

# A Brief History of Signal Flags

by Robert Etheredge and Russell Bourne

You have possibly seen them flying from some Navy ship's mast, or perhaps decorating a sailboat, or even on someone's belt at a party. But they are far more than just colorful decorations. They are used by navies and ships around the world to communicate messages. They are important and useful signaling devices whose history goes back hundreds of years.

## Communicating at a Distance

Ancient military and navy forces used simple flag signals, drums, trumpets, fires, smoke, cannon fire, and banners to communicate among themselves. At sea, many of these messages would then be passed along from ship to ship, as long as they were within visual or hearing range.

The Greeks defeated the Persian fleet in 480 B.C. with the Athenian leader, Themistocles, using a speaking trumpet to control his ships. Other sea battles had outcomes affected by either the use of voice commands or by denying the enemy the use of their voice commands by separating their ships.

## Greek hydraulic telegraph

An ingenious method invented by the Greek Aeneas Tacticus allowed messages to be sent at great distance on land. It was essentially an early code book. Both sender and receiver had to possess identical devices that consisted of a large vessel with a spigot, and a vertical stack of floating, equally-spaced messages that floated high in the water. The text of each message indicated a different military message, such as: "Large enemy force approaches", or "Enemy is retreating by sea". The participants could be miles apart but needed to be in line of sight. The sender would raise their torch to initiate contact, and then lower the torch and at the same time open the spigot to start draining the bucket. The receiver would see the torch being lowered and would instantly open their spigot. As the bucket drained, the stack of messages would sink lower and the message displayed by the lip of the bucket would change. When the correct message had lowered to the bucket lip, the sender would raise the torch again and close the spigot. The receiver would see the torch raised and close their spigot, reading the correct message at the lip of their bucket.

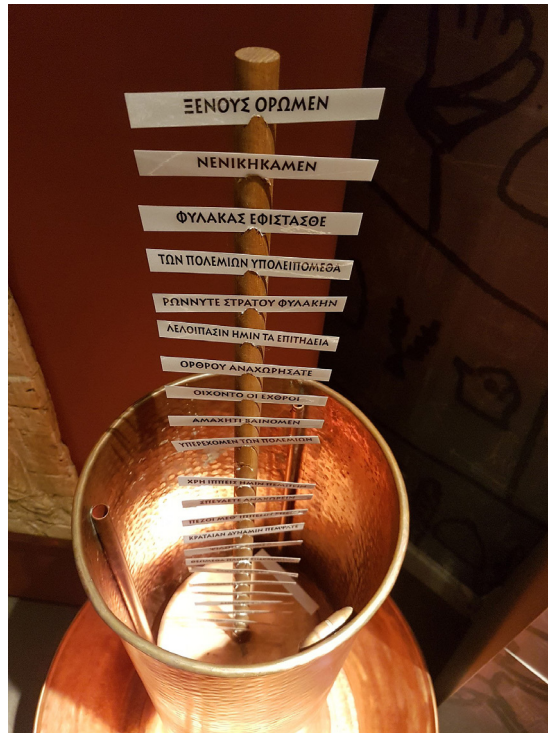


FIGURE 1: GREEK TELEGRAPH (SOURCE: WIKIPEDIA GTS-TG)

## Smoke Signals

Smoke signals have been used for thousands of years. Though not well suited for sending long messages, their use can often influence battles. They were used in ancient China by soldiers on the Great Wall who sent warning messages from tower to tower, covering thousands of miles. Native American tribes each had their own set of signals to communicate over long distances. Standard signals included one puff of smoke to mean ‘Attention’, while three puffs of smoke indicated danger or the need of help.



FIGURE 2: THE SMOKE SIGNAL, BY FREDERIC REMINGTON

## Semaphore

Semaphore systems rely on the sender using flags, lights or similar pointers to indicate letters. A semaphore telegraph system, designed in France in 1792, used pivoting indicator arms for the message. During the American Civil War, a different kind of semaphore messaging was used by both sides in the conflict. Called the 'wigwag' system, it used only a single flag that was waved around. This motion represented the letters of the message. A larger flag allowed the message to be sent at greater distances. Today, semaphore is still used by the Navy and Boy Scouts to send messages.

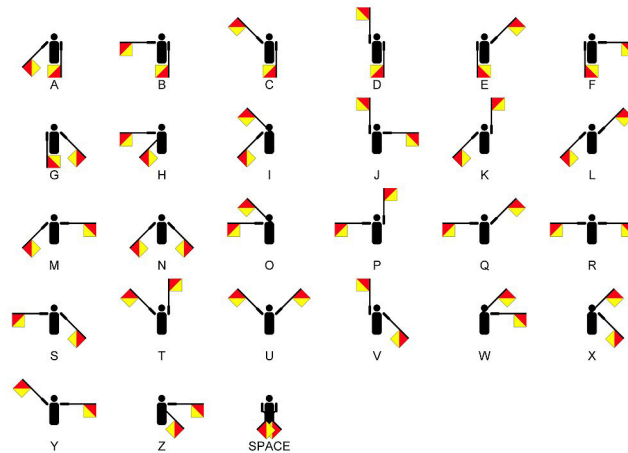


FIGURE 3: SEMAPHORE SIGNALS (SOURCE: WIKIPEDIA DENELSON83)

## Signal Flags

As the Age of Sail dawned in the 16th century, it became apparent that a better method was needed to quickly and accurately send messages at sea. As early as 1653, the British Navy was using flags to send messages to other ships by raising flags in different locations on the ship. Other signaling methods were used over the next century. The signal flags that were used were usually whatever flags were on board, including the flags of different countries.

The Frenchman Sebastian Francisco de Bigot published a system for sending messages using signal flags in 1763. The system was able to send over 300 possible signals using a list of messages.

### Popham System (1799)

Richard Howe, Lord of the British Admiralty, revised the French system and his changes eventually led to the 1799 Signal Book used in subsequent battles. This code book was published by Captain Popham and used numbers to reference lists of words and sentences. A substitute flag was added that repeated earlier flags in each hoist.

Flags combinations representing 1-25 referred to letters of the alphabet (e.g. Number 4 meant 4th letter of alphabet or 'D', hoisting 2 and 4 meant the letter Y.) The letter J was omitted and V came before U. Numbers higher than 25 represented code messages from the code book. And the number 8 flag is just a white flag.

0	1	2	3
4	5	6	7
8	9	Preparatory	Finishing
Substitute	Affirmative	Numerical	Answering

FIGURE 4; POPHAM'S SIGNAL FLAGS

This was the code system used by Admiral Nelson at the Battle of Trafalgar in 1805. Before the battle, Nelson wanted to send the fleet the message “England confides that every man will do his duty” but his Signal Officer suggested substituting the word ‘expects’ for ‘confides’ since ‘expects’ was a word in the code book and would not require sending 8 separate letters for the word ‘confides’ which was not in the book.

Sending this message required 12 different hoists of flags taking around four minutes. The first eight flag hoists were numbers greater than 25 that referenced words in the code book while the last 4 hoists were numbers less than 26 which resulted in the word ‘DUTY’ since it wasn’t a word in the code book.

253	269	863	261	471	958	220	370	4	21	19	24
England	expects	that	every	man	will	do	his	D	U	T	Y

FIGURE 5; NELSON'S FLAG MESSAGE

So this was the message that was displayed, and reads “England expects that every man will do his duty.” The signal is still hoisted every year on the *HMS Victory* in drydock in Portsmouth. All flags are shown at once rather than being hoisted in order.

Admiral Nelson is also involved in another incident regarding signal flags. Nelson had been blinded in one eye early in his career. During the Battle of Copenhagen in 1801, the fleet commander sent a flag message to Nelson’s ship ordering them to break off action. Nelson had no intention of stopping, so he lifted his telescope to his blind eye and said he did not see the signal and continued his attack (the British ended up winning the battle.) This event led to the phrase ‘turning a blind eye’ to describe ignoring unfavorable information.

## Marryat System (1817)

Captain Marryat published a more comprehensive system for signaling at sea in 1817 using a different set of flags. It was used to identify merchant ships and home or destination ports. The numeric flags referenced lists in the book *A Code of Signal for the Merchant Service*.













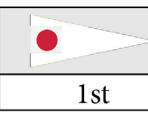
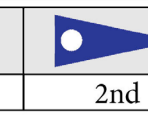
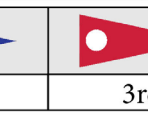
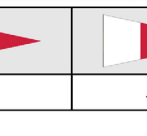
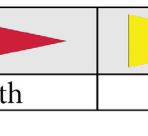
					
0	1	2	3	4	5
					
6	7	8	9	TE	RE
					
1st	2nd	3rd	4th	Num	

FIGURE 6: MARRYAT'S FLAGS

## International Code of Signals (1857)

The *Commercial Code* (later the *International Code of Signals*) was published by Britain in 1857. It used 18 flags to represent thousands of signals and messages and was used for the rest of the century. It included letter flags but left out little-used consonants and all vowels to avoid forming objectionable words. (Lk wht?)


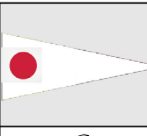
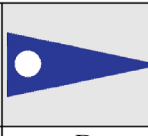
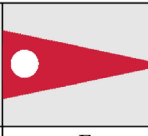
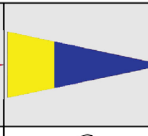

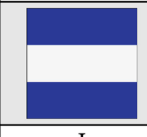
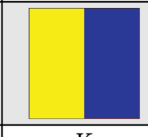
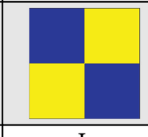

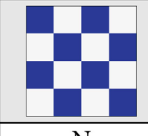
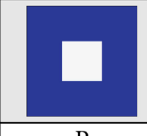
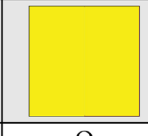
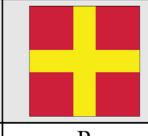
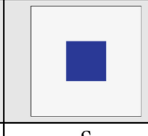
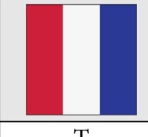
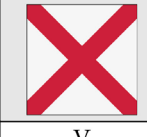
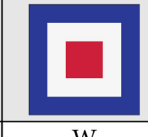
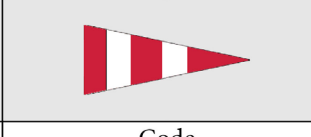
				
B	C	D	F	G
				
H	J	K	L	M
				
N	P	Q	R	S
				
T	V	W	Code	

FIGURE 7: COMMERCIAL CODE FLAGS



## New International Code of Signals (1901)

Trying to fix deficiencies in the existing signal flag system, a new code system was published in 1901. Flags for the missing consonants and all the vowels were added as well as a code pennant flag. However, not all flags matched their current design, particularly C-G which were still pennant designs. During World War I, this system was found to be inefficient and created many errors sending messages word by word.

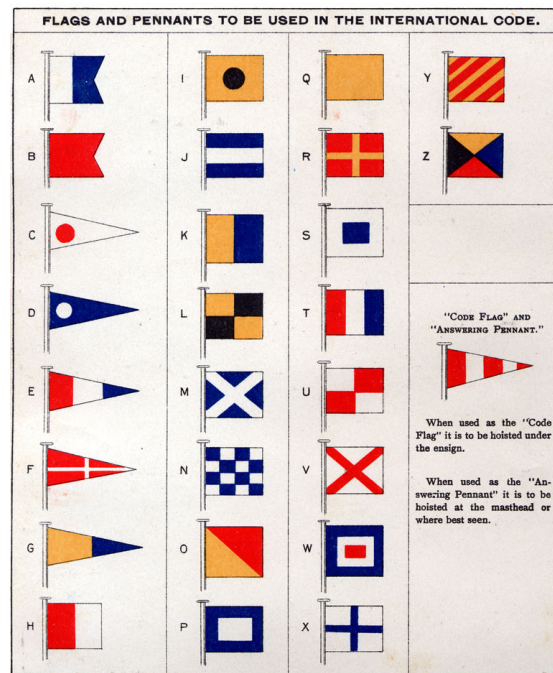


FIGURE 8: FLAGS IN USE DURING WORLD WAR I  
(SOURCE: STATE LIBRARY OF SOUTH AUSTRALIA, [PRG 280/1/12/392])

## Major Revisions (1934)

Proposals were made to change the code book and create a standard phonetic alphabet. Major revisions were then made to the system and formally released in 1934. New flags were introduced, pennants were replaced by square flags and moved to become numbers. Substitute flags were added so letters could be repeated in the message. Five new flags were added for 6,7,8,9 and 0. Code references were added for aviation and medical help. The flags now represented what is in use today but the phonetic spelling alphabet was still to change. The meaning and assigned letter of many flags had evolved over time (like Q for quarantine) but many were explicitly selected and assigned.

The actual design and color of the flags had to be selected to avoid confusion at sea under conditions of great distance and poor visibility so using only colors would not be reliable. All flags are square with geometric patterns and use the same palette of colors: yellow, white, blue, red, and black. Most flags and pennants are of two colors, but they range from containing 1 color to 4 colors.

## Publication 102 (1969)

The Inter-Governmental Maritime Consultative Organization (IMCO) assumed control of the *International Code of Signals*. They began work on a revision to the Code in 1964 which led

to the 1969 version of the code, called *Publication 102*. This covered all forms of communication: radio, flags, light, etc. It was revised in 2020.

This publication lists more than 1,000 signal flag code combinations for every type of message imaginable. There is a meaning for all single flag messages (except R) and hundreds more for 2 or more flag messages. Why waste gallons of water to send Greek messages, or hours trying to send a complicated message with smoke signals when you can just hoist flags ED1 to send the message “Your distress signals are understood; the nearest life-saving station is being informed.” There is even a section on codes for icebreakers, as well as for signals between Russian and American vessels.

The release of this publication was very notable in its completeness, but also because it was published in nine languages. This allowed ships of different nationalities to communicate since the messages were the same for each flag combination. And it standardized the phonetic alphabet word associated with each letter so mariners speaking different languages could still determine the correct letter. The following is the current system of International Signal Flags with current phonetic alphabet words.

INTERNATIONAL FLAGS AND PENNANTS									
ALPHABET FLAGS					NUMERAL PENNANTS				
Alfa		Kilo		Uniform		1			
Bravo		Lima		Victor		2			
Charlie		Mike		Whiskey		3			
Delta		November		X-ray		4			
Echo		Oscar		Yankee		5			
Foxtrot		Papa		Zulu		6			
Golf		Quebec		SUBSTITUTES		7			
Hotel		Romeo		1st Substitute		8			
India		Sierra		2nd Substitute		9			
Juliett		Tango		3rd Substitute		0			
					CODE (Answering Pennant or Decimal Point)				

FIGURE 9: CURRENT SIGNAL FLAGS

The final design of all of these flags was not done using some system that would make them easy to remember, nor did they use some repeatable sequence similar to that used in semaphore. Many were pre-existing flag designs that may have had a specific meaning, like ‘About to Sail’ which only later was assigned to a specific letter. Or they were simply made up to fill holes in the alphabet.

Mastering this communication system, remembering the numerous flags, letters and meanings is a daunting task and not easily accomplished with sheer will and repeated efforts at memoriza-

tion. Fortunately, if you really want to learn the language of the International Signal Flags and the NATO Phonetic Alphabet, there is help available. The unique smart phone app *mvSigFlags* (Apple and Android versions) utilizes an effective and easily understandable mnemonic system to facilitate your learning and track your progress. It also contains all 1,000 codes from Publication 102, and even lets you compose and send personalized Signal Flag messages to others

Note: There are additional flags designed to be used by NATO forces, including separate number flags, and specific flags for military terms like ‘flotilla’, ‘squadron’ or ‘corpen’.

## Evolution of the Phonetic Alphabet

Along with signal flag standardization, the words used to describe each letter needed to be standardized as well to prevent confusion (have you ever had to spell your name to someone on the phone and had trouble with letters like C, T, P, Z, B or M, N). And now add to that the problem of communication between individuals speaking different languages with different accents. The process of standardizing these words was a long process.

A telegraph operator in the U. S. Navy in 1901 came up with the idea of using words to represent each letter. A 1913 edition of “The Bluejackets’ Manual” contained a version of a phonetic alphabet. During World War I, both the American and British forces had their own phonetic alphabet, ones that are quite different from that used today.

### ITU Version (1927)

The International Telecommunication Union produced a phonetic alphabet in the 1920’s that used the names of world cities for each letter. You can see how cumbersome this was, both in the length of the words and the complexity of pronouncing and understanding them. Imagine trying to pronounce Xanthippe, much less understand it over the radio.

*Amsterdam, Baltimore, Casablanca, Denmark, Edison, Florida, Gallipoli, Havana, Italia, Jerusalem, Kilogramme, Liverpool, Madagascar, New York, Oslo, Paris, Quebec, Roma, Santiago, Tripoli, Uppsala, Valencia, Washington, Xanthippe, Yokohama, Zurich.*

### Able Baker Version (1941)

Further changes were made to the alphabet up until World War II when the U. S. and British military adopted the Able Baker alphabet. Words from this alphabet are often heard in World War II movies, like Able Company or Easy Company. The words were:

*Able, Baker, Charlie, Dog, Easy, Fox, George, How, Item, Jig, King, Love, Mike, Nan, Oboe, Peter, Queen, Roger, Sugar, Tare, Uncle, Victor, William, X-ray, Yoke, Zebra*

### IATA Version (1951)

But this alphabet still had troubles when used by forces in different countries. In 1951, the Air Transport Association (IATA) came up with another alphabet for civil aviation. Though similar to the final alphabet in use today, users still confused words like ‘nectar’ with ‘victor’, ‘echo’ with ‘extra’, and ‘extra’ did not start with an ‘X’.

*Alfa, Bravo, Coca, Delta, Echo, Foxtrot, Gold, Hotel, India, Juliett, Kilo, Lima, Metro, Nectar, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Union, Victor, Whiskey, eXtra, Yankee, Zulu*



## Current Version (1956)

After much debate, changes were made to a number of the letters and the final alphabet was approved in 1956 and is now known as the NATO Phonetic Alphabet. The words were selected to minimize any confusion between two words sounding similar. A small alteration changed the spelling of “Alpha” to “Alfa” as some languages may not treat the ‘ph’ combination as an ‘f’. The hyphen was removed from ‘X-ray’, and an extra ‘t’ was added to change ‘Juliet’ to ‘Juli~~et~~t’ since some languages would not pronounce the ‘t’ in ‘iet’. So the final NATO Phonetic Alphabet in use today is:

*Alfa, Bravo, Charlie, Delta, Echo, Foxtrot, Golf, Hotel, India, Juli~~et~~t, Kilo, Lima, Mike, November, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Uniform, Victor, Whiskey, Xray, Yankee, Zulu.*

Using a standardized NATO phonetic alphabet enables armed forces from many countries to communicate properly. Great care was taken to select words that could be understood by personnel of any language, or with bad radio connections. Considerations included:

- It was supposed to be a real word in English, French, and Spanish and spelled similarly.
- The first letter of the word must be the letter it identifies.
- It could be spoken and understood by personnel using any language.
- It should be recognizable in radio transmissions.
- It could not have any negative connotation.

Phonetic spelling today is important particularly with phone support being handled by people from many different countries, as well as navies operating with navies of other countries. Besides the military, it is also used in industry, stock markets, medicine, and aviation—all to avoid mistakes. The NATO Phonetic Alphabet words should be recognizable everywhere and the *mvSigFlags* app is the smart way to learn these words so you’ll never be misunderstood again. But you may still have to explain the spelling, such as: “B as in Bravo, O as in Oscar, etc.”

*Next: Part 2: Use of Signal Flags Today*