

## Silent mindset

*Commander  
Robert Green  
Royal Navy (Ret'd)*

*Commander Green is a former operator of nuclear weapons.*

Approaching 700 pages excluding chapter notes, *The Silent Deep* is a formidable read. Space restriction confines me to an overview, before outlining and discussing highlights selected for their current relevance. Well referenced, it is too detailed at times; but it is comprehensive, thoroughly readable, and captures the subject's ethos. In their preface, veteran historian of British government Peter Hennessy and James Jinks explain that, while not an official history, they have tried to bridge the divide between those submariners determined to sustain their profession's image as the 'silent service', and others who feel this has become counterproductive, especially with the Submarine Service facing an increasingly uncertain future.

The authors received unprecedented access. The introduction sets the consequent, often reverential tone, describing the Submariners' Association Annual Memorial Service at the National Submarine War Memorial a week before Remembrance Sunday. Hennessy then offers highlights from his diary while 'embedded' in the nuclear attack submarine (SSN) *HMS Tireless* for a 'Perisher' course of prospective Commanding Officers (COs). He revels in dramatising what it takes to command this most complex and demanding naval weapon system in such a hostile environment. In conversation with former US submariners, they admire the swashbuckling attitude encouraged among British COs: '... the Royal Navy's SSNs would take more risks...', because the RN has so few 'boats' (in-house jargon for submarines) compared to the US Navy. A

French submariner goes further: 'French COs are more scientific. They are all engineers. The Royal Navy are more warriors.'

After World War Two, the Submarine Service had to cope with huge cuts in hulls and personnel while struggling to modernise submarine design. One revelation is the central role of Helmut Walter, the German scientist behind many of the revolutionary improvements in U-boat effectiveness.

It was an exciting time to be in submarines. The Cold War meant training to oppose the new Soviet threat by enforcing blockade of their waters where surface ships were too vulnerable, and to perform dangerous, uncomfortable covert reconnaissance missions. This required new skills and equipment associated with submarine-to-submarine combat, of which there had been almost no experience in World War Two. Emphasis shifted to high endurance and quiet running, with streamlining, stronger pressure hulls to permit deeper diving, plus extra pressure hull length to accommodate more batteries and motors. Development of new passive sonars, fire control equipment and torpedoes encountered many difficulties.

1956 saw the launch of *HMS Porpoise*, the first post-war conventional hunter-killer submarine (SSK), which was quieter than even the US equivalent *Guppy* class. However, the Americans were forging ahead with their prototype SSN *USS Nautilus*. The authors emphasise how Admiral of the Fleet Lord Louis Mountbatten overcame UK resistance to nuclear propulsion, competing with nuclear weapons and electricity generation. On becoming First Sea Lord in 1955, he masterminded getting alongside the USN, and charmed irascible Admiral Hyman Rickover, the all-powerful director of the highly secret US nuclear programme, into allowing *Nautilus* to show her paces in a major UK anti-submarine warfare (ASW) exercise. The RN realised it had to build nuclear submarines; thus the unequal struggle began to keep up with US and Soviet developments. Also, the need for effective ASW weapons precipitated an expedient, misguided drive for nuclear warheads. These would have been suicidal for the user and first alerted me, as Senior Observer of an ASW helicopter squadron equipped with nuclear depth bombs, to their military uselessness.

Mountbatten persuaded Rickover to visit UK, who advised buying the latest version of a nuclear propulsion plant, fitted in the newest SSN *USS Skipjack*, from Westinghouse via Rolls-Royce. This resulted in the US and UK signing the top secret 1958 agreement for 'Co-operation on the Uses of Atomic Energy for Mutual Defense Purposes', which with amendments remains in force.

*Dreadnought* was launched on Trafalgar Day, 21 October 1960, and her reactor went critical in November 1962, with sea trials completed by the end of the year. Lack of experience plus complicated improvements meant it took another four years before the second UK SSN, *HMS Valiant*, became operational. Another, *HMS Warspite*, followed; and a 'Repeat Valiant' class (*Churchill*, *Conqueror* and *Courageous*) appeared between 1970-71.

The authors recount the background to the UK's loss of Empire craving for a scaled down version of the US Polaris nuclear-armed ballistic missile submarine (SSBN). In the humiliating 1962 Nassau negotiations, Kennedy understandably tried to end the UK's independent nuclear status. As a face-saving ploy to avert the biggest crisis in the 'special relationship', Macmillan agreed to UK Polaris assignment to NATO except where 'supreme national interests' were at stake; but this was not credible. Implications for the RN were barely considered, for what would be the largest project since World War Two.

Four Polaris SSBNs were built almost to schedule, but imposed a huge strain on both shipbuilders and the Submarine Service. Pressure for a fifth boat arose from learning that the French were independently building five, the optimum for sustaining two on patrol. This prompted what the UK's leading exponent of nuclear deterrence, Sir Michael Quinlan, dubbed 'the national gut feeling': fear that France would have a superior nuclear force, which persists to this day. A fifth boat was approved in early 1964. Labour, under Wilson, rightly mocked the claim of UK Polaris independence; and it was an election issue in October 1964, with Labour pledging to renegotiate the Nassau Agreement.

The Labour government was left with serious economic problems; but Wilson and Denis Healey, Defence Secretary, were quickly persuaded to continue with Polaris. Wilson justified it as 'having a handle on the Americans'; but as always in the history of the 'special relationship', the reverse was true.

The authors record some interesting comments from former Polaris COs about their appalling responsibility. These ranged widely, from prayerful reliance on not receiving a firing order in the hope that nuclear deterrence would always work, through indifference driven by the professional imperative to present a credible threat (plus the let-out that Polaris was a second strike system), to several prospective commanding officers turning down the prestigious appointment, effectively ending their careers.

The SSK development story resumes with introduction of the *Oberon* class, of which 13 were built between 1961-67. Quieter than the *Porpoise*

class, they could dive deeper and had better detection equipment; but both classes were considered highly effective.

The 1966 Labour Defence White Paper cancelling CVA-01, a new class of strike aircraft carrier, meant a major re-orientation of the Royal Navy to anti-submarine warfare. The nuclear powered attack submarine (SSN) was promoted as the future capital ship, and protection of deploying nuclear-armed submarines from Soviet detection and trailing ('delousing') became a new essential role. The US Navy and Royal Navy began more aggressive operations, collecting intelligence and shadowing Soviet SSNs as a form of controlled confrontation. Passive sonar gave only a bearing, not range or depth. This risked collision, at least one of which occurred, luckily with only minor damage; and there were numerous near-misses.

The new *Swiftsure* SSN class (six commissioned from 1973) had increased diving depth, and retractable forward hydroplanes making them quieter, helped by pumpjet propulsion, which explained the slight stern bulge, and was so successful that all subsequent nuclear powered attack submarines were given it. Computerised tactical data handling and fire control systems were a huge advance; but weapon problems persisted until recently.

Torpedo limitations resulted in the commanding officer of *HMS Conqueror* falling back on World War Two design Mk8 torpedoes to controversially sink the Argentine cruiser *General Belgrano* in the 1982 Falklands War. A chapter is devoted to this first war experience for UK SSNs. With only seven nuclear powered attack submarines available, establishing early barriers around the Falklands, and then maintaining them, proved challenging. As I discovered as Staff Officer (Intelligence) to CINCFLEET, there was little information about the Argentine conventional submarine threat (two ex-US *Guppy* class, and two modern German Type 209 class); but the latter were known to be quiet, and posed a serious potential threat to the Task Force and nuclear-powered attack submarines.

Frustrations grew when bad weather, associated poor sonar detection conditions, and shallow water limitations resulted in fleeting surface contacts, exacerbated by slow communications and initially restrictive rules of engagement. *Splendid* developed an electrical generator fault, forcing her to withdraw under diesel power in a storm; unable to snort, she nearly ran out of battery power, and was replaced by *Courageous*. *Valiant* arrived struggling with defects; and *Conqueror*'s communication problems intensified after a trailing wire aerial became wrapped round her screw. Heroic efforts by a diver removed enough to enable her to stay operational,

and return home to an unsurprisingly subdued welcome.

The intriguing rumour of nuclear-armed submarine deployment south in case UK forces faced defeat is probed; but the commanding officer of the deployed boat, *HMS Resolution*, received no such order. However, the possibility of an extremely secret contingency plan re-emerged in the 2005 memoirs of Ali Magoudi, French President Mitterrand's psychoanalyst. He recounted a chilling phone call from Mrs Thatcher after a French-supplied Exocet missile fired by a French-supplied Super Étendard naval strike jet crippled the destroyer *HMS Sheffield* in retaliation for loss of the *Belgrano*. Apparently, the British Prime Minister threatened a nuclear strike against Argentina unless Mitterrand informed her of the frequency of the Exocet target acquisition system; and he was so convinced of her seriousness that he complied. Sir Lawrence Freedman's official history of the Falklands campaign claims that 'the nuclear option was never seriously discussed...'; but Quinlan confirmed that Thatcher did consider use of nuclear weapons in extreme circumstances: '...she took it very seriously...'. For me, this highlighted the danger of a leader of a nuclear-armed state facing defeat, especially against a non-nuclear state. Had the commanding officer of a nuclear-armed submarine received such an order and obeyed, the failure of nuclear deterrence would have compounded the ignominy of defeat with that of being the first to have broken the nuclear taboo since Nagasaki.

As expected, the authors display a sure touch covering the extremely secret and costly 1970s Chevaline programme to shore up the credibility of UK Polaris against Moscow's anti-ballistic missile (ABM) defences, and replacement with Trident. Building four *Vanguard* class Trident SSBNs and support facilities in the Clyde Submarine Base at Faslane was the largest, most complex and expensive construction programme in Western Europe.

The Royal Navy's decisive role in salvaging Mr Thatcher's career – before the Falklands War she was the most unpopular Prime Minister in history – restored a few surface ship cuts in the 1981 defence review. The Type 2400 *Upholder* SSK class, initially costing a third of that of an SSN, was a less demanding way to lift submarine numbers. Following delays and increased costs, *Upholder* was delivered in 1990; three more followed.

Meanwhile, the first of seven successor SSNs to the *Swiftsure* class, *HMS Trafalgar*, launched in 1981, was quieter still, with improved passive sonar and fire control systems. The late 1980s 'were the glory days of the Submarine Service'. However, nuclear-powered attack submarines were effectively seconded to the US Navy; and many submariners felt detached

from the rest of the Royal Navy, who had no idea what they were up to. SSN commanding officers reminisced about how exciting it was to 'win' the Cold War; but maybe they should be grateful for Soviet restraint under provocation in their backyard?

The 'glory days' were short-lived. A month after the Berlin Wall came down, in 1989, cracks were found in *Warspite's* propulsion system pipe welds. All *Valiant* and *Swiftsure* SSNs had to be recalled for complicated repairs, and the nuclear-armed submarines struggled to keep one on patrol despite weld cracks being found in them. Operational commitments overloaded the *Trafalgar* class, and mistakes were made. A 1990 defence review cut 27 SSNs and SSKs by almost half, including the entire new *Upholder* SSK class. Widespread anger at this ensued because of the loss of important command experience, and appalling waste of money and skills. They were eventually sold to the Canadians as replacements for their *Oberon* class. The authors fail to ask if this was the opportunity cost of getting Trident? Also, the first Gulf War in 1991 is not mentioned, presumably because SSNs had no role in the shallow waters, two *Oberon* class SSKs being preferred for Special Forces operations.

With *Vanguard* and *Victorious* operational, Polaris was stood down in August 1996 after 28 years. Two years later, the Blair Government announced that by 2006 the submarine fleet would be cut to 10 SSNs and 4 SSBNs.

From the mid-1990s the SSN role began to shift to power projection. Purchase of US Tomahawk land attack (TLAM) cruise missiles in 1995 enabled them to catch up with the US SSN land attack capability first demonstrated in the 1991 Gulf War. The first UK SSN fitted with them, *Splendid*, saw action in the 1999 NATO war against Serbia. The *Trafalgar* class followed, integrated into US forces in the Gulf and Mediterranean.

In April 2001, the Submarine Service celebrated its centenary, overshadowed by increasing overstretch and a new propulsion system crisis. A serious generic design/manufacturing fault had been found in the primary cooling circuit of *Tireless*; repairs took a year. Two UK SSNs fired TLAM against Afghanistan targets in 2001; and two (with 12 US ones) took part in the 2003 invasion of Iraq. Long deployments in warm waters took a toll on the often cutting edge technology, while SSN service life had to be extended from 25 to 33 years. In 2011, two SSNs participated in NATO's Libyan campaign, conducting close-in intelligence gathering and firing Tomahawk cruise missiles. The last of the *Swiftsure* class had to be scrapped in 2010; and delays to the new *Astute* SSN class meant that, in 2012, *Turbulent* went, leaving five nuclear-powered attack submarines

barely able to sustain SSBN delousing and Perisher training, let alone anti-submarine warfare exercising.

The sad saga of the *Astute* programme highlights anxieties about a viable future for the Submarine Service. In 2002, *Astute*'s construction was three years behind and several hundred million over budget: 200 US designers and managers, including a new project director, had to be brought in to help. Launched in 2007, problems abounded, including design flaws, unreliable equipment and poor construction; and her cost had rocketed to almost £1.4bn. Soon after commissioning in 2010, *Astute* ran aground; then a disaffected sailor shot dead one officer and injured another. The Royal Navy pleaded that all issues had been addressed, and she was 50 per cent quieter than the *Trafalgar* class.

Seven *Astute* class are being built, the last planned to enter service in 2024; so most of the surviving four *Trafalgar* class will need to remain in service until then and *Astute* boats be worked harder, or reduce commitments. A recruiting crisis has led to a shortage in engineers and younger officers, and allowing women in submarines. There is fear of a serious, unconcealable nuclear accident, which could 'be the end of the Submarine Service'. The worst such accident yet was the farcical 2009 collision between *Vanguard* submerged on 'deterrent' patrol and the French patrolling SSBN *Le Triomphant*, miraculously causing only minor mutual damage. This is described without any discussion of the appalling implications.

The last chapter of *The Silent Deep* covers the 'Successor' SSBN programme (recently reviving the name *Dreadnought*), final Parliamentary approval for which was given on 18 July 2016. Blair conceded in his 2010 memoirs the commonsense and practical arguments against Trident renewal, including huge expense for no military use; but so far the perceived loss of status, not least relating to the French, has prevailed.

The new SSBN design incorporates a Common Missile Compartment (CMC) with that planned in the US *Ohio* class SSBN replacement (to be named *Columbia*), the programme for which has just been approved. It is unprecedented for the Royal Navy to be planning to build it first. Because of delays in the UK decision, the *Vanguard* class service life has to be extended to 37 years. Running them on for 6-8 years longer than the *Resolution* class is another leap in the dark, as is getting *Dreadnought* into service by the early 2030s until possibly the 2060s. Again, US know-how and personnel are indispensable; the highest grade steel has to come from French monopoly suppliers, and costs have already grown to £31bn. Yet the authors remain chipper that it will happen, citing Cicero that 'the safety

of the people is the chief law'. However, this could be turned on its head by the staunchly anti-nuclear Labour leader, Jeremy Corbyn.

A disconcerting epilogue opens by returning to *HMS Tireless*, eulogising her recent decommissioning, joining 18 other nuclear submarines awaiting dismantling. With *Dreadnought* rusting in Rosyth since 1980, the cost of maintaining them is rising and space running out as the Ministry of Defence struggles to find an environmentally safe and cost-effective means of disposal. In a poignant ending, the authors confront the reality that the Submarine Service's 'glory days' are leaving a dark, irresponsible legacy of still unresolved radioactive contamination, and a barely viable surface Fleet.

As the UK government and Royal Navy anxiously persist with the increasingly vulnerable *Astute* and new *Dreadnought* programmes, I found this book – with its photos, illustrations of past and present submarines, decode of acronyms, and detailed maps of the Falklands campaign – valuable in understanding what lies behind their mindset.

*Peter Hennessy & James Jinks, The Silent Deep: The Royal Navy Submarine Service since 1945, Penguin Books, 2016, paperback ISBN 9780241959480, £12.99*

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## Ageing Trident

*In June 2016, following a major refit, the British nuclear armed submarine HMS Vengeance attempted to fire a Trident missile without its nuclear warheads. The submarine and crew passed muster, but the Trident missile veered off course, apparently towards the coast of the United States, before it was destroyed.*

*According to the US Department of Defence, the Trident II D5 missile has completed its 26<sup>th</sup> year of deployment and 'has reached its original design life goal'. As the DoD commented, 'like any other ageing weapon system, increased maintenance and repair will be required to sustain a safe, reliable and accurate strategic weapons system'. The DoD also notes that the 'US Navy has been actively engaging with the company to "aggressively lower" the amount of money it spends maintaining Trident'. The failed test was kept secret from the public, although Theresa May, newly appointed UK Prime Minister, was informed. She neglected to inform MPs of the failure when, weeks later, Parliament was asked to approve the construction of four successor Dreadnought class submarines to carry the ageing missiles. The budget for the new submarines runs to tens of billions of pounds.*