

VISUAL SIGNALLING

HISTORY

From at least the time of the Athenians, admirals have hoisted various flags as signals to other ships of the fleet to take various actions. For most of that time until the mid 1700's, however, the number of possible signals were few and inflexible. Originally, the flags were intended to convey a single meaning to all this of the fleet, often were calling Captains for a council of war conference, where the admiral could convey more detailed tactical direction. The anglo-dutch wars of the 1700's provided considerable impetus on both sides for more and more elaborate signals, culminating in the "Royal Navy's Permanent Fight Instructions". The edition issued in 1691, which remained basically intact for the next century, provided 45 fixed signals using a combination of 11 flags that could be displayed in 9 different positions on the flagship. For example, a red flag hoisted on backstay of the fore topmast directed the vice admiral of the red squadron to take and try to get to windward of the enemy. The same flag on the flagstaff a top the mizzen top mast directed the same manoeuvre to the rear admiral of the red squadron, but at the cap of the mizzen ordered the ships on the starboard quarter to come to the starboard tack, or at the mizzen peak, all the flagships of the fleet to come into the admirals wake. Although the "Fighting Instructions" did permit the admiral to issue commands to portions of his fleet, it was still a one way communication that only provided for a limited scope of manoeuvres. Moreover, as tactics came to required more complex signals, 3 added in 1740, this system was becoming increasingly unwieldy.

In 1738 a French officer Mahe de la Bourdonnais devised the first numerical flag code, the basis on which all later development of flaghoisting was based, Bourdonnais assigned a different flag to each number 0 to 9. With three sets of flags, a ship could make 1,000s of different combination 3 flag signals.

Adding a dictionary assigning a meaning to each combination, the Bourdonnais system would have permitted a marked advance in the sophistication of naval communications. Unfortunately, his idea was never adopted by the French Navy. However, it was a quarter of a century later by another Frenchman Captain Sebastien Francios de Bigot Vicomte de Morogues, founder of the French Marine Academy at Brest, who published his "Tactique Navale ou Traite des Evolutions et des Signaux" in 1763. While Bigot de Morogues code for the most part followed in the old tradition of assigning meanings to particular flags, he also included a provision in his code for ten numerical flags hoisted in 336 combinations of up to 3 flags each, and added a preparatory flag to signal that a coded message would be transmitted and requirement that the receiving ship acknowledge the signal.

Signals development in the Royal Navy fell behind the French going into the last quarter of the 1800's, something which a select group of Royal Navy officers were well aware of. One tactician Admiral Richard Kempenfelt who was one of the driving forces in having Bigot de Morogues system translated into English in 1767. Kempenfelt pressed hard for the adoption of numerical signalling and in 1781 received permission to experiment with such a system in his squadron operating in the North Sea. Tragically Kempenfelt died with the Channel Fleet in 1782 but one of his fellow innovators was able to carry on with this work. This was Richard Earl Howe who became the First Lord of the Admiralty in 1783 and introduced his own numerical signal system throughout the fleet in 1790. Howe's innovations included the use of substitute or repeater pennants, so that only one set of flags was necessary instead of three, and the introduction of additional control flags. Howe also introduced the concept of assigning a number to each ship so that signals could be addressed individually instead of collectively. Howe's system was revised and expanded over the last decade of the 1800's culminating in the Admiralty's 1799 "Signal Book for Ships of War", which promulgated the individual flag designs used by the Royal Navy throughout the Napoleonic

Wars and the War of 1812, although the number assigned to each flag changed periodically or whenever a signal book was compromised.

In 1800, Rear Admiral Sir Home Popham expanded on Howe's system with his "Telegraphic Signals or Marine Vocabulary". Working from 10 existing numerical flags from the Admiralty Signal Book, Popham developed the world's first alphabetical flag signal system. Flags 1 through 9 were assigned letters A through J (I and J counting as a single letter), two flag hoists accounted for the rest of the alphabet, Popham's code included a numbered dictionary of 3,000 predefined words and sentences, plus the capability to spell out words not included in the dictionary, such a word was "Duty", In Lord Nelson's immortal signal at Trafalgar in 1805. "England expects that every man will do his duty, the word duty need to be spelt out. The Admiralty adopted the Popham system to augment the 1799 Signal Book and by 1813 an expansion and revision of the Popham code contained some 6,000 phrases and 60,000 words.

In 1817, Captain Frederick Marryat of the Royal Navy published his "Code of Signals for the Merchant Service. Based on the 1799 Naval Code it was also a numerical system but with vocabulary oriented more toward commercial and less toward Naval needs. Marryat's codes was widely accepted and by 1854 was known as the "Universal Code of Signals" In 1855 the British Board of Trade had appointed a committee to develop an improved code, which was promulgated in 1857 as the "Commercial Code of Signals" The Board of Trade code had not only the previous numerical flags but flags specifically for letters as well although for only 18 of them. 18 letters and 10 numerical flags could be hoisted in over 20,000 combinations. Over the years, the commercial code was expanded, revised and updated. In 1870 it was renamed the "International Code of Signals and before the turn of the century all the major maritime powers were publishing their own editions of the code. In 1965 the management of the "International Code of Signals" was

taken over by the United Nations International Maritime Organisation. Each major seafaring nation still publishes the “International Code of Signals for the use of its mariners”.

The Navy’s of the western world use the “International Code of Signals” supplemented by – ANMI Allied Naval Manoeuvring Instructions, ANSB Allied Naval Signal Book and ACP Allied Communication Publications.

THE WAR YEARS

During World War I visual signalling proved invaluable. The Royal Navy had now attained a high degree of efficiency and speed in signalling and visual signalling had become the normal method used for tactical manoeuvring. It also proved a vital means of communicating with merchant ships using the “International Code of Signals”.

The Battle of Jutland provided many visual signalling lessons, poor visibility and battle damage impeded effective visual signalling during the action and ambiguity arose from instances of poor signal selection and ineffective enemy contact reporting. The Royal Navy was quick to review its visual signalling and manoeuvring procedures following the battle with a number of changes being swiftly implemented by September 2016. One of the most important changes came when Wireless Telegraphy ceased to be a byline of torpedomen and became instead the departmental and administrative property of the signals branch.

Technological advancements included the introduction of the hand held aldis lamp followed shortly after the war by the ubiquitous Admiralty Pattern 3860A 10 inch signalling projector used in all commonwealth navy’s until superseded in the mid 1980’s.

In the lead up to World War II visual signalling changed little. Notwithstanding this, visual signalling and fleetwork were used extensively through the war in all theatres and in just about every facet of naval warfare imaginable. The application of visual signalling and fleetwork ranged from major surface

actions to convoy operations, amphibious assaults (notably D Day), small boat work and clandestine operations, when the need for radio silence was paramount.

AFTER THE WARS

Following World War II the proliferation of signal traffic stemmed from the rapid development in technology introduced new challenges for naval warfare. The sheer volume of information being transferred today between allies and coalition partners via a myriad of hi-tech circuits is astounding. This is often compounded by the absence of brevity which underpinned all visual signalling and wireless telegraphy transmissions. As early as 1955 Captain Jack Broome RN wrote in his book "Make a Signal": Today information is poured, irrespective of distance, from brain to brain. The air is saturated with it. One day it will condense and paradoxically, form fog.

Visual signalling is still taught today in most allied navies for use in fleet operations albeit at a much reduced rate. In its heyday it was favoured for its brevity and security, those who used it became adept at "saying what they mean and meaning what they said". Irrespectively of the method used, the key to successful visual signalling has always been its brevity.

METHODS OF SIGNALLING

Flags

Semaphore

Flashing Light

NAVAL COLLISIONS

This section introduces references to naval collisions which appear or have been attributable to visual signal or tactical communications error or misinterpretations.

1895 – HMS Camperdown rammed HMS Victoria

“History of Naval Signalling” Captain Barrie Kent RN

1952 – USS Wasp collides with USS Hobson

“Naval Accidents since 1945” Malcolm McLean

1962 – HMS Ursa collides with HMS Battleaxe

1964 – HMAS Melbourne collides with HMAS Voyager

“Naval Accidents since 1945” Malcolm McLean

“Cruel Legacy” Tom Frame

“Where Fate Calls” Tom Frame

“Breaking Ranks” Peter Cabban

“One minute of time” Vice Admiral Harold Hickling

“Postscript to Voyager” Vice Admiral Harold Hickling

1969 – HMAS Melbourne collides with USS Frank E Evans

“In the Wake” Mrs Jo Stevenson

1975 – USS John F Kennedy collides with USS Belknap

“On Watch” Admiral Elmo Zumwalt CNO

1982 – SAS Tafelberg collides with SAS President Kruger