for a short time

BT = Separation, or break, between address and text; between text and signature in a radiogram. Also used between topics in a QSO.

IMI = Yes, this is a standard CW question mark. But it also can be used to ask for a repeat of difficult words as well as to indicate a query (?).

SK = The communications is concluded or clear. End of Work

Common Procedural Signals

DE = Used as "FROM" after the other station(s) and before your call

ES = & or and

K = Indicates you are turning the conversation over to another station or stations.

KN = Indicates you are turning the conversation over to a specific station and no one else is to call or answer. Use this only when you wish a specific station to answer.

R = All received and understood, the telegrapher's version of "roger."

You can download a more complete list of common procedural signals *here*.

Common Abbreviations Used in CW QSOs

Long before today's teenagers were texting and using bizarre abbreviations (IIRC my BFF), amateur radio operators were using their own set of abbreviations -- just to save time. The easiest rule for making just about any abbreviation is simply to remove the vowels from the word. That means a complete list of abbreviations would fill a dictionary. But there are several that you'll run across in a normal CW QSO. We have listed some of the most common below.

AGN = Again

ANT = Antenna

BK = Break, Break in

BURO = Bureau

B4 = Before

C = Yes, Correct

CL = I am closing my station; Call

CONDX = Conditions

CPI = Copy

CU = See You

GG = Going

OM = Old Man

PSE = Please

TNX = Thanks

TU = Thank you

VY = Very

WX = Weather

You can download a more complete list:

http://www.skccgroup.com/member_services/beginners_corner/CW%20Abbreviations.pdf

The RST Reporting System

If you have used phone or digital modes, you are probably already familiar with the RS signal-reporting system, as in "you're five by eight here in South Snowshoe, MA."

CW operators add another component to the signal report: the "T," for signal tone. For all practical purposes, with today's solid-state radios with well-regulated and fully filtered power supplies, a "9" tone report is most common. But some hams still run tube equipment, or radios with wiggy power supplies. Give them an honest report so they can troubleshoot their radios if needed.

<u>R: Readability</u>

1 -- Unreadable

2 -- Barely readable, occasional words distinguishable

3 -- Readable with considerable difficulty

4 -- Readable with practically no difficulty

5 -- Perfectly readable

<u>S: Signal Strength</u>

1 -- Faint signals, barely perceptible

2 -- Very weak signals

3 -- Weak signals

4 -- Fair signals

5 -- Fairly good signals

6 -- Good signals

7 -- Moderately strong signals

8 -- Strong signals

9 -- Extremely strong signals

<u>T: Tone</u>

1 -- Sixty cycle A.C. or less, very rough and broad

2 -- Very rough A.C., very harsh and broad

3 -- Rough A.C. tone, rectified but not filtered

4 -- Rough note, some trace of filtering

5 -- Filtered rectified A.C.. but strongly ripple-modulated

6 -- Filtered tone, definite trace of ripple modulation

7 -- Near pure tone, trace of ripple modulation

8 -- Near perfect tone, slight trace of modulation

9 -- Perfect tone, no trace of ripple or modulation of any kind

In addition, these indicators can help another ham troubleshoot a signal-quality problem, or pat him or her on the back for having a solid signal:

X: stable frequency (crystal control)

C: "chirp" (frequency shift when keying)

K: key clicks

Here are some sample signal reports:

559 -- a perfectly readable, fairly strong signal with perfect tone

558C -- a perfectly readable, fairly strong signal with a minor chirp

355K -- a difficult-to-read signal, fairly strong signal with moderately bad key clicks

599X -- a strong, readable signal with a perfect tone, just like a crystal-controlled transmitter. This is everyone's desire!

You can download a desktop reference of the RST system _here_.

Common Q-Signals Used in CW QSOs

CW operators also use the same set of Q-Signals as phone and digital-mode operators. With CW, however, some of these appear more frequently during a contact. If the Q signal stands alone, it typically represents a statement. If it's followed by a question mark, it's a query.

QRG(?) -- My exact frequency is _____. What is your exact frequency?

QRL(?) -- Frequency is busy.

QRM(?) -- Interference from another station

QRN(?) -- Interference from static

QRO(?) -- Increase power

QRP(?) -- Decrease power

QRQ(?) -- Send faster

QRS(?) -- Send slower

QRT(?) -- Stop sending

QRU(?) -- All done - nothing more

QRV(?) -- I am ready

QRX(?) -- Please Wait a minute or more

QRZ(?) -- Who is calling me

QSK(?) -- I can hear you while I am sending

QSL(?) -- I acknowledge receipt

QSX(?) -- I am listening on ...

QSY(?) -- Change frequency to ...

QTH(?) -- My location is ...

You can download a more-complete list of Q signals _here_.

Section 3 - A "Typical" CW QSO

Whew !!! It seems like it took a lot of background information to get to this section. We apologize if we have provided too much information. In reality, we have tried very hard to strike a balance between providing you with enough information and overwhelming you with too much information.

Truth be known, far too many Amateurs dive into their first on air CW experience without adequate preparation. They get frustrated from the experience and end up missing out on the joys of the original Ham communications mode. Many years ago, the ARRL and other Amateur organization provided guides for Radio Telegraph operators. We have tried to recall the information that was presented in those books and summarize it here. If you have reviewed and understood most of the preceding information, then you are pretty much ready for an on-air CW QSO.

This section outlines a typical CW QSO. Although there are many variations possible to the basic QSO, most QSOs follow this format. If there is any way to do it, find an Elmer, friend, or any other experienced CW operator to help you with your first on-air CW QSO. The following "script" describes a typical CW QSO as it might be heard on most any HF band on any given day.

Checking to see if the frequency is clear:

In this example, W3ABC will check to see if the frequency is clear - this is a good, courteous practice, try to make this a habit in all your radio fun.

The first step is to listen for several seconds or even a few minutes. A frequency may sound quiet when you first tune to it. But a QSO may be underway, but propagation allows you to hear only one of the two stations. Listening for a decent interval gives the station you **can** hear enough time to make itself known, saving you the need to ask if the frequency is clear.

If you hear nothing, it's still useful to check with a query on the air, using QRL?. A good basic rule is to keep your inquiry as short as possible to minimize disruption to an existing QSO.

Example 1: **QRL?**

Example 2: **QRL? DE W3ABC K**

Please note: If the frequency is busy, you may hear a C (correct), R or QRL in response. Do not respond. Simply move on and select another frequency.

Calling CQ:

If there is no response to your QRL? you may proceed to calling CQ.

CQ CQ CQ DE W3ABC W3ABC W3ABC K

Please note: A 3x3 format is recommended. In other words, send CQ three times, followed by the DE (from/this is), followed by your call sign three times. That's enough -- take a break and see if anyone hears you and wants to call you. The K at the end means that you are done transmitting and invites anyone to respond.

Receiving the Response:

In this example, W2XYZ will respond to your CQ.

W3ABC DE W2XYZ W2XYZ AR

Please Note: Although the use of AR at the end of the call is strictly correct procedure, many operators will end the call with a simple K. The argument for the use of AR is twofold:

-- K should be used only after communication has been established and that, at this point in a QSO, full two-way communications has not yet been established.

-- Many calls end with a K and depending on conditions it can be unclear if the sender has finished. AR removes any ambiguity. In actual practice, be prepared for either K or AR.

The QSO is now in progress:

W3ABC begins the QSO by responding as follows:

W2XYZ DE W3ABC TNX FER CALL BT UR RST 599 599 HR QTH READING PA READING PA BT NAME DAVE DAVE ES SKCC 1234 1234 SO HW CPY? W2XYZ DE W3ABC KN

Some notes:

-- Note the use of the BT prosign to serve as a break between sections or sentences of the QSO. CW operators seldom use a period in their QSOs.

-- Many operators will use longer pauses between thoughts and seldom use the BT. Some operators will use more BT's. Each operator will have a different style.

-- The prosign KN denotes that only W2XYZ should answer. This is an alternate procedure, so a simple K here can also suffice.

-- The prosign AR can also be included after the message content but before the call signs based on suggested ARRL procedure. However, the use of AR is optional and not necessary in day to day communications.

Continuing the QSO:

W2XYZ now transmits and returns the basic information to W3ABC:

W3ABC DE W2XYZ TNX FER RPT BT SLD CPY UR RST 589 589 BT NAME BOB BOB BT QTH POLASKI NY POLASKI NY BT SKCC 2345 2345 BT HW CPY? W3ABC DE W2XYZ KN

Additional Information:

Both stations may continue to play catch by conversing back and forth as long as desired. For example, here is an additional exchange containing yet more typical information:

W2XYZ DE W3ABC FB BOB BT WX HR WARM ES DRY TEMP 75F BT RIG KNWD TS520S ES ANT DIPOLE UP 50 FT BT HW CPI? W2XYZ DE W3ABC KN

W2XYZ can now send the same type of info. This is the point that the QSO becomes fairly free form with suggested topics such as age, other hobbies, discussion of further topics in ham radio etc.

If you want to engage in a longer QSO, often called a Rag Chew, to get to know the operator on the other key, we have provided some tips for engaging in a conversational QSO. You can download a PDF of these hints here: _Hints for Rag Chew QSOs_

Please note: For US operators, the FCC requires that you send your call at the end of a QSO and once every 10 minutes durng a QSO. It is not necessary to exchange call signs every time you hand the QSO over to the other station or as you pick up the other station's hand-off. When you take advantage of the 10-minute rule, your conversations can flow more smoothly.

Completing the QSO:

And soon it is time to sign off.

W2XYZ DE W3ABC TNX FER FB QSO BOB BT HP CU AGN BT VY 73 TO U ES URS SK W2XYZ DE W3ABC

W2XYZ would now also sign. Goodbyes are best done quickly. Like everything else in Morse operation, brevity is best. As your experience grows you will find what works best for you. Keep in mind that the prosigns and abbreviations are designed to help the conversation move along smoothly as well as help others who might be listening to understand what is happening on the frequency. Using proper procedure will make you sound like a seasoned pro to those who listen in.

Over time, it has become somewhat traditional for one station to send shave-and-a-hair-cut (dit di-di-dit dit) to which the other station can respond with two bits (dit dit). Often, both stations will simply send a dit dit as a final Goodbye.

Please note: Strictly speaking, this exchange could be considered as an illegal unidentified transmission since it comes AFTER the final transmission of your call sign. It is not presented here as a best practice, but rather as information to let you know what to expect.

Additional suggestions for those first low-stress QSOs:

-- As mentioned above, prepare a script containing the basic information you might transmit for each exchange. This allows the beginner to concentrate completely on clean and steady keying without worrying about composing the message on the fly.

-- Call CQ and transmit your initial information at the same speed you can comfortably copy. If you transmit faster than you can copy, the other station may assume you are comfortable receiving at that same speed.

-- It is often helpful to listen carefully for traffic on frequency for a minute or two before asking if the frequency is in use.

-- Don't be afraid to say QRS if you are having difficulty copying the other station. A good, courteous operator will slow down for you.

-- Feel free to tape record your QSOs so you can review missed information. This can be helpful for the beginner who wishes to confirm the content if curious or if he wants to be sure he has the information right before sending a QSL card.

-- If the other operator transmits 599 or states that he is receiving you with solid copy it is unnecessary to repeat message content.

-- If you have a mentor (Elmer) who is a CW operator, invite him/her to join you for your first QSO. An Elmer can copy along and assist you in case you get nervous.

-- Don't worry about making mistakes. Remember! This is Amateur Radio, not Professional Radio. While everyone's goal should be to improve and eventually become a first-class operator, mistakes are part of the learning process. Enjoy yourself, don't worry about errors and have fun.