The Fleet Submarine

The Fleet submarine is the modern equivalent of the battleship. It is the main striking power of the Fleet and the single most effective anti-submarine weapon available to the maritime commander.

Its main role is to seek and destroy enemy submarines and surface ships in wartime. It is also capable of conducting ocean-wide covert surveillance.

A Fleet submarine is about 280 feet long and displaces 4,500 tons when dived. It has a crew of about 110.

It is nuclear-powered. A small nuclear reactor provides heat to produce steam and the steam drives turbine machinery which will propel the submarine at speeds greater than 25 knots at depths in excess of 500 feet.

Fresh water is distilled from seawater and a small amount of fresh water is electrolysed to produce oxygen and hydrogen. The hydrogen is eliminated and the oxygen replenishes the "closed" atmosphere of the submarine. Waste and noxious gases are eliminated to keep the atmosphere pure. The steam turbines also produce massive amounts of electrical power—enough to meet the needs of a small town. This enables the use of a vast array of sensors, computers and navigational equipment. Using sonar the submarine is able to identify possible targets and other ships by identifying the noise signatures made.

Submarine targets can be engaged by the Tigerfish wire-guided homing torpedo (soon to be given an anti-surface ship capability) and surface targets can be engaged with salvo (unguided) torpedoes. Fleet submarines are soon to be equipped with Sub-Harpoon—an underwater-launched, air-flight guided missile to attack surface ships. Fired when the submarine is dived the missile is able to take off from the surface of the sea to home on an enemy surface ship many miles away. With sophisticated navigational equipment and the ability to operate at high speeds constantly—even when surface ships are battling against gales—the Fleet submarine is a formidable weapon capable of operating unaided anywhere in the world.

Once a Fleet submarine is at sea and dived it represents a dangerous series of question marks for the "other side".

Where is it? What is it doing or watching? Is it using its capability to shadow—and if it is, for what purpose? Is anything that an enemy might do at sea likely to be compromised as the result of unknown, undetected surveillance by a Fleet submarine?

There are no publishable answers to these questions, neither can there be. The existence of this sub-surface capability adds up to deterrence, however. One certain responsibility of the *Submarine Flotilla* in peacetime is to train to wage war as effectively as possible in the knowledge that this will contribute to its prevention.

Fleet Submarines

HMS *Dreadnought*: First British nuclear-powered submarine. Built largely with American technology first commissioned 17.4.63.

HMS *Valiant*: First all-British nuclear-powered submarine. Her sister ships are *Warspite, Churchill Courageous* and *Conqueror*. First commissioned 18.7.66.

HMS *Warspite*	First commissioned		18.4.67.
HMS *Churchill*	"	"	15.7.70.
HMS *Courageous*	"	"	16.10.71.
HMS *Conqueror*	"	"	9.11.71.

HMS *Swiftsure*: The first of an improved class of Fleet submarines. Her sister ships are *Sovereign, Superb, Sceptre, Spartan* and *Splendid*. First commissioned 17.4.73.

HMS *Sovereign*	First commissioned		11.7.74.
HMS *Superb*	"	"	13.11.76.
HMS *Sceptre*	"	"	14.2.78.
HMS *Spartan*	"	"	22.9.79.
HMS *Splendid*	"	"	21.3.81.

HMS *Trafalgar* and HMS *Turbulent*, the first two vessels of the 'Improved Swiftsure' class of Fleet Submarines have entered service with the Royal Navy. HMS *Tireless* and HMS *Torbay* have been launched and two others are being built.

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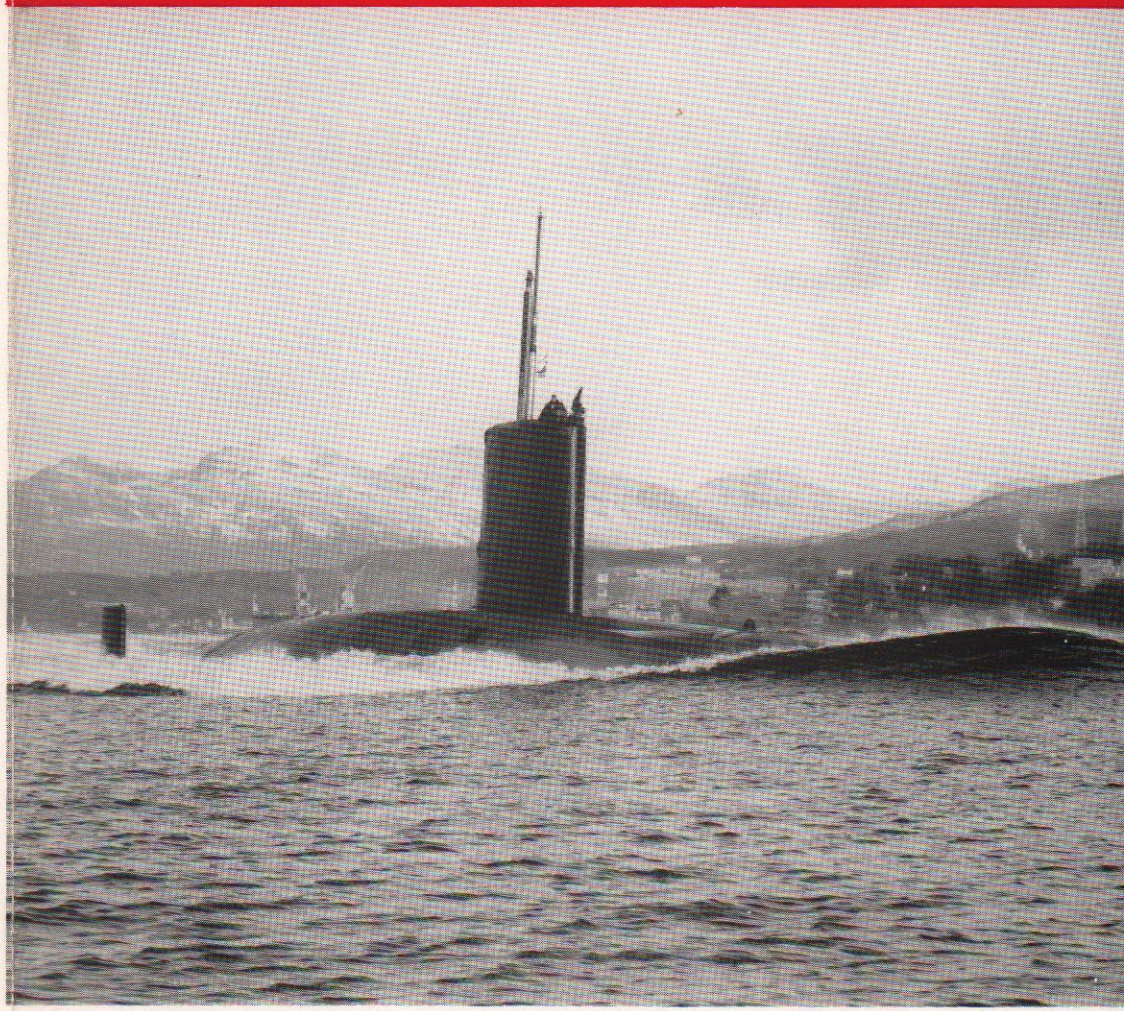
FLEET SUBMARINES

NUCLEAR POWERED



HMS Courageous.

Introduction

Throughout history, sea power has proved a deciding factor in the ambitions of one country over another—and still does today.

And the deciding factor in sea power today is most likely to be the submarine.

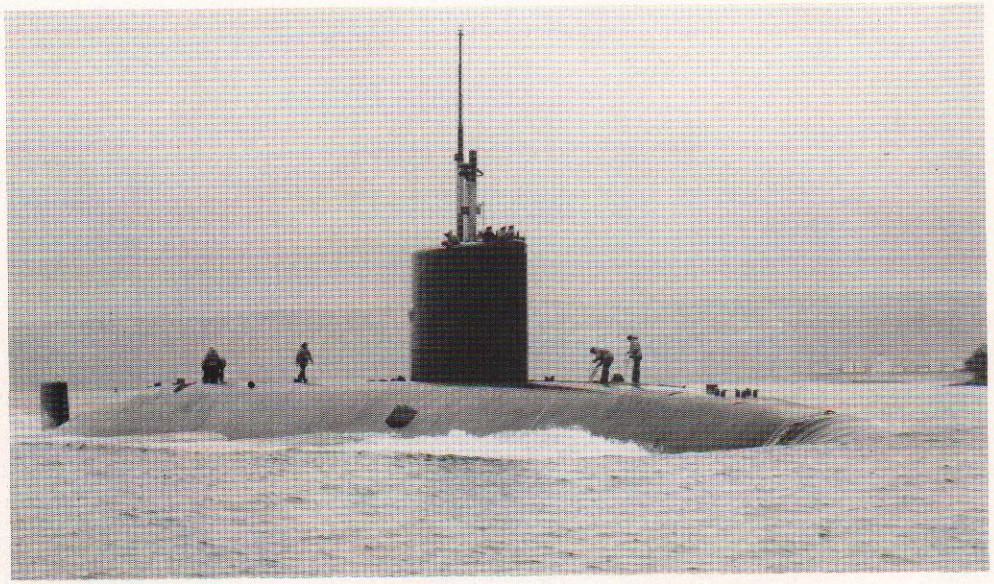
Submarines can dive deep and stay deep—away from the highly dangerous surface of the sea, where vessels are easily located by aircraft or satellites and increasingly vulnerable to long-range missile attack. New knowledge of temperature and salinity layers in the oceans, which can conceal a submarine against the probing sensors of ships and aircraft, has created an underwater jungle for the submarine commander to exploit like a tiger in the shadows.

The *Submarine Flotilla* of the Royal Navy operates three basic types of submarine—the diesel-powered Patrol submarine, the nuclear-powered Polaris submarine, and the nuclear-powered Fleet submarine.

The Polaris submarine carries the ballistic nuclear missiles which form Britain's contribution to the NATO strategic deterrence. Patrol submarines can conduct anti-ship and submarine attacks and are extremely useful in inshore roles such as surveillance, minelaying and operating with commandos or agents.

The Fleet submarine, however, is the modern equivalent of the battleship. Its role is to seek out and destroy enemy ships and submarines in wartime anywhere in the world's oceans.

At present the Royal Navy operates twelve Fleet submarines and others are under construction.



HMS Spartan.

History

The first recorded mention of a submarine was in the writings of an Englishman named William Bourne, who in 1580, published details of "a boate that may go under the water". Although his craft was not built, Bourne was the first to suggest how a submarine might realistically be made to dive and surface.

Over the next two hundred years there were records of many submarine inventions. Some were for peaceful purposes. Those with military roles did not influence naval warfare—primarily because most did not work and posed a greater danger to their crews than to an enemy.

In 1776, some 29 years before the Battle of Trafalgar, an attack was made by American revolutionaries against a British Fleet blockading New York Harbour by a submarine craft which looked remarkably like a large beer barrel. The *Turtle*, as it was called, was a one-man muscle-powered craft. An attempt was made to lay a mine beneath the hull of the British flagship. Although the attack failed it marked the first occasion when a submarine was used in anger.

In 1796 an American engineer named Fulton designed a successful submarine craft. He offered his design to Emperor Napoleon who rejected it as "a dishonourable form of warfare". Fulton offered his design to the Royal Navy. Prime Minister Pitt was enthusiastic—but his enthusiasm was crushed by a statement by the Earl St Vincent, one of Britain's greatest sailors, who said: "Pitt must be the greatest fool that ever lived to encourage a mode of war which those who command the sea (Great Britain) do not want and which, if successful, will deprive them of it". This statement was to be the basis of British policy towards the submarine for almost one hundred years.

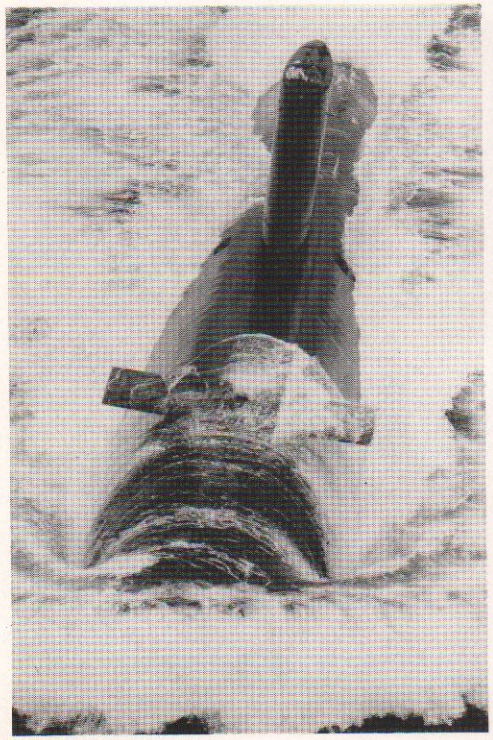
By the turn of the Nineteenth Century six navies owned a total of ten submarines. The submarine had already proved itself in Battle during the American Civil War. Finally after a French submarine demonstrated its prowess in Fleet manoeuvres Britain was forced to buy submarines. In 1901 the first of six American-designed submarines entered service with the Royal Navy.

Although there was much initial opposition to the submarine from within the Royal Navy—one admiral called it "underhand, underwater and damned un-English" and another suggested that all captured submariners in wartime should be hung as pirates—the submarine developed into an efficient weapon which proved itself in two world wars.

In spite of its successes the submarine remained little more than a submersible craft, forced to surface or draw in air through a "snorkel tube" at frequent intervals.

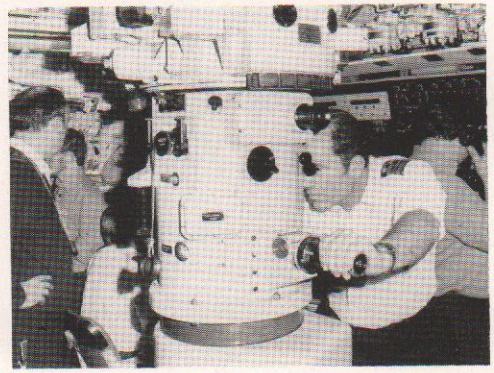
Then in 1954 the Americans commissioned the nuclear-powered submarine *Nautilus* and soon afterwards the Royal Navy commissioned the nuclear-powered submarine *Dreadnought*.

The first true submarines had appeared—capable of remaining dived for months at a time and able to circumnavigate the world underwater.



HMS Conqueror

Systems control console in the Control Room.



The Control Room closed-up for diving operations.