

A Century of Royal Navy Submarines



“Most Dangerous Service” A Century of Royal Navy Submarines



The emergence of the submarine as a weapon of war during the twentieth century was a development of the greatest significance. In 1900, it was new and untried. Over the next hundred years, its rapid development had a highly influential impact on the course of firstly naval, and then global, warfare. In both world wars, the submarine came close to being a war-winning weapon. Since the arrival in the 1950s of nuclear-powered boats armed with nuclear missiles, submarines have become the main strategic weapon of the entire world's leading military powers.

Introduction

In just one hundred years, the Royal Navy Submarine Service has progressed from a force with tiny, slow and unwieldy craft capable of firing a torpedo only a few hundred yards to one with vessels which carry Britain's strategic nuclear deterrent and are able to launch missiles of huge destructive power over thousands of miles.

During that time, the perception of the submarine's role has changed totally. At its outset in 1901, the Service made a very cautious beginning, being unpopular with most of the rest of the Navy. Admiral Sir Arthur Wilson VC, Controller of the Navy, voiced the opinion of the vast majority when he allegedly described submarines as "underhand, unfair and damned un-English. They'll never be any use in war and I'll tell you why: I'm going to get the First Lord to announce that we intend to treat all submarines as pirate vessels in wartime and that we'll hang all the crews".

Sixty Seven years later, the Daily Telegraph described the beginning of deterrent patrols with nuclear weapons as "taking out on behalf of the nation the best insurance policy it has ever had".

Today the Royal Navy Submarine Service plays the principal role in the defence of the United Kingdom.

The First Boats: From Holland 1 to First World War



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Launch of Holland 1, 2 October 1901.

At the beginning of the twentieth century, Great Britain was the world's leading naval power. It possessed the world's largest battle fleet, which had helped to keep the peace for nearly a century since Napoleon's defeat at Waterloo in 1815. However, the development of the submarine introduced a grave threat to Britain's dominant naval position. It was a weapon, which could be used by weaker powers to undermine traditional naval mastery, and, therefore, Britain had most to fear from it.

Thus, in April 1901, Viscount Selbourne, First Lord of the Admiralty, announced the purchase of five boats "to assist the Admiralty in assessing their true value". As Britain had no designers of its own, an order was placed with the Irish-American inventor John P. Holland of

New Jersey. Construction was undertaken by Vickers Son & Maxim at Barrow-in-Furness and HM Submarine Torpedo Boat No.1 (usually known as Holland 1) was launched on 2 October 1901.

Captain Reginald Bacon RN, a torpedo specialist, was appointed as the first head of the new submarine service.

Building the Holland class gave the Admiralty valuable experience in submarine construction and the limitations of the American boats stimulated larger and better British designs, starting with the A class in 1902. The success of both types in the 1904 naval manoeuvres proved that the submarine was here to stay.



'A', 'B', and 'C' class submarines alongside Fort Blockhouse, Gosport, the Submarine Service Headquarters, circa 1910.

Although the Holland boats never lost a man, some disastrous accidents in the other classes before the First World War proved how dangerous was the new service. However, these experiences were utilised to improve designs, especially safety features. Submarine strength expanded rapidly, driven by Admiral Sir John Fisher, the First Sea Lord, who had great faith in the new weapon. B, C, D and E class boats were built, each a successive improvement in size, propulsion, armament and seaworthiness. Even so, living conditions remained primitive in the extreme.

Despite certain sections of the Navy regarding the submarine service as "no occupation of a gentleman" and its members as little better than "unwashed chauffeurs" who were in "the Trade" (an epithet which later became an unofficial proud nickname), the service was, apart from an initial lack of enthusiasm, always oversubscribed with volunteers for its crews. The officers, who were all relatively junior, had to go through a rigorous selection process and the ratings had to be men of long service and exemplary conduct.

The First World War 1914 – 1918

The Royal Navy entered the First World War with the world's largest submarine service, 62 boats, though only fifteen were ocean going, the rest being coastal boats unsuitable for long distance patrols. Submarines were the first British naval units to go out to face the enemy in 1914 and the last to return to port in 1918. During the war, British submarines saw action in three main areas: the North Sea, the Baltic and the Dardanelles. C, D and E class boats carried out the majority of operations.

Throughout the war, submarines patrolled the Heligoland Bight off the German North Sea coast as part of the Royal Navy's blockade of the German High Seas Fleet. The lack of success in the joint action with surface forces on 28 August 1914 (the Battle of the Heligoland Bight) proved that the submarine was best used as a lone weapon. Thereafter, the rest of the war was spent in long periods of uneventful reconnaissance punctuated by attacks on German ships on the few occasions when they ventured to sea. For a short period in 1915, when it was believed that the best anti-submarine weapon might be another submarine, four C class boats were deployed on anti-U boat duties off Britain's east coast, in combination with trawlers as bait. Two U boats were destroyed, but the loss of C29 in a minefield on 29 August put an end to the operation. From March 1916, increasing numbers of submarines were fitted out as minelayers to operate in the hazardous waters near the German coastline. One of the strangest encounters occurred on 4 May 1916 when E31 succeeded in using its gun to destroy a low-flying Zeppelin.

By mid-September 1914, the Admiralty had decided to broaden the naval war by sending E1, E9 and E11, commanded by three of its most experienced submariners, to the Baltic Sea. In October, E1 (Lieutenant Commander Laurence) and E9 (Lieutenant Commander Horton) both made a successful passage of the narrow Sound between Denmark and Sweden, but E11 (Lieutenant Commander Nasmith) was blocked by German patrols. By autumn 1915, five more E class and four C class boats had arrived as reinforcements. By their impact, real and imagined, on the Germans the strategic effect of these boats was very significant. They harassed, and sometimes sank, German warships and dislocated the vital iron ore trade between Sweden and Germany, which forced the commitment of even more German ships to anti-submarine duties. Their presence thwarted German naval advances in support of the land campaign against Russia. Even vessels lost to mines were blamed by the Germans on the British submarines. So successful were the

British in 1915 and 1916 that German trade in the Baltic was almost completely paralysed. The Germans renamed the Baltic the Hortensee. The campaign came to an end in early 1918 when Russia capitulated to Germany.

When the Allies began land operations against Turkey in April 1915, by attacking on the Gallipoli Peninsula, submarines were deployed in the Sea of Marmara to intercept Turkish supply lines. To reach their operating area they had first to negotiate the narrow and dangerous passage of the Dardanelles, infested with mines and anti-submarine nets. Three small, obsolete B class boats had already begun to probe the Narrows. On 13 December 1914, B11 had sunk the old Turkish battleship Messudiyeh, for which action her commander, Lieutenant Norman Holbrook RN, was awarded the submarine service's first Victoria Cross (VC). During the rest of the campaign, several E class boats reached the Sea of Marmara, where, usually on single patrols, they carried out attacks on all types of shipping and land-based targets and some even raided Constantinople harbour. The great personal skill and bravery shown in these actions resulted in the award of three further VCs, to Commander E.C. Boyle (E14), Lieutenant Commander M.E. Nasmith (E11) and Lieutenant Commander G.S. White (E14). Strategically, submarine operations could not prevent the failure of the Gallipoli campaign, but the great toll taken of the Turkish Navy and merchant fleet contributed to Turkey's defeat later in the war.

A new and largely untried weapon at the beginning of the First World War, the submarine had proved its military value by the end of the conflict. Operations in the Baltic and Dardanelles had been the Service's supreme achievements. It had penetrated to, and operated effectively in, waters inaccessible to surface ships, bringing the war close to enemy countries. British submarines had made a strategic contribution to the war effort out of all proportion to the numbers deployed. 56 submarines and 1,174 officers and men were lost.



Submarine officer looking through a periscope.

E 11's crew on their return from patrol, 7 June 1915. Note the periscope damaged by a Turkish gunboat shell.



E.19 covered in ice at Reval in the Baltic, winter of 1915-16.



The Interwar Years 1918 - 1939

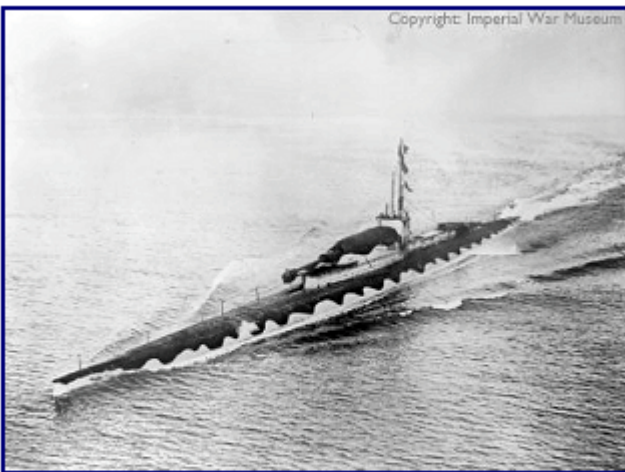
In the immediate aftermath of the First World War, the Submarine Service, in common with all the armed forces, was rapidly scaled down in a political atmosphere of financial economy and war-weariness. The desire for disarmament in the 1920s and early 1930s led to international limits being imposed on submarine construction by the London Naval Treaties of 1930 and 1936. Before the latter was signed, the British Government even proposed the abolition of the submarine, though it did not expect its proposal to be accepted. Inside the Royal Navy there was still a residue of feeling against the weapon, echoing its earliest days at the beginning of the century, but also reinforced by the repugnance felt against the unrestricted submarine warfare of the German U-boats.

At the end of the war, the boats, which had carried the burden of the fighting, were retired from service. Of the large number of different designs built during the war itself, only a few survived into the interwar period. Some, like the K and M classes, were the product of over-ambitious tactical concepts and did not endure. The former, for example, was an attempt to build a submarine to operate with surface fleets, but it suffered a large number of accidents and was described as "the result of an unholy union between a destroyer and a submarine". The H class, built from an American design, and the L class, a larger and more powerful version of the E class, became the mainstays of the interwar fleet.

The first new designs to be constructed in peacetime reflected Britain's changing strategic situation. Growing rivalry in the Pacific between Japan and the United States persuaded Britain not to renew its Japanese alliance, as it desired closer relations with the USA. Therefore, the O, P and R classes, begun in the mid-1920s, were designed as large, long-range boats to safeguard Britain's interests in the Far East. They remained on the China Station until 1940, when Italy's entry into the Second World War saw them transferred to the Mediterranean.

These boats were superseded by new designs in the 1930s, which were to provide the backbone of the submarine service during the Second World War. The small S and U classes were built for Home coastal waters and the Mediterranean. The T class, "undoubtedly the finest submarines ever constructed for the Royal Navy", and the Porpoise class were intended for action in the Far East against Japanese surface ships and on mine laying operations respectively.

The submariner's world was still one of danger. The Service lost fourteen boats between 1918 and 1939. The most tragic incident occurred in June 1939 when HMS Thetis went down in Liverpool Bay during diving trials with the loss of all but four of the 103 men on board - 53 crew and fifty staff from her Cammell Laird builders.



The distinctive M 1, armed with a 12 inch gun from a decommissioned battle ship.



HM Submarines Perseus, Otus, Orpheus and Poseidon (left to right) moored in Hong Kong harbour, circa 1930.

The Second World War 1939 - 1945

When the Second World War began on 3 September 1939, British submarines were on patrol on the opening day of hostilities. The attack on HMS Spearfish by a German U-boat only minutes after the commencement of hostilities presaged 5½ years of dangerous and uncompromising submarine warfare. The new boats designed in the 1930s were far superior to those which had carried the burden twenty years before. They were stronger, more heavily armed,

faster, both on and under the water, and more technologically advanced. Their straightforward yet robust designs facilitated rapid expansion of submarine numbers when the war began. The main theatres in which British submarines operated were Norwegian waters, the North Sea, the Mediterranean and the Far East.

Throughout the war, the Submarine Service mounted patrols in the North Sea and other Home waters to intercept U-boats and commerce raiders heading for the Atlantic to attack Allied trade. In the first five months of war four boats were lost, one unfortunately sunk in error by another British submarine. More casualties were suffered from April 1940 onwards as the war intensified with the German invasion of Norway. However, both by direct action and mine laying activities, Royal Navy submarines took a heavy toll of German troop transports, supply ships and escort vessels, quickly forcing the Germans to adopt defensive convoys. German shipping in Norwegian waters continued to provide profitable targets for the rest of the war.

The most important area of operations was the Mediterranean where, between 1940 and 1944, British submarines based on Alexandria, Malta, Gibraltar and Algiers waged war against Italian and German lines of communication and supply routes supporting the Axis campaign in North Africa and elsewhere. Conditions in this theatre proved the most testing of the war. The proximity of Italian air and naval forces and the calm, clear and shallow water which made submarines vulnerable to detection and attack were factors which combined to cause high losses. On the other hand, the confined sea and plethora of targets on the one main supply route available to the enemy also meant that successes were frequent. Pre-war Allied strategy had left the defence of the Mediterranean to the French Navy. However, France's surrender and Italy's declaration of war in June 1940 forced the recall of large ocean-going boats from the Far East. Operating largely from Alexandria, they patrolled the waters round Greece and Crete and in the Aegean and Adriatic Seas to compel the commitment of Axis resources away from the vital North African routes.

Also in 1940, reinforcements of small U class boats were sent out from Britain to operate from the crucially important base at Malta, set astride the Italian and German path to Africa. Large mine laying submarines brought in supplies which helped to keep the island in the battle despite the heavy Axis assault upon it. The boats based on Malta, together with S and T class submarines, were able to dominate the enemy's supply lines to such an extent that the toll they took of men, fuel and supplies - over one million tons of shipping - was a decisive contribution to the Allied victory in North Africa. The ultimate accolade came from General Fritz Bayerlein, Rommel's Chief of Staff, who said: "we would have taken Alexandria and reached the Suez Canal if it had not been for the work of your submarines". However, the price was high as 45 boats were lost. All five of the Victoria Crosses awarded to officers and men serving in conventional submarines during the Second World War were won in the Mediterranean theatre.

When the war in the Far East began at the end of 1941, the rapid loss of Hong Kong and Singapore to the Japanese forced the withdrawal of British submarines to bases in Ceylon and Australia. Until reinforcements could be sent from Europe at the end of 1943, as the Allied position there improved, operations were on a small scale. The great distances limited the range of the British boats to the Indian Ocean, the waters around Malaya and the Dutch East Indies, and the South China Sea. They could not reach the Pacific. Conditions were difficult. The coastal waters around the islands to which Japanese shipping almost invariably clung was swampy and shallow and the climate was very hot and humid. Targets were fewer than in Europe and, therefore, harder to find. When they were encountered many were dispatched by gunfire, not being large enough to merit a torpedo. British submarines contributed to the Allied, mainly American, effort which sank 90% of Japan's merchant navy during the war. Only three boats were lost in the Far East.

During the Second World War, British submarines proved, for the second time in twenty years, their value and importance as a supreme strategic weapon. 475 merchant ships, 105 warships and 36 submarines had been sunk, with many others damaged. The course of the North African campaign had been decisively altered. However, the cost was a heavy one. 74 of the 206 boats in the Submarine Service did not return, while 3,142 men (1 in 3 who served) were killed and 359 captured. Winston Churchill, the Prime Minister, paid tribute when he told Parliament: "There is no branch of His Majesty's forces which in this war have suffered the same proportion of losses as our Submarine Service. It is the most dangerous of all services".



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Top Left:- Commander A R Hezlet of HMS Trenchant watching a Japanese minesweeper under attack from his submarine in the Lombok Strait, 18 July 1945.

Top Right:- The crew of Torbay at Algiers, May 1943.

Left:- Taku, Una and Unrivalled in Malta harbour, 1943.

Clandestine Operations

As well as carrying out conventional underwater warfare, the submarine is uniquely suited to undertaking clandestine operations. With its ability to operate unseen and undetected in hostile waters, the submarine is an ideal instrument for approaching close inshore for intelligence gathering or for landing those personnel, such as agents or special forces, who must carry out their duties in secret or remain undiscovered for as long as possible. British submarines have been heavily involved in such activities.

The first beach reconnaissance took place in 1917 when submarine C17 gathered tidal measurements off the Belgium coast to aid possible amphibious landings as part of the Third Ypres offensive. During the Second World War, similar operations began in the Mediterranean in spring 1941 with a survey of Rhodes intended to prepare for a prospective assault of the island. They were carried out by various special units, including the forerunners of the present Special Boat Service (SBS) and Combined Operations Pilotage Parties (COPPs), in two-man collapsible canoes, or "folbots" launched from submarines offshore. Reconnaissance by submarines based on Alexandria were carried out against areas of coastline of North Africa, Greece and Yugoslavia. Boats from the Eighth Flotilla at Gibraltar surveyed beaches before the Allied invasion of North Africa in November 1942 and marked landing places on the night forces went ashore. Similar actions preceded the invasions of Sicily and Italy in July and September 1943. Several COPPs also operated in the Far East against the Japanese in 1944 and 1945, reconnoitring beaches and their respective hinterlands on the coasts of northern Sumatra, Thailand and Malaya.

For three years from early 1941, submarines in the Mediterranean deployed Special Forces to attack ports, shipping and airfields, sabotage railways and move agents into and out of hostile territory. Some of these were specific operations, but SF parties were also carried on full-length submarine patrols to attack targets of opportunity, during which time they took orders from the submarine's commander. In 1944 and 1945, sabotage raids and agent movements also took place in Malaya and Sumatra. Between March 1941 and February 1945, submarines carried the Special Forces on 43 separate operations.

In mid November 1941, Torbay and Talisman landed Army commandos in an attempt to assassinate Rommel at his Libyan Headquarters. A year later, men of the Royal Marines Boom Patrol Detachment were disembarked from Tuna in their Cockle Mk II canoes to attack Axis

shipping in Bordeaux running the British economic blockade (becoming the Cockleshell Heroes of popular memory). In September 1944, Porpoise launched a Special Operations Executive (SOE) attack party on Operation Rimau, a disastrous raid on shipping at Singapore.

The movement of SOE, Secret Intelligence Service and foreign agents into and out of occupied countries began soon after the fall of France in June 1940. Operations were conducted off all the coasts of France, in the Mediterranean and Far East and continued sporadically until 1945.

The submarine with the highest profile in clandestine operations was Seraph, which carried out three very important assignments. On 19 October 1942, she took Major General Mark Clark, second-in-command to General Eisenhower for the North African invasion, and a small party of US officers to Algeria for discussions with the French Major General Mast to discover the reactions of the Vichy French to the forthcoming landings. Eight days later, Seraph, again carrying some American officers, collected the French General Giraud from southern France. The anti-Vichy Giraud was wanted by the Americans to take command of all French troops in North Africa after the invasion to ensure they fought with, and not against, the Allies. Finally, on 30 April 1943, as part of Operation Mincemeat, a body dressed as a fictitious Royal Marines "Major Martin", the supposed victim of an air crash, was placed into the sea from the submarine off the Spanish port of Huelva. Papers with the body deceived the Germans, who were shown the documents by the Spanish authorities, into believing that the imminent Allied invasion would come in Greece and not Sicily. This action became the subject of the book and film, *The Man Who Never Was*.

Clandestine operations have continued in the post Second World War era. The vastly improved speed, endurance and range of modern nuclear-powered submarines, in conjunction with modern swimmer delivery vehicles which can be attached to the parent boat and have substantial range themselves, means that special forces can be deployed to any objective anywhere in the world.



Seraph's crew in January 1943 after taking part in two secret operations connected with the Allied landings in North Africa.

Members of a Combined Operations Pilotage Party manhandle their "folbot" (as used by the Marine Commandos in the "Cockleshell Heroes") or collapsible canoe through the forward hatch of a submarine, 1944.



X-Craft and Chariots

For certain operations where conventional submarines could not be deployed, smaller, more specialized boats were required. Four-man, 52 feet long X-craft, complete submarines in miniature, were first laid down in September 1942 with one definite purpose, the destruction of the German battleship Tirpitz. Although she, and other German battleships, rarely ventured out from their secure bases among the Norwegian fjords, the possibility of the devastating damage they might inflict on the Allies' vital Russian convoys tied down British capital ships to the North Atlantic theatre when they were much needed elsewhere, particularly in the Far East.

X-craft were towed submerged by standard submarines to their target area where they were then released for independent action, which might last several days. They had a crew of three for the exhausting and occasionally hazardous towing period and another of four, including a diver, to carry out the operation. Weaponry consisted of either several limpet mines to be attached individually or two two-ton explosive charges to be laid directly beneath the target.

On 22 September 1943, Tirpitz was lying in Alten Fjord at the northern tip of Norway. Although six X-craft set out on Operation Source to sink the battleship, X 8 and X 9 were lost on passage, X 10 abandoned at the outer fjord suffering from mechanical problems and X 5 was presumed sunk by the Germans in the inner fjord so only X 6 and X 7 made the attack. Both had great difficulty in getting past the formidable anti-submarine and anti-torpedo net defences. Forced to the surface by one of these obstructions, Lieutenant Donald Cameron in X 6 had to scuttle his boat and surrender, after having released his explosive charges in the vicinity of Tirpitz. X 7, commanded by Lieutenant Godfrey Place, also placed her two charges successfully but could not get far enough from Tirpitz before they exploded. The resulting structural damage caused Place also to surrender and scuttle his craft. Unfortunately two of his crew did not survive. Although Tirpitz was not sunk she was put out of action until April 1944. Both Cameron and Place were awarded the Victoria Cross.



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Top Left:- An X-craft (as used on the Tirpitz raid) under way at sea.

Top Right:- Crew member of an X-craft in the Far East dressed appropriately for the hot and humid conditions.

Left:- A two-man Chariot at sea.

There were seven other X-craft operations during the Second World War. In January 1944, X 20 landed hydrographic experts to gather information on the Normandy beaches and, in June, together with X 23, acted as navigational beacons to guide in the first wave of assault craft on D-Day. In April X 24 attacked and then in September sank a floating dock being used for vital U-boat

repairs in Bergen, the most heavily defended Norwegian harbour. Finally, in the Far East, on 31 July 1945, XE 1 and XE 3 penetrated Singapore waters to sink the Japanese cruiser Takao and XE 4 and XE 5 cut Japanese telephone cables between Saigon, Hong Kong, and Singapore. The latter action was important as, at a crucial point in the war, it forced the Japanese to revert to radio communications which could be intercepted. Both XE 3's commander, Lieutenant Ian Fraser and diver, Leading Seaman James Magennis, received the Victoria Cross. All X-craft returned safely from these operations.

Men of the Submarine Service also manned human torpedoes, which were used for attacks on shipping in enemy harbours. British development had been stimulated by the Italians' successful use of similar weapons, particularly an attack on the battleships Queen Elizabeth and Valiant at Alexandria on 19 December 1941. Known as "Chariots", these craft were transported to their objective in external containers welded on to T-class submarines. Two men, dressed in diving suits, rode astride the torpedo to steer it to the target where the nose section, a 600lb detachable warhead, was then attached. Built, like X-craft, to take on the Tirpitz, their only operation against the German battleship was aborted on 1 November 1942. Re-directed to the Mediterranean, opportunities to use Chariots were few and far between. Nevertheless, they damaged an Italian light cruiser and merchant ship in Palermo harbour on 2/3 January 1943, sank merchant ships to prevent the Germans using them to block Tripoli harbour on 18 January 1943 and carried out beach reconnaissance in May and June 1943 before the invasion of Sicily. After one operation in the Far East on 27 October 1944, the use of Chariots by the Royal Navy was ended. Two T-class submarines were lost while supporting actions in the Mediterranean.

Conventional Warfare Since 1945

The aftermath of the second world conflict in twenty years reflected that of the first, as rapid and severe cuts were made in all the armed forces. However, the almost instantaneous onset of the Cold War, and with it the threat to Britain of a burgeoning Soviet submarine threat, saved the Royal Navy Submarine Service from the worst effects. The country could not afford to maintain a large surface fleet so, in 1948, the Service was given the main role in the interception and destruction of enemy submarines. As a result, by the mid-1950s, Britain had sixty boats (three more than in 1939) and submarines made up a greater proportion of the total strength of the Royal Navy than ever before.



Oberon berthed at Singapore Naval Base.

Taken running on the surface at sea, 8 September 1967.



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Some improved T-class and nearly all the sixteen A-class submarines (the only ones designed during the Second World War) continued to serve, but the first new postwar designs were the twenty one boats of the Porpoise and Oberon classes built between 1955 and 1964. Specifically

constructed for anti-submarine operations, they were large, very quiet patrol submarines with excellent long-range sensors and significant underwater endurance capable of independent, worldwide deployment. In the 1960s and 1970s they were the mainstay of the Submarine Service, undertaking anti-submarine and anti-ship operations, forward surveillance, special forces activities, weapons development and training. The Oberon class was undoubtedly a world leader of its type at this time. In the late 1980s, updating of sonar equipment and torpedoes and the addition of a missile capability allowed Oberons to extend their service until 1993. Both the Porpoise and Oberon boats served with great success and distinction all over the world for more than thirty years.

In the late 1980s, modern Upholder class submarines were introduced to replace the O and P boats. They were designed with the specific aim of filling the North Atlantic gap astride the routes from northern Soviet bases. However, the four that were built served for only a short time before becoming victims of the end of the Cold War and the consequent defence cuts. Compared to their nuclear-powered counterparts, the use of conventional submarines was limited by their slow speed of deployment around the world and shorter underwater endurance. As a result, they were withdrawn from service in the Royal Navy in 1994.

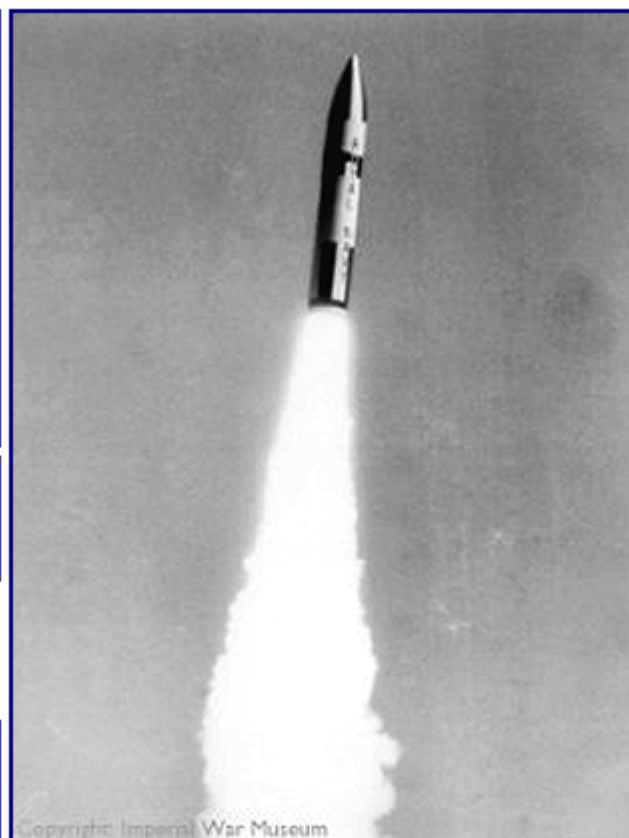
The Nuclear Age

After the Second World War the advent of the nuclear age, ushered in at Hiroshima, brought about a quantum leap in both the size and power of some weapons of war and their destructive capability. Nuclear power facilitated the development of the true submarine, a vessel able to stay underwater permanently, limited only by the endurance of its crew. In turn, with the development of inter-continental ballistic missiles, the submarine became the most important element in the armouries of all the major powers and the keystone of national strategic policy.



Dreadnought during fitting out at Barrow-in-Furness, November 1962.

Polaris A-2 Missile during Royal Navy tests, 1969.



The world's first nuclear-powered submarine was the American Nautilus, launched on 21 January 1954. Anxious to preserve Britain's position as a leading sea power, the Royal Navy established its own nuclear capability when Dreadnought was launched on 21 October 1960, powered by a US reactor. Five similar boats of the Valiant class, the first entirely British nuclear submarine, entered service between July 1966 and October 1971, including Conqueror, which sank the General Belgrano during the Falklands Conflict in 1982. The faster, quieter and deeper diving Swiftsure class, a marked advance over its excellent predecessors, was introduced from 1973. Eight years later, Dreadnought was taken out of service. The Valiants were all withdrawn by 1994. In 2001, five Swiftsure boats and seven of the most modern Trafalgar class, first commissioned in May 1983, made up the Royal Navy's fleet submarine complement. All of these nuclear-powered

hunter/killer submarines possess high underwater speed and excellent sonar capability. Armed with torpedoes, anti-ship and long range tactical land attack missiles, their main roles are to support the surface fleet and monitor and, if necessary, destroy enemy submarines. They also have the capacity to undertake close surveillance and beach reconnaissance work and to influence land operations by the deployment of their Cruise missiles. The characteristics of stealth, flexibility and endurance which these submarines possess allow them to operate freely anywhere in the world's oceans.

Polaris, the intercontinental ballistic missile constructed to equip nuclear submarines, was test-fired successfully for the first time in April 1956. Britain acquired Polaris technology from America under an agreement reached in December 1962, enabling it to build its own warheads under its own national control. By 1968, after a period of intensive development, the United Kingdom's independent nuclear deterrent was ready. The first of four ballistic missile-carrying submarines, Resolution, was launched on 15 September 1966 and sailed on its first deterrent patrol in June 1968. On 30 June 1969, responsibility for Britain's strategic nuclear deterrent passed from the Royal Air Force to the Royal Navy and remains with it to this day. Since that time a continuous series of patrols has maintained the country's nuclear defence. Polaris boats, helped by a mid-life missile upgrade through the Chevaline programme first deployed aboard Renown in summer 1982, carried out the task until August 1996, when Repulse was decommissioned. The role then passed to the four new Vanguard class submarines equipped with Trident D5 missiles, which have a range of over 4,000 nautical miles. The most modern strategic nuclear missile submarines in the world, they are expected to be in service for at least the next twenty years.

Operations Since 1945

The most important operations carried out by Royal Navy submarines since the Second World War are the nuclear deterrent patrols, which have maintained a constant strategic defence for the United Kingdom since 1969. The objectives of each patrol are to remain undetected and to be at constant readiness to receive orders and to fire missiles at short notice. The highest standards of teamwork and professionalism are therefore required and, as the submarines are totally alone and self-supporting, the crews are virtually in a state of war when at sea. From their base at Faslane on the west coast of Scotland, Polaris boats executed an unbroken sequence of 229 patrols between 1969 and 1996. The new Vanguard class submarines now maintain the constant vigil. This role made a highly significant contribution towards the continuation of peace during the political and military hostility of the Cold War. As a result of the calmer international climate of the 1990s, the 1998 Strategic Defence Review decided that "readiness to fire" would be relaxed to days rather than minutes. This has enabled crews on patrol to undertake secondary tasks, such as equipment trials, exercises with other vessels and oceanographic surveys, without compromising security.

The Service's hunter/killer submarines, both conventionally and nuclear powered, also played an important, and distinctly more dangerous, role during the Cold War. The highly-secret tracking and surveillance of the growing Soviet submarine fleet was usually carried out under conditions of high tension and extreme risk, given the possibilities of detection (with its inevitable damaging diplomatic consequences), collision, breakdown or running aground in hostile waters without any chance of rescue. However, British submarines have proved to be remarkably successful in gathering intelligence. In 2001, the five Swiftsure class boats were part of the First Submarine Squadron based at Faslane and the seven Trafalgar class boats were with the Second Submarine Squadron at Devonport.

Submarines have continued to be in action since 1945. For clandestine operations, Porpoise and Oberon class boats have been frequent carriers of the Special Boat Service. Conqueror carried out a special forces raid in the South Atlantic in 1982 and Special Air Service units are rumoured to have been landed in the shallow waters round Iraq and Kuwait during the Gulf War in 1991. More conventionally, Splendid fired Tomahawk Cruise missiles against land targets during the NATO bombardment of Kosovo in 1999.

But the most important engagement since the Second World War was the Falklands Conflict of 1982. Four nuclear-powered boats, Conqueror, Valiant, Spartan and Splendid and one diesel-electric boat, Onyx took part in the British campaign to restore sovereignty after the Argentinean invasion. They had two main roles: to protect the surface fleet and to conduct clandestine operations by landing special forces on the various islands. The high underwater speed and powerful sonar facilities enabled these "Fleet" submarines to patrol well ahead of the task force as a shield when in transit to the south Atlantic and then to adopt defensive positions around it on arrival. Such a deployment was opportune as Spartan, first on station, arrived in time to observe the Argentineans mining Port Stanley harbour. The task force arrived in the British 200 mile radius Total

Exclusion Zone (TEZ) around the Falklands at the beginning of May. It was threatened by three Argentinean naval groups north west, west and south west of the islands, which included a light aircraft carrier armed with Skyhawk strike aircraft and ships armed with the formidable Exocet anti-ship missile. Two groups were being shadowed by British submarines. Fearing a pincer attack, Rear Admiral J.F. "Sandy" Woodward, the Task Force commander, requested and received permission for a change in his rules of engagement from the War Cabinet to enable him to attack the southern Argentinean group of the cruiser General Belgrano and two destroyers. As a result, at 6.57pm on 2 May, Conqueror launched an attack on the Belgrano. Commander C.L. Wreford-Brown fired a salvo of three Mk VIII 21-inch torpedoes, causing two explosions. The ship sank within 45 minutes and 321 of the total of 1,200 men on board were lost.

Conqueror's action was a brilliant strategic success because it resulted in the withdrawal of the rest of the Argentinean fleet, which played no further effective part in the war. However, there was also a wider historical relevance. Wreford-Brown had used a modernised version of a torpedo, which had been in service since 1927, and was almost identical to those used in the last British submarine attack on a cruiser, the Japanese Ashigara, in June 1945. It was not only the first time a nuclear powered submarine had fired a shot in anger but also made the Conqueror unique in being the only one to sink a warship in conflict.



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General Belgrano sinking, making Conqueror unique as the only nuclear submarine to sink another warship in conflict.



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Vanguard with her crew on deck.



Conqueror returns to Faslane on 3 July 1982, flying her jolly roger which records the sinking of the Belgrano during the Falklands Conflict.

Keith Appleford