

# War Communication during WWI

From the very beginnings of military warfare communication often holds the keys to victory. Communicating with your allies while knowing where your enemies are is one of the most crucial parts in war. After all, in military ranks the common saying is that, "knowing is half the battle." Military communication has evolved throughout the ages from flaming arrows, drum beats, smoke signals, messenger pigeons, to modern satellite enabled communication devices.



During the First World War, (WWI) communication technology was changing very quickly. For the first time, much of the world was using electricity, and this new source of power was utilized for communication in the form of telegraphs, telephones, signal lamps, and radio. However, this new technology was not always the best way to communicate with the Marines on the front lines. Weather, terrain, and

the enemy could break the electric lines that connected the Marines to their commanders. While instant communication was preferred, Marines often had to use proven methods of communication, many that were invented well before the Revolutionary War. Here we will explore the different types of communication used by the Marines, the United States military, and their allies throughout the WWI.

## Signal Flags

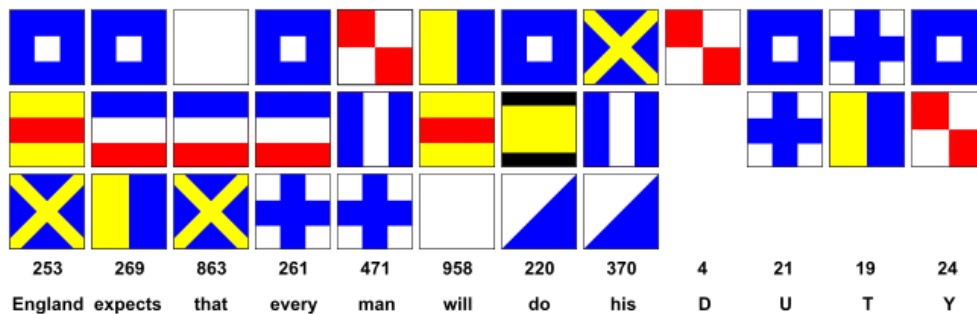
Before the inventions of the telegraph, telephone and two-way radio, ships would communicate with a series of signal flags.

Signal flags are a uniform set of easily identifiable nautical codes used to convey visual messages and signals between two ships or from ship to shore. They are based on an internationally recognized set of codes referred to as the International Code of Signals published in nine different languages; English, French, Italian, German, Japanese,



Spanish, Norwegian, Russian and Greek.

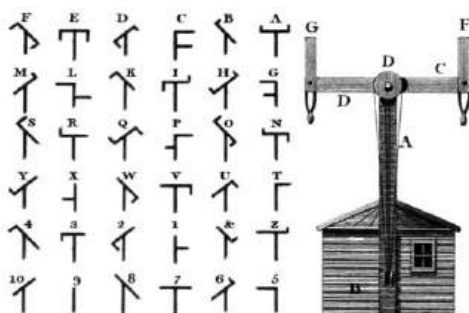
Naval flag signaling can be traced back to medieval times but the first well documented case of communication by signal flags was that of the British fleet during the Napoleonic Wars. Signal flags have been used for both communicating between different ships at sea as well as between ships and shore. Whenever forming and preparing to use naval tactics, it is imperative that different ships be able to communicate with one another in order to complete complicated maneuvers. For example, during the Battle of Trafalgar in 1805, British naval forces under the command of Admiral Lord Nelson effectively used flag signals to form 27 British ships under his command into complex battle formations before meeting a superior force of 33 French and Spanish ships. Upon meeting enemy forces, Admiral Nelson had a flag signal raised that read “England expects that every man will do his duty”, providing the patriotic encouragement needed to win the battle.



Flag signals may also be used to communicate messages between different ships that are close to one another. Often this occurs because they are performing dangerous operations, such as when refueling at sea (and thus a sitting target). While it may be possible nowadays to make a radio message that a ship is refueling, it is incomplete if it does not provide information as to where that specific ship is located in order for it to be avoided.

## Semaphore

During the French Revolution in 1792, Claude Chappe invented the semaphore line system. This was a method of communication using a series of visual signals and rotating paddles. The message was encoded by the position of the paddles. The message can then be read when the paddles are in a fixed position. This



system proved to be much faster than a horse and rider, and once constructed proved to be a much more cost efficient way of sending messages. In 1792 Chappe constructed 556 semaphore towers throughout France, spanning 3,000 miles. This method of communication would be used by the French military until the 1850s.

## Wig Wag

Wig wag was developed by U.S. Army Major Albert Myer during the American Civil War. Based upon the idea of Morse code (each letter being represented by a series of dots and dashes), this method uses one flag that is waved back and forth in a series of



“wags” to represent each letter of the message. There are two basic wig wag flags, one white with a red center and one red with a white center. The white flag was used at dusk or dawn (times of day with low light or low visibility) and the red was used during days with bright sunshine. Each letter has three basic movements: down to the left, down to the right, or down in front of the signalman. Since this code was based upon Morse Code, it could take up to five waves of the flag for a single letter. To the untrained eye, it looked as though the signalman was just “wagging” the flag around in no particular order, giving it the name “wig wag.” Marines would utilize wig wag through the end of WWI, and would change to the more widely used system of

semaphore during WWII.

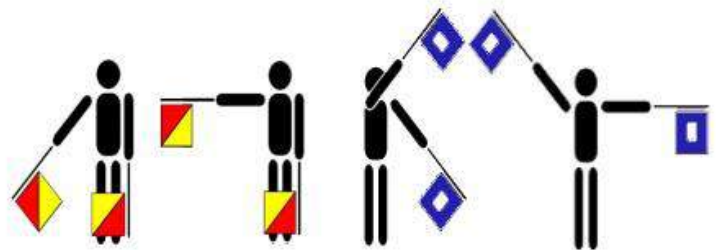
## Semaphore with flags

Similar to Chappe’s semaphore system, semaphore is a form of signaling used by the U.S. Navy, but instead of using signal flags that are hoisted far overhead, visual signals are conveyed with hand-held flags or colored paddles.

Usually used for unofficial

communication, semaphore may be

used between ships at sea that are trading goods with one another. Semaphore flags are usually square shaped and for ship to ship communication, Sailors use the “Oscar” red and yellow flag, and for land based communication use the “Papa” blue and white flag. The signalman uses



of letters to another by extending his arms in various positions; the signal pattern resembles a clock face divided into 8 positions: up, down, out, high, low, for each of the left and right hands. Using the standard 26 letter alphabet, the sender spells out each word of the message or sends code letter groups. Semaphore messaging is also easier to send and receive, a practiced operator may send 12 to 15 words or code groups per minute using this method.

There are some problems with using flags like wig wag and semaphore. There is a limit to the distance of communication, and only one mile for the naked eye (further with binoculars). The sending of a semaphore message is dependent upon light and weather conditions as well as background terrain. Also, semaphore isn't always confidential, anyone who can read semaphore can read your message.

### **Electricity and war communications during World War I**

At the turn of the 20th century, the world was being introduced to an array of new technology utilizing electricity. Scientists had been researching electricity and ways to harness it well before the 1800's, but it was scientists like Samuel Morse, Alexander Graham Bell, Thomas Edison, Nikola Tesla, George Westinghouse, and many others who turned the mystery of electricity into a useable form. By the time WWI began, electricity was in use in major cities worldwide. The electric telegraph, the telephone, wireless radio, and the lightbulb would completely change how the world would conduct warfare.

At the outbreak of WWI, each side had many different communication options. Non-electrical systems of communication such as carrier pigeons and dispatch riders were used alongside and sometime interchangeably with modern communication systems such as the telephone and wireless telegraphy.



## Telegraph and Morse code

The electric telegraph sends an electric current to a receiving station. When the sender presses on the telegraph key he interrupts the current creating an audible pulse that is heard at the receiving station. It cannot carry voice or other data, and relies only on pulses to communicate. The receiver on the other end decodes the pulses to decode the message. Several electric telegraphs were being developed in Europe, and in 1836 Samuel Morse and Alfred Vail developed their own prototype.

Morse code is a system of sending messages by a series of on-off tones, lights or clicks. Each letter is represented by a unique series of short dots (dits) and longer dashes (dahs). The duration of a dash is three times the length of a dot. Each word is separated by silence in the equivalent of one dash. It is very important that the transmitter be consistent, or the message might be misread completely! Morse developed his code after seeing the optical, or semaphore telegraph, in Europe.

The widespread use of telegraph was quickly accepted, as it allowed information to be transmitted between telegraph stations almost instantly, rather than the weeks it took for a horse and rider. The technology was also accepted world-wide, with extensive systems appearing across Europe. By 1866 the first permanent telegraph cable was laid across the Atlantic Ocean.

During WWI, electric telegraphs were used throughout the war, on both sides. They were used to communicate from the front line trenches to the officers, and from nation to nation via telegraph lines throughout Europe and across the Atlantic, telegraph machines allowed governments and their leaders to instantly receive information on troop movements, battle outcomes, and other crucial information.

### **SOS: The internationally accepted distress signal**      ... - - - ...

First adopted in Germany in 1905, the 'SOS' three letter message quickly became the internationally recognized message for distress. While it is often thought it means "save our ship", it actually does not stand for anything. The three letter message is easy to remember, which is crucial during emergencies. SOS remained the official maritime distress signal until 1999 when the Global Maritime Distress Safety System was created. SOS is still recognized as a visual signal of distress.

## Signal lamps

Another form of communication in use by the U.S. military was the electric signal lamp. Communication by signal lamps are similar to flag signals in that it is a visual signal and is often times restricted by one's line of sight. Signal lamps are a focused lamp which can



produce a pulse of light to send a message to another. In large versions this pulse is achieved by opening and closing shutters that are mounted in front of the lamp via a manually operated pressure switch. With smaller hand held lamps a mirror is tilted by a trigger to focus the light into pulses. The light pulses transmitted by the signal lamp were most often sent in the form of Morse code. Initially pioneered by the British Royal Navy in the late 19th century, signal lamps offer a means of secure communication during periods of radio silence where stealth is of vital importance. Communicating by signal lamp was particularly useful during the Battle of the Atlantic and the initial years of the Second World War where allied ship convoys needed a covert means to communicate with one another amidst the threat of German submarine attack.

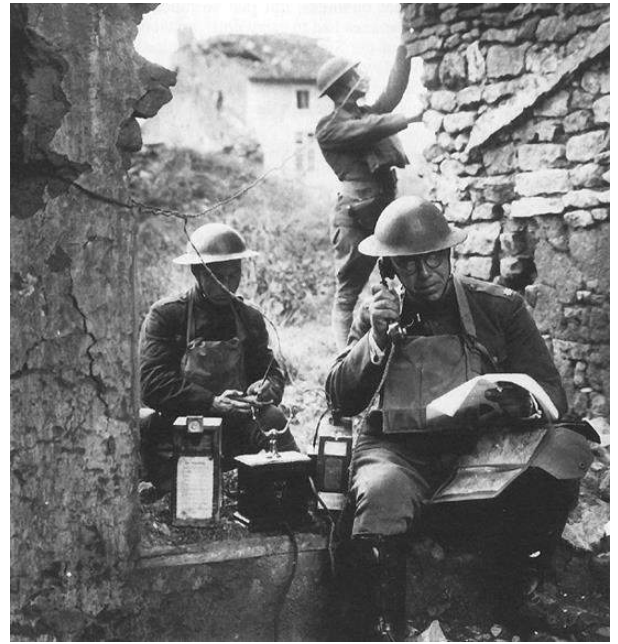


Heliograph communication is like signal lamps in that it relays a message using flashing dots and dashes. Unlike an electrically powered signal lamp a heliograph transmits flashes of reflected sunlight. The heliograph is a simple but effective instrument for instantaneous optical communication over long distances and was mainly used to send messages for the Army in overland campaigns, such as during America's Indian Wars. Heliograph was used for long distance communication without a fixed infrastructure during the Geronimo campaign which US Army forts all across the country. Heliograph equipment was also

very portable and required no restrictive power source, making it an ideal means of military communication. Despite the many benefits of heliograph communications, it is very limited by the terrain and weather in which it operates.

## Telephone

The telephone was developed by improving the electric telegraph. A telephone converts sound (from our voice) into electronic signals suitable for transmission via cables or other transmission media over long distances, and replays those signals simultaneously so we can hear them. The first patent for the telephone was given to Alexander Graham Bell in 1876. During WWI, on the Western Front, telephones were used to communicate between the front line Marines and Soldiers and their commanders. The U.S. Army Signal Corps constructed 2,000 miles of



telegraph and telephone pole lines using 28,000 miles of wire, and 32,000 miles of French communication poles. They also installed 40,000 miles of combat lines, and established 134 permanent telegraph offices and 273 telephone exchanges. But heavy artillery bombardment meant these lines of communications were easily broken. They were also easily intercepted by the German Army, as were the very basic wireless telegraph sets. However, despite the risk of interception the speed of telephone and telegraph communication meant they were the most commonly used telecommunications systems.

Away from the trenches, navies faced similar problems of reliable communication and interception of their signals. For short-distance communications, the navy relied on semaphore flags, while using more modern but also more easily intercepted wireless telegraphy sets for long-distance communication.

## Wireless Telegraph (Radio)

Radio made its debut years before World War I — it was often used by ships transmitting messages via Morse code, and in 1912, operators on the Titanic depended on radio to communicate with other ships, and with onshore radio stations.

The biggest improvements radio offered over message systems like Morse code were the speed and accuracy afforded by the use of voice communication. Advances in radio technology such as oscillators, amplifiers and the electron tube made reliable voice communication possible.

The "wireless" (as early radio was

sometimes called) quickly proved invaluable to wartime efforts: Radio operators with portable transmitters were able to warn soldiers of an attack of poisonous gas, giving them time to put on their gas masks.



























## Phonetic Alphabet

With the increasing use of radio and telephone communication, a new way of conveying important information was needed to ensure the listener received the correct message. This led to the development of the phonetic alphabet. A phonetic alphabet is a list of words used to identify letters in a message transmitted by radio or telephone. Spoken words from an approved list are substituted for letters. For example the word “Marine” would be “Mike Alfa Romeo India November Echo when spelled out in the current phonetic alphabet. Using this method helps to prevent any confusion between similar sounding letters or if there is a poor connection during transmission.

The phonetic alphabet in WWI is different than today’s because each country and individual military branches created their own alphabet. However, in 1957 a standardized, international phonetic alphabet was created.

## Animal Messengers

During WWI, the U.S Army Signal Corps also utilized homing pigeons to maintain frontline communications. A field commander would have one or two pigeons with him, and if other lines of communication were not available, he could write a message on a small piece of paper, secured by a small canister attached on the bird’s leg. The bird would then fly back to its home, behind the lines, and deliver the message. By 1917 there were two detachments of U.S. Army “pioneers” in France, and the birds were used in several battles including the St. Mihiel and Meuse-Argonne offensive. Pigeons successfully delivered ninety-five percent of the messages delivered to them.

Letter	1913	1927	1938	World War II	1957–present	Signal Flag
A	Able	Affirmative	Afirm	Afirm (Able)	Alpha	
B	Boy	Baker	Baker	Baker	Bravo	
C	Cast	Cast	Cast	Charlie	Charlie	
D	Dog	Dog	Dog	Dog	Delta	
E	Easy	Easy	Easy	Easy	Echo	
F	Fox	Fox	Fox	Fox	Foxtrot	
G	George	George	George	George	Golf	
H	Have	Hypo	Hypo	How	Hotel	
I	Item	Interrogatory	Int	Int (Item)	India	
J	Jig	Jig	Jig	Jig	Juliet	
K	King	King	King	King	Kilo	
L	Love	Love	Love	Love	Lima	
M	Mike	Mike	Mike	Mike	Mike	
N	Nan	Negative	Negat	Negat (Nan)	November	
O	Oboe	Option	Option	Option (Oboe)	Oscar	
P	Pup	Preparatory	Prep	Prep (Peter)	Papa	
Q	Quack	Quack	Queen	Queen	Quebec	
R	Rush	Roger	Roger	Roger	Romeo	
S	Sail	Sail	Sail	Sugar	Sierra	
T	Tare	Tare	Tare	Tare	Tango	
U	Unit	Unit	Unit	Uncle	Uniform	
V	Vice	Vice	Victor	Victor	Victor	
W	Watch	William	William	William	Whiskey	
X	X-ray	X-ray	X-ray	X-ray	X-ray	
Y	Yoke	Yoke	Yoke	Yoke	Yankee	
Z	Zed	Zed	Zed	Zebra	Zulu	

## Cher Ami- the pigeon who saved the lost battalion





In October 1918, approximately 500 men of the U.S. Army 77<sup>th</sup> Infantry Division were trapped behind enemy lines after an attack on German forces in the Argonne Forest.



They became surrounded by German forces and were receiving friendly fire from Allies unaware of their position. Communication was difficult, as the messenger dispatchers became lost or ran into German patrols. Carrier pigeons became the only method of communicating with their headquarters. After two pigeons were shot down, Major Charles Whittlesey sent his last bird, Cher Ami, with the message: WE ARE ALONG THE ROAD PARALLEL 276.4. OUR ARTILLERY IS DROPPING A BARRAGE DIRECTLY ON US. FOR HEAVENS SAKE STOP IT. Despite being wounded, Cher Ami flew the 25 miles back to headquarters

in 25 minutes, saving the lives of the 194 survivors. He was awarded the Distinguished Service Cross for his actions, and he is currently on display at the Smithsonian American History Museum in Washington, D.C.

## Messenger Dogs

While pigeons could fly out messages to headquarters, dogs were also extensively used as messengers during WWI. Their speed, size, and senses allowed dogs to navigate the trenches and battlefields much easier than human messengers. In addition to sending messages dogs were used to find wounded soldiers, warn of incoming shells, act as guard dogs and as a source of comfort and companionship.

## Sergeant Stubby



Stubby was a Staffordshire terrier who became the mascot of the 102<sup>nd</sup> Infantry, 26<sup>th</sup> Yankee Division. He originally went to France just to be the division's mascot, but when he arrived he showed that he had great talent for much more. His heightened sense of smell allowed him to warn the men of impending poison gas attacks, and he could locate wounded soldiers. Sergeant Stubby would either lead them to safety or bark to alert the medics. Once, he even

caught a German spy attempting to copy a map of the Allies position. Stubby held on to the seat of the spy's pants until American soldiers arrived. He was given the rank of Sergeant for his actions against the German spy. He was wounded at the battle of Seicheprey in April 1918, and was sent to a Red Cross hospital for recovery. During his hospital stay, Stubby boosted morale by visiting the wounded soldiers. After the war he became a national celebrity, leading parades, meeting three presidents, and making many public appearances. He would continue to boost public morale until his death in 1926. Like Cher Ami, Sergeant Stubby is on display at the Smithsonian American History Museum in Washington, D.C.