



Submarines

Canada has operated submarines since 1914 when British Columbia acquired two small boats from an American shipyard because of local fears about German raiders during the First World War. Responsibility and operation of the boats was quickly transferred to the navy. In the decades that followed, the submarine service was small, with the Royal Canadian Navy (RCN) commissioning only four boats, two captured German U-boats and two British H-class vessels.

In the years following the Second World War, Canadians maintained the skills necessary to operate submarines primarily with boats loaned to the RCN by Britain. Cold War requirements brought Canada back into the submarine game and, in 1962, approval was received for the acquisition of the Navy's Oberon-class attack submarines, the last of which was retired in 2000.

Today, Canada's current submarine fleet comprises four Victoria-class diesel-electric attack submarines (SSKs), which replaced the Oberon-class. Divided between the Atlantic and Pacific fleets, the Victoria-class is made up of HMCS *Victoria* (876), HMCS *Windsor* (877), HMCS *Corner Brook* (878), and HMCS *Chicoutimi* (879).

These vessels are renovated British ships of the Upholder-class (Type 2400s). Built for the Royal Navy in the late 1980s and early 1990s, the boats were purchased second-hand by Canada in 1998. After significant work to integrate RCN standard technology and equipment – a process known as Canadianization – they were delivered to the RCN between 2002 and 2004. Crewed by approximately 50 officers and sailors and displacing 2,475 tonnes (submerged), the Victorias are capable of speeds of up to 20 knots and an impressive range of roughly 8,000 nautical miles (at 8 knots). They are larger than most modern diesel-electric submarines, though only half the size and speed of their larger nuclear counterparts.

The Victoria-class has several missions and functions. They were built as anti-submarine warfare (ASW) platforms to locate and destroy Soviet submarines during the Cold War. Because hunting enemy submarines is done primarily by acoustic detection the best platform to detect and destroy an enemy boat has long been another submarine.

Despite considerable difficulty integrating them into the RCN – and the long period of update and initial renovations – Canada's submarines are highly capable assets. Armed with the US-made Mark 48 torpedoes and advanced sensor systems, the Victoria-class has become an excellent tool for surveillance, defence, and deterrence along Canada's coasts.

Sometimes described as a strategic asset, these boats have become a 'special force' component of the RCN due to their ability to control space through their very existence. Because they cannot be easily detected, the presence (or assumed presence) of an attack submarine serves as a deterrent to potential adversaries, altering that opponent's decision-making across an entire maritime theatre.

These vessels operate on both the East and West Coasts and have been deployed abroad alone and in partnership with Canada's allies. They are not, however, capable of regular operations in the Arctic and have made only symbolic journeys north. A diesel submarine operates underwater on batteries and those batteries rely on a diesel engine to recharge, a process that can only take place on the surface, where diesel exhaust can be vented. As such, Canada's submarines have a limited submerged range. While this is suitable for the vessels' tactical employment in combat and surveillance, it makes under-ice operations dangerous and the Victoria-class does not deploy under ice.

In times of conflict, these submarines would be Canada's most effective means of countering enemy submarines or surface craft to ensure the safety of Canada's coasts. They are also the best platforms for operating in dangerous environments where surface combatants would be at risk from air- or ground-based missile attack. Their combat capability is augmented by highly sensitive acoustic, electro-optic and electromagnetic sensors, as well as an advanced bow sonar. As a result, they can monitor large undersea areas for other submarines and detect and track surface vessels at great distances.

Compared to the larger nuclear submarines operated by some of Canada's allies, the smaller size of the diesel-electric boats makes them ideal vessels for operating close to shore – an increasingly important task in modern military operations. Their electric propulsion system also makes them very quiet, providing a decisive advantage, especially during operations in shallow waters and strategic choke points.

Canadian submarines are also a useful contribution to alliance training activities, particularly with the United States. Because the US Navy operates no diesel-electric submarines, the Victoria-class regularly trains with American ships to prepare for combined operations against an enemy possessing a similar capability. Canada also participates in a global 'water space management' regime, in which allied submarine operators share information about the movement of their submarines to prevent a collision. As a member of this exclusive 'sub club,' Canada gains privileged access to naval intelligence that would otherwise not be available to it.

The Victoria-class submarines have been active at sea since 2003. In that time, these boats have undertaken a diverse set of security and defence missions. They have participated in exercises at home and overseas, patrolled Canada's coastal areas – including the Arctic (although not under the ice) – and worked in partnership with Canada's allies in international operations such as Operation *Caribbe*, a counter-drug operation in the Caribbean and Eastern Pacific, and in 2018, as part of Operation *Projection – Asia-Pacific*, a Canadian submarine visited Japan for the first time in many years.

Canadian submarine operations experienced a pause in operations and were not active in 2019 and 2020. All four of the submarines spent time in various stages of maintenance or modernization. Because submarines are complex machines, they require regular maintenance, including preventive and corrective maintenance, engineering upgrades, and hull survey and remediation. HMCS *Victoria* returned to sea for trials in September 2020 after routine maintenance, repairs and upgrades, including the installation of a new sonar. A new capability was also tested in fall 2020 as *Victoria* worked with a helicopter hovering overhead to practice transferring equipment and personnel to the submarine. HMCS *Corner Brook* finished its extended docking work period in

June 2021 and returned to operational status, HMCS *Windsor* finished a maintenance period in March 2021 and returned to sea, participating in Exercise *Cutlass Fury* in September 2021. HMCS *Chicoutimi* returned to sea in 2023.

While valuable assets, Canada's submarines are ageing and increasingly in need of regular and expensive maintenance. In 2024, the Government of Canada announced plans to replace the fleet with a new class of diesel-electric vessels. Canada now plans to acquire up to 12 new submarines and is in the process of determining the design and builder for these vessels.

