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## The Partnership Between Canada and Britain in Winning the Battle of the Atlantic

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# The Partnership Between Canada and Britain in Winning the Battle of the Atlantic

**Correlli Barnett**

**H**ow wide is the Atlantic? This title of our conference has a very direct operational meaning in regard to the sea campaign which decided the Western democracies' war with Nazi Germany. Well, how wide? For a slow convoy steaming at around 6-7 knots, the Atlantic was up to three weeks wide – three weeks of enduring the worst of weather and the hazards of U-boat ambush.

On this constant round traffic of convoys between North America and the United Kingdom utterly depended not only Britain's industrial war effort, but also her very national life itself. It was estimated in 1937 that Britain in wartime would need 47 million tons a year of imports. This gigantic reliance on overseas supplies was the legacy of the Victorian adoption of Free Trade back in the era of unchallenged British world mastery – mastery naval, financial, and industrial. In that era, Free Trade had brought enormous peacetime economic benefits to Britain – above all, abundant cheap food from the Americas and the Antipodes. But in the very different era of the two 20th Century total wars – the era of the U-boat – this dependency on seaborne imports rendered Britain's existence more precarious than that of her allies or her main European enemy.

By comparison, that enemy, Nazi Germany, being a Continental power, suffered from no comparable economic vulnerability.

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Let me remind you that Britain's wartime imports across the Atlantic included not only bulk supplies like raw materials, foodstuffs, and all the oil needed to keep the Royal Air Force flying and the Navy at sea, but also such absolutely indispensable high-value goods such as advanced machine-tools, aircraft, trucks, radio and radar components, and weaponry – kit which British industry either could not make in sufficient quantity, or could not make at all.

Here's one insight into just how precarious Britain's position became at the worst moment of the Atlantic struggle. In late 1942, it was estimated that Britain's cut-to-the-bone import requirements for 1943 would be 27 million tons – as against the 47 million deemed essential back in 1937. In January 1943, actual import tonnage was less than half of what it had been in January 1941. In the three months, November 1942 to January 1943, nearly half of Britain's consumption of raw materials – the very stuff of war production – had come from stocks. When these were exhausted, what then?

This British reliance on the 2,500-mile-wide Atlantic convoy route had been vastly increased in the summer of 1940, when all Europe was finally lost to German occupation. Before that loss, some 20 per cent of British imports had come from relatively nearby sources like the Continent itself, the Mediterranean region, and North Africa. By 1941 that proportion had dropped to four per cent. Meanwhile, the proportion of British imports coming from across the North Atlantic had risen from 36 per



An Allied convoy makes its way across the North Atlantic.

cent to 54 per cent. This in turn meant a much larger commitment of merchant shipping and naval escorts, with “round-voyage time” rising from an average of 99 days before the fall of France to 122 days afterwards.

What’s more, the fall of France hugely swung the strategic balance at sea to Germany’s advantage. Now the bases of both U-boats and surface raiders could be brought forward from Germany’s North Sea coast to French Bay of Biscay ports, so giving speedy direct access to the Atlantic. U-boats being repaired or replenished in their French “pens” beneath 20-foot-thick concrete roofs would be invulnerable to the heaviest bombs then possessed by Royal Air Force Bomber Command. Soon a Luftwaffe squadron of long-distance Focke-Wulf Condors arrived in France to work with the U-boats. In this combination of the long-distance U-boat, surface raiders, and the Luftwaffe, Britain faced a peril far more dangerous than in the Great War.

No wonder, then, that the Prime Minister, Winston Churchill, wrote to President Franklin D. Roosevelt at the end of 1940:

The decision for 1941 lies upon the seas. Unless we can establish our ability to feed this Island, to import the munitions of all kinds which we need, unless we can move our armies to the various theatres where Hitler and his confederate Mussolini must be met, and maintain them

there, and do all this with the assurance of being able to carry it on till the spirit of the Continental Dictators is broken, we may fall by the way, and the time needed by the United States to complete her defence preparations may not be forthcoming.

In March 1941 Churchill issued a directive proclaiming that what he called “the Battle of the Atlantic” had begun, with an enemy-attempt “to strangle our food supplies and our connection with the United States.” He could have added: “and our connection with Canada.”

The fortunes of this battle were to sway to and fro for the next two years – measured by a grim accountancy of comparative losses: the ratio of merchant ships sunk to U-boats destroyed or captured; the relative numbers of trained British and Allied merchant seamen and German submariners blown up, drowned or maimed set against the numbers of fresh volunteers coming forward to replace them; the total tonnage of shipping sunk measured against the output of Allied shipyards, and of sunk U-boats measured against Germany’s new production; the “productivity” of U-boats, in terms of ships sunk per U-boat per sortie.

To the opposing admirals and their staffs, these statistics were the equivalent of profit-and-loss accounts or monthly cash flow figures to the directors of hard-pressed rival businesses. They were scanned with equal trepidation and

hope by Grand Admiral Eric Raeder, the head of the German Navy, in Berlin, and by Admiral of the Fleet Sir Dudley Pound, the First Sea Lord, in London; by Rear Admiral Karl Doenitz in his U-boat Command bunker near Lorient, and by the Commander-in-Chief Western Approaches in Liverpool (Admiral Sir Martin Dunbar-Nasmith until February 1941; Admiral Sir Percy Noble until November 1942; and thereafter Admiral Sir Max Horton, himself a submariner).

It is perhaps too easy for an academic conference such as ours to discuss historical topics in dry documentary terms removed from actual human life in the past. In the present case of the Battle of the Atlantic, we must bear in mind that the comparative accountancy of merchant ships and U-boats sunk signified a truly appalling experience at sea. We have to imagine what it was like for the crews of the heavy-laden cargo ships labouring slowly through the huge Atlantic seas, always conscious that at any moment a torpedo could consign them suddenly to those seas in frail lifeboat or raft. We have to keep in mind the seamanship and tactical skill of the crews of the naval escorts – crews who were cold, wet, and exhausted from keeping watch on open bridges swept by spray or green water. Crews with their eyes and nerves strained by the unremitting vigil for shadowing Focke-Wolf Condors, for the U-boat's squat conning tower or periscope plume or torpedo track amid the seaway. The Battle of the Atlantic would be

decided by several factors, strategic and technological, but above all, it would be decided by morale.

From the beginning of the war, the Dominion of Canada had provided the absolutely essential North American terminal of this 2,500-mile-wide bridge of convoys. The port of Halifax, Nova Scotia, became the assembly point for merchant shipping bound for Britain from all parts of the Western Hemisphere, while St. John's, Newfoundland – yes, I know Newfoundland was then a Crown Colony – supplied a vital, if at first primitive, naval base for the Royal Navy on the Western seaboard of the North Atlantic.

Let's be clear: given US neutrality until the end of 1941, there could have been NO Battle of the Atlantic, and NO British survival if Canada had not served from the start as that indispensable North American buttress of Britain's ocean bridge.

But here we come to a paradox. In the 1930s, Canadian Prime Minister Mackenzie King had steadfastly refused to sign up to any kind of joint Commonwealth strategic planning proposed by Britain. By 1937, Britain, as the Mother Country morally responsible for defending the whole Empire, was facing what the Chiefs of Staff reckoned to be the worst possible case – a triple threat by Germany, Italy and Japan to the Empire right across its global spread. Remember, none

A rare view of a German Type VIIc U-boat in the mid-Atlantic.



Photo courtesy of Marc Milner

of the Dominions had strong enough armed forces to defend themselves. In particular, Australia and New Zealand were depending on a British promise to despatch the main battlefleet to Singapore in the event of Japanese aggression.

So naturally enough, Britain wanted to maximise the Empire's capabilities for collective defence. That meant the kind of joint planning and prior collective assignment of forces under a common strategy as was achieved in NATO in the 1950s. This was what the British hosts tried to achieve at the 1937 Commonwealth Conference. In the words of Lord Derby, the Secretary of State for War,

The defence problem is like a great puzzle composed of many different pieces, of which the Mother Country and the Dominions each held some pieces. We want to piece these together so as to make a complete picture.

But Mackenzie King would have none of it. In the first place, Canada, unlike Australia, faced no potential danger of attack and had no need for British protection. And secondly, as you well know, ever since the 1923 Imperial Conference, King had been determined to establish Canada as a completely independent power with its own foreign and defence policies. So at the 1937 Conference, King cut Lord Derby off at the knees, telling him that,

I think I ought to make it clear that as to what extent Canada would participate in a war at any time must be considered a matter which her own Parliament will wish to decide.

In the event, of course, Canada's own parliament DID freely decide to participate in the war against Nazi Germany, and to the maximum extent of Canada's resources. So despite Mackenzie King's peace-time huffings and puffings, Canada would after all fight as a close ally of Great Britain.

But just the same, Canada in September 1939 had little enough to contribute to a struggle against the U-boat. The Royal Canadian Navy then consisted of only seven destroyers and five minesweepers, and those were divided between her Atlantic and Pacific coasts. In January 1939 it had been planned to increase the number of destroyers to 18, plus 16 minesweepers and eight anti-submarine vessels. The new destroyers, at 2,000 tons and with eight 4.7-inch guns, were really almost light cruisers, and they would take three years to build. So in the meantime, Canada virtually developed two navies side by side – the regular Navy which would operate the big destroyers, and a reserve navy which manned the humble corvettes on convoy duty – that is to say, the Royal Canadian Naval Reserve and the Royal Canadian Naval Volunteer Reserve. And it was these reservists manning the corvettes which saw most action in the early years.

The Canadian naval authorities faced a special problem of expansion: unlike the Royal Navy, they had no existing large training establishments and training staffs. This meant that crews of corvettes were routinely pillaged

HMCS *Dundas*, a Flower-Class corvette photographed shortly after it was commissioned in April 1942. In 1940 the RCN ordered a second six ship program of short forecastle corvettes which were outwardly similar to the original program. The most important change, water-tube boilers, is not evident, but her lack of minesweeping gear is, and her bridge wings have been extended.



Royal Canadian Navy photo E-2682, courtesy Marc Milner



Royal Canadian Navy photo NF-894, courtesy Marc Milner



Photo courtesy Marc Milner

The principle actors – Left: Admiral Sir Max Horton, RN, Commander-in-Chief Western Approaches Command from November 1942; Centre: Rear Admiral Leonard Murray, RCN, Commander-in-Chief Canadian Northwest Atlantic Command from April 1943; Right: Grand Admiral Karl Doenitz, Commander of the German U-boat fleet.

of their best officers and seamen to man the new training centres or to act as the experienced cadres of new crews in new corvettes. What's more, the first Canadian-built "Flower-class" corvettes in spring 1941 lacked the latest kit and design modifications of their British counterparts. Here were all the classic problems and costs of belated and improvised military expansion.

Only in June 1941 did the RCN really join the Battle of the Atlantic, when the Newfoundland Escort Force came into service. Commanded by a British-born career sailor in the RCN, Commodore Leonard Murray, it consisted of 13 destroyers (seven Royal Navy, six RCN) and 21 corvettes (17 of them RCN). Its task was to protect convoys between points east of Newfoundland and south of Iceland.

I now want to summarise the evolution of Canada from a very junior role in the Atlantic command-and-control system to a full and equal partnership with Britain. But this is where Canada's colossal neighbour comes into the story. I can only telegraph the step-by-step involvement of the United States in the Atlantic battle in the course of 1941 even while she remained technically neutral. In January the US Navy set up a new "Support Force, Atlantic Fleet,"

composed of destroyers and an air component. American naval and air bases for the new Support Force were rapidly built at Argentia, Newfoundland (leased from Britain), in Greenland, near Reykjavik in Iceland, and in Northern Ireland and Scotland. On 11 April 1941, the American government extended the so-called "Security Zone" off the coasts of North and South America eastwards to 26 degrees west, or to within some 750 sea miles of Portugal. Within this zone the US Navy would report the position of enemy U-boats and warships to the British Admiralty, leaving it to the Royal and Royal Canadian Navies to do the rest.

Then at the Argentia summit between Roosevelt and Churchill in August 1941, it was agreed that the United States would assume overall responsibility for convoy protection west of the "Mid-Ocean Meeting Point" – MOMP for short – south of Iceland. So the Canadian-commanded Newfoundland Escort Force now passed from the control of the British C-in-C Western Approaches to Rear-Admiral A.L. Bristol, US Navy, commanding the Support Force, Atlantic Fleet.

The point to note here is, that this major decision in regard to the deployment and command of the Royal Canadian Navy was taken

without any consultation with the Canadian government or naval authorities. Well, Churchill for his part certainly saw all the Dominions as subordinate to British strategic decisions – he showed this in his relations with Australia and New Zealand over the use of their army divisions in the Middle East and Far East. Albeit from a different perspective, Roosevelt and his colleagues likewise took it that London was the one centre of decision they had to deal with in regard to the armed forces of that strange hybrid, the British Commonwealth.

Canada, therefore, was very much the junior partner. But here is another paradox. Though technically still neutral, the United States had become by the autumn of 1941 a fighting participant in the Battle of the Atlantic equal in weight to Great Britain. But in the months after being bombed and torpedoed into full belligerence by the Japanese attack on Pearl Harbour on 7 December, the US role in the Atlantic actually shrank. The reason was simple: the war in the Pacific left the US Navy desperately

short of ships. And so by mid-summer 1942, the Royal Canadian Navy had replaced the US Navy as the Royal Navy's principal partner in the Atlantic – carrying 46 per cent of the burden to the British 50 per cent, and the American four per cent.

Even so, an American admiral continued to be responsible for convoys west of the CHOP line (Change of Operational Control) at 26 degrees west. This anomaly was not to be resolved until an Atlantic Convoy Conference in Washington in March 1943. For Canada, this conference proved a turning-point in more than one sense. First, it was the first genuinely tripartite conference held on the Battle of the Atlantic. Second, it was convened at Canada's own request. And third, it resulted in the Royal Canadian Navy taking over from the US Navy the responsibility for the Atlantic west of a new CHOP line at 47 degrees west. To discharge this responsibility, a Canadian North-West Atlantic Command was to be set up under Leonard Murray, now a Rear-Admiral, as C-in-C, and based in Halifax.

It certainly helped the Canadians at this conference that Ernie King, the US Chief of Naval Operations, with his eyes on the Pacific war against Japan, was only too glad to be rid of the burden of the North Atlantic. What matters is, that Canada had now achieved an equal partnership with Great Britain in the key campaign of the war against Nazi Germany.

And this partnership had come about just when that campaign seemed to be on the point of being won by the U-boat. So now I'm going to turn to the protracted struggle itself.

We are, of course, talking about the second Battle of the Atlantic against the U-boat, the first being narrowly won by the Royal Navy in 1917. Both sides drew their own lessons – or illusions – from that experience; lessons or illusions which in the interwar period they then applied to planning for a new conflict.

Seamen loading depth charges onto throwers aboard the Canadian corvette, HMCS *Mayflower*, in 1941.



Photo courtesy Marc Milner



The *Robert Tuttle*, on fire and sinking after being torpedoed by *U-701* on 12 June 1942. Tankers were high priority targets due partly to the oil they carried, but also because of their size.

In the Royal Navy's 1917 victory over the U-boat, new technology had certainly played its part. Hydrophone listening gear helped to locate a U-boat lurking beneath the surface. The depth-charge lobbed over the stern of a escort could crack its pressure hull if close enough. Flying-boats and airships of the Royal Naval Air Service had patrolled home waters on the lookout for surfaced submarines.

Yet far more important still as an ingredient in the victory was the convoy system itself. Its success really lay in an equation of space and time. As more and more shipping became grouped into convoys, the U-boat found the seas emptied of prey. It could cruise for days without sighting a ship. If and when it did encounter a convoy (and even a large convoy was a minor object in the vast wastes of the sea), it only had time for a single attack before the convoy steamed steadily out of range. Moreover, the convoy was an offensive rather than merely defensive system, because it drew the U-boat within range of the escorting destroyers.

Yet in the 20 years of delusory peace between the world wars, the British Admiralty forgot this hard-learned lesson. Can you believe it, but not until 1937 was it accepted that to bring in Britain's estimated annual wartime requirements of 47 million tons of imports would once again demand a full convoy system. What's more, in the rush of belated rearmament there was little spare capacity in British shipyards to build the huge numbers of escorts needed. Royal Air Force Coastal Command too lacked aircraft of sufficient range for ocean patrolling; lacked as well bombs capable of even damaging, let alone sinking, a U-boat. In any case, the need for close cooperation between surface escorts and maritime airpower had also been forgotten.

Why did the Admiralty in the 1930s so neglect the operational lessons of the Great War? The answer was simple. The Royal Navy reposed an exaggerated faith, shared by the Royal Canadian Navy, in an improved device for detecting submerged U-boats. This was the ASDIC (from Allied Submarine Detection



Investigation Committee) echo-sounder – today called “sonar.” But unfortunately the German U-boat arm had by 1939 adopted a new tactic (first tried out towards the end of the Great War) of attacking convoys at night on the surface. This nullified Asdic. Moreover, the U-boat under diesel power on the surface was much faster than cargo ships, and so could hang on to a convoy in order to launch sustained strikes.

Mercifully, the German naval staff in the 1930s, for its part, had neglected expansion of the U-boat arm in favour of commerce raiders – 12,000-ton “pocket” battleships like the *Admiral Graf Spee*, the 32,000-ton fast battleships *Scharnhorst* and *Gneisenau*, and the two 51,000-ton super battleships, *Bismarck* and *Tirpitz*, still building in 1939. So on the outbreak of the Second World War, Germany had available only 21 operational U-boats suitable for Atlantic sorties, as against the estimated 200 needed to cut Britain’s oceanic lifeline for good.

Both sides therefore began the second Battle of the Atlantic in comparable states of unreadiness. Indeed it was the threat of German surface raiders (including heavily-armed disguised merchant ships) that gave the Admiralty the greater anxiety during the early months of the war. They ranged the North and South Atlantic and the Indian Ocean, sinking merchantmen at far distant points. The tonnage sunk was not vast, but the hunt for the elusive raiders stretched the Royal Navy’s resources to the limit.

Two things ushered in the full ferocious struggle with the U-boat. The first I’ve already mentioned – the establishment in 1940 of U-boat bases on France’s Atlantic coast. The second was the ultimate failure and destruction of Germany’s surface ships in which Grand Admiral Raeder had misplaced such faith. This failure was consummated by the sinking of the *Bismarck* in May 1941. So the hour of the U-boat had come.

The Royal and Royal Canadian Navies now faced perhaps the most formidable enemy admiral in the history of British seapower – Karl Doenitz, a man sharp of mind and ruthless of will. Doenitz had now perfected his new system of U-boat warfare. By means of an elaborate radio communications net and the Enigma enciphering machine, he centrally directed his offensive from

his command bunker near Lorient. Once a convoy had been located by a Focke-Wolf Condor, a U-boat, or, for long periods, by reading the Admiralty’s top-secret convoy ciphers, Doenitz would concentrate “wolf-packs” of up to 40 U-boats in a sustained attack. Very different from the lone cruising U-boat of the Great War.

There was another big difference. In that earlier conflict, the U-boat offensive had been limited to the Western Approaches round the British Isles – which was one reason why Canada was then little involved. But this time round, Doenitz’s new and bigger U-boats could carry their offensive far into the Atlantic. This meant that instead of merchant ships coming together into convoys for the final run to British ports, as in the Great War, they would now have to sail in convoy right across the Atlantic. Hence the new and vital importance of Canada as the western buttress of the system. But in turn, the need to protect convoys over oceanic distances meant a far greater need than in the Great War for escort vessels and patrolling aircraft.

The outcome of the conflict depended on the ability of these vessels and aircraft to find the exact position of U-boats, and then sink them. Pretty obvious, I know, but it took the navies and air forces of Canada and Britain three and a half years of war fully to develop that ability.

The basic requirement for both the finding and the sinking lay in a large enough number of appropriately equipped escorts and aircraft. The key here is “a large enough number.” Take the basic work-horse and weapons-platform of the Atlantic battle, the corvette. In 1939-41, there was a desperate shortage of these – partly because Britain’s pre-war rearmament programme had given priority to building ships for the battlefleet; partly because, to begin with, the wartime output of British and Canadian yards was so limited. Only by the end of May 1941 had enough corvettes been built to enable the first convoy to be escorted the entire way across the Atlantic from Halifax to Britain instead of leaving an unprotected gap in mid-ocean. At this time, 99 new corvettes were building – and 55 of them in Canada.

I should mention here that, by the climax of the Atlantic battle in 1942-3, Canada had created an essentially corvette navy, with no fewer than 120 of the vessels on the strength of the RCN.

Bridge personnel of HMCS *Ottawa* watch as a pattern of hedgehog bombs hit the water.

As a weapons platform and a living space, the Flower-class corvette had the disadvantage that it rolled like a barrel. And to begin with, Canadian-built corvettes had only a magnetic compass and no gyro-compass. The Flowers were powered by an obsolete design of a four-cylinder triple-expansion engine, since British industry lacked the capacity for large-scale production of diesels. Because of this, the corvette, at a maximum speed of 14-15 knots, was actually slower than a U-boat's 18 1/2 knots on the surface.

What's more, better replacements were slow to come out of the shipyards. In 1942, delivery of the new River-class frigates was still being awaited. Only in September of that year did the Royal Navy have enough frigates and destroyers to create its first hunting group to serve as a supplement to the close convoy escort, with the specific task of chasing U-boats to the death.

Comparable delays occurred in the development of on-board devices for pinpointing a surfaced U-boat's position. Only after mid-summer 1942 were escort ships progressively fitted with radar and HF/DF [High Frequency Direction Finding]. Already installed for some time in shore stations, HF/DF located a U-boat from its radio transmissions, and of course, Doenitz's system of central direction demanded copious use of radio. Even then, Canadian ships lagged behind Royal Navy escorts in getting radar and HF/DF – a penalty of dependence upon the manufacturing capacity of other countries. In any case, it was not until early 1943 that ship-borne HF/DF and radar become standard kit in all Atlantic escorts, British or Canadian.

And what about the means of killing U-boats once they'd been located – apart, that is, from the traditional gun and the depth charge dropped over the escort's stern? Because of bureaucratic rivalries and obstruction within the British naval research establishments, it was not until late 1942 that escorts began to be equipped with the



Photo courtesy Marc Milner

“Hedgehog,” a forward-firing battery of 24 mortar tubes lobbing a broad spread of 65-pound high-explosive bombs over a submerged U-boat.

In the air, there were similar problems of developing the means both to locate a U-boat and then destroy it. Only in mid-1942 were the two air forces equipped with a shallow-setting depth charge filled with a powerful new explosive, Torpex, and lethal to U-boats diving or just submerged. As for finding U-boats in the first place, the British aircraft industry had failed to produce effective long-range maritime aircraft in sufficient quantity, and so RAF Coastal Command and the Royal Canadian Air Force became largely dependent on the American Consolidated PBY-5 Catalina flying boat, and the Mark II B-24 Liberator bomber. Just the same, such aircraft operating from bases in Canada, Iceland, and the British Isles lacked the range to give continuous air cover across the whole North Atlantic. And it was in the resulting 700-



A Consolidated Liberator of No.10 (BR) Squadron, RCAF, Goose Bay, Labrador, Newfoundland, May 1943.

mile wide “mid-Atlantic air gap” that in 1942 Doenitz concentrated his ever more lethal offensive.

The British and Canadian naval staffs recognised that only Very Long Range (VLR) aircraft were capable of maintaining continuous patrols over this gap. So for many months in 1942 they pleaded to be allotted just 40 such aircraft. But in any case, RAF Coastal Command also lacked enough medium-range bombers for the task of attacking U-boats in the Bay of Biscay on their way to and from the Atlantic. So Coastal Command and the Admiralty also urgently requested that bombers be transferred from the strategic air bomber offensive on German cities to the Battle of the Atlantic.

Yet Winston Churchill failed to give speedy and decisive backing to either of these requests. Here was perhaps the most potentially disastrous episode of his whole conduct of the Battle of the Atlantic. Why do I say this? Because for want of a handful of very-long-range 10-cm-radar-equipped aircraft, Britain and Canada very

nearly lost the Battle of the Atlantic in late 1942 and early 1943.

To be beaten by the U-boat would mean not only British industry at a standstill, the nation starving, and, for that matter, Bomber Command grounded for want of fuel, but also no possibility of a later liberation of Western Europe by British, Canadian and American armies. As Sir Dudley Pound wrote at the time: “If we lose the war at sea, we lose the war...”

So here was the absolute crux of the conflict with Nazi Germany. There is a fascinating parallel between U-boat Command’s attempt to defeat Britain by wrecking her economy; and Bomber Command’s attempt to defeat Germany likewise. The question in 1942 was: who was winning the race? And the answer clearly was, based on the evidence, the U-boat. Over the full year 1942, Doenitz’s U-boats sank more than six million tons of shipping, as against the relatively slight damage so far done by the bombers to German industry. Yet at the beginning of 1943, RAF Coastal Command and the RCAF

still had only received a handful of the VLR aircraft they needed.

This was not the only punch-up between the Admiralty and the Air Staff in 1942. The key to pinpointing a U-boat's conning tower or even periscope amid the clutter of a seaway lay in the new 10 centimetre ASV (Air-to-Surface-Vessel) Mark III radar. Moreover, this could not be detected by a U-boat's Metox anti-radar device. Yet two years after testing the prototype, not a single ASV Mark III had yet seen service with the RAF or the RCAF. Why the colossal delay? Answer, production muddles in the British radio industry – and that was despite rescue by American supplies of the magnetron thermionic valve and precision components.

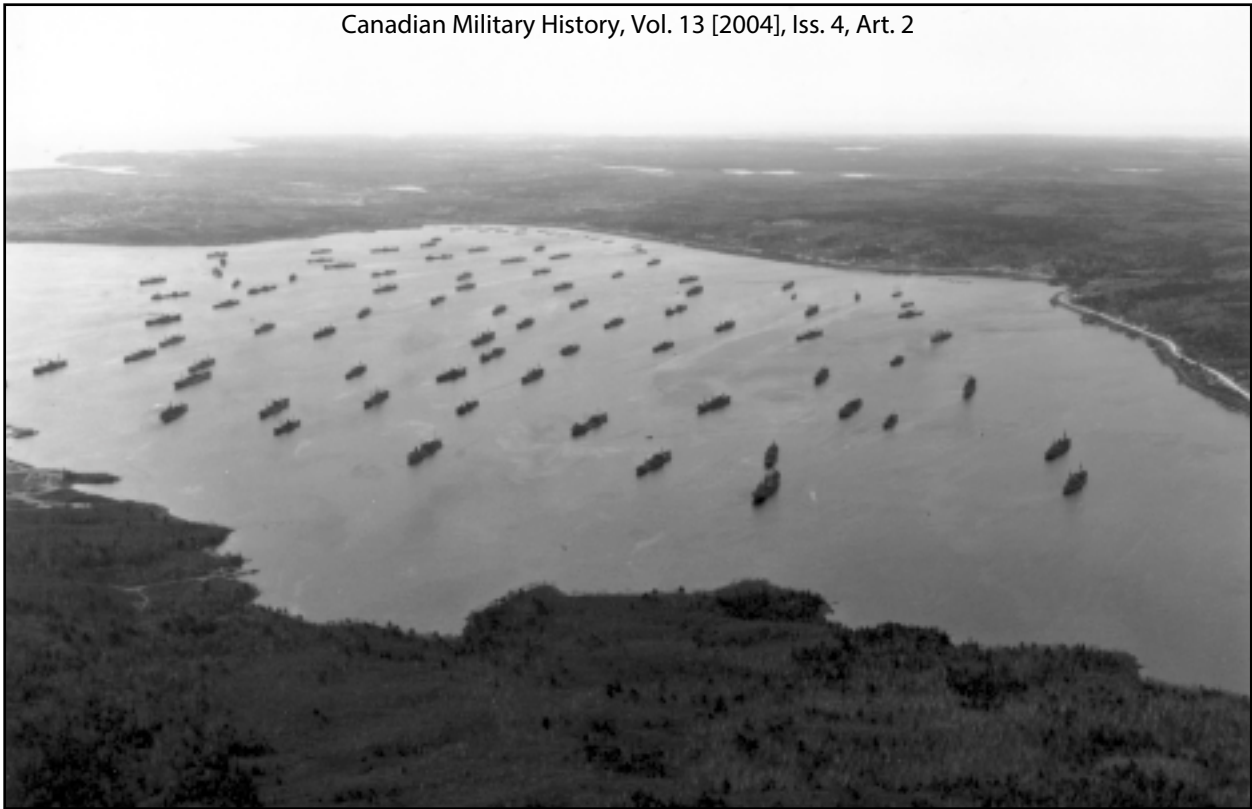
But there was another reason too. Technically the ASV III was virtually the same as Bomber Command's target-finding device H2S. So fierce competition raged between the Navy and the Air Force for the available hand-built production. Only in November 1942, with a growing likelihood that Britain might lose the Atlantic battle and hence the war, did the British government take the decision to convert 40 H2S sets into ASV Mark IIIs. Just the same, the first Coastal Command squadron was not to be equipped with them until February-March of 1943 – perilously late.

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**Below:** A Consolidated Catalina flying boat, the mainstay of Allied medium-range air patrols in the Atlantic.

**Right:** Ground crew load a depth charge aboard a Consolidated Canso (a Canadian-built Catalina) on No.5 (BR) Squadron, RCAF, Dartmouth, Nova Scotia, October 1941.





NAC PA 128093

A convoy assembling in Bedford Basin, Halifax, 1941.

And I mean “perilously late” in terms of a U-boat offensive now rising to its climax, with some 220 boats on the hunt in the Atlantic. And a key factor in this peril was one that I have not so far mentioned – the top secret struggle between Britain’s Government Code and Cipher School at Bletchley Park (that is, the “Ultra secret”) and the German *B-Dienst* to read each other’s signals but at the same time keep their own inviolate. The swinging fortunes of the frontline battle at sea over the previous two years closely reflected the current balance of this secret struggle.

From spring 1941 until February 1942, Bletchley Park was able to read the voluminous radio traffic between U-boat Command and its U-boats transmitted via the “Enigma” electro-mechanical enciphering machine. This enabled the Admiralty to re-route convoys clear of U-boat ambushes, as well as locate U-boats (and their “milch cows” or tanker U-boats) for destruction by aircraft or surface forces. Although Doenitz was deeply troubled by the apparent ability of his enemy to anticipate his plans, he never suspected that Enigma itself had been cracked.

But in February 1942 the enemy added a fourth rotor to his Enigma machine, multiplying many times the complexity of the enciphering. This was the so-called “Shark” cipher. With

Bletchley Park henceforward unable to read Doenitz’s signals, the Admiralty could no longer route the convoys clear of U-boat ambushes except by informed professional guesswork. This crippling setback occurred just when U-boat numbers in the Atlantic were rising fast. It contributed to the ever more appalling loss of merchant shipping in 1942, that year when the Allied navies and air forces still lacked various kinds of vital equipment.

Only in December did Bletchley Park succeed in cracking Shark, and even then the task of decrypting could be slow or only partially successful.

Meanwhile, *B-Dienst*, for its part, could read the British convoy cipher throughout 1942, so enabling U-boat Command to accurately locate its mass ambushes. *B-Dienst* was only temporarily baffled when in December the Admiralty altered the convoy cipher. By February 1943, the Germans had again cracked it – just in time for the colossal convoy battles of March and April.

I should say at this point that, although Canada did not participate directly in the attempts to break the Shark cipher, her radio-intercept and direction finding (DF) stations had formed an indispensable component of the North

Atlantic signals intelligence (SIGINT) network ever since the beginning of the war. From May 1943 onwards the Submarine Tracking Room in Ottawa received the full output of Enigma decrypts, while a free exchange of ideas and information was carried on via a direct signal link between Ottawa and the Tracking Room in the Admiralty's Operational Intelligence Centre. So in this secret struggle of SIGINT as well, a close partnership was forged between Canada and Britain.

Now I'd like to return to the battle at sea, when towards the end of 1942 it began to look as if the convoy system itself might break down. In December, convoy ONS154, escorted by a Canadian group of one destroyer, the *St. Laurent*, and five corvettes, lost 14 out of 45 ships in a four-day battle with a pack of 20 U-boats. It sank only one U-boat in return.

In and after February 1943, when *B-Dienst* could again read the British convoy cipher, even the most heavily escorted convoys lost many ships. That same month of February, convoy ON166 lost 14 ships out of 63 in return for only two U-boats destroyed out of 21 in the wolf-pack. Yet this convoy was escorted by four Canadian

corvettes and one British, plus a Polish destroyer and two American Coast Guard cutters. In March, things got even worse. Seventeen U-boats hung on to convoy SC121 as it struggled through horrific storms and sank 13 ships without loss to themselves. In the catastrophic first three weeks of March, no fewer than 97 merchant ships had gone down, three-quarters of them in convoy, the cornerstone of anti-U-boat warfare in both world wars.

It was now no longer a question of the U-boat eventually wearing down Allied shipping resources by sheer attrition; it was a question of the Atlantic soon becoming impassable – with catastrophic consequences for the whole course of the war.

Yet only two months later Doenitz (now C-in-C of the German Navy) had withdrawn his boats from the Atlantic in acknowledgement of defeat. This astonishing turn of fortune was the result of several factors coming together in the nick of time. As I've mentioned, Bletchley Park had at last begun to crack the four-rotor Enigma machine, enabling it again to read U-Boat Command's voluminous radio traffic. By now, all British and Canadian escort ships were

The harbour at St. John's, Newfoundland, 26 September 1942. The natural harbour, with its abrupt outlet to the ocean, provided a vital, if at first primitive, naval base for the Royal and Royal Canadian Navies on the Western seaboard of the North Atlantic.



Canadian Department of National Defence PMR 84-731, supplied courtesy Marc Milner

equipped with HF/DF, and could also home in on this radio traffic. Thus the very sophistication of the Doenitz system proved a major source of vulnerability.

And the problem of the mid-Atlantic air gap had at last been solved. At the end of March appeared the first of American-built escort carriers, the USS *Bogue*, to provide convoys with their own air cover. By April the Royal Navy had formed three such escort carrier groups. And in this same month, the strength of the Royal Canadian Air Force and RAF Coastal Command in Very Long Range aircraft fitted with 10 cm radar had risen to 41 from a winter low-point of 6. Add in convoy escorts now equipped with the Hedgehog mortar, and aircraft carrying Torpex depth charges, and everything had come together at last.

Yet it would not be the shipbuilders and armourers and boffins of the opposing sides any more than the code-breakers who would ultimately decide which way the battle would tip that critical April and May of 1943, but the sailors ranged against each other in the Atlantic front-line itself. Despite all the cumulative losses of past years, despite all the dangers of U-boat infested waters, the seamen of the British and Allied merchant marines continued unflinchingly to sail their slow and vulnerable vessels across the Atlantic. As for the ships' companies of the Royal Navy, Royal Canadian Navy, and Allied navies, it is enough to say that they cheerfully and ever-more skilfully went on doing their duty. In the event, it was the German attackers, especially the novice captains and batch-trained crews manning the new U-boats coming off the production lines, who were the first to flinch. From the end of March 1943 onwards U-boats were signalling U-Boat Command to offer ingenious excuses for failing to press their attacks home or for aborting sorties; and U-Boat Command was sternly signalling back to stiffen morale and resolve. But in April the U-boats sank only half the tonnage of March.

Doenitz's cutlass was beginning to bend in his hand. In May, however, he made his supreme effort, concentrating as many as 36 U-boats against single convoys – and encountered British and Canadian sea and air power over the Atlantic in all its mature panoply. In a series of gigantic

running battles, Doenitz lost 41 U-boats in return for only a handful of sunk merchant ships. On 22 May, U-Boat Command made an almost despairing signal of supposed encouragement to its captains:

If there is anyone who thinks that combating convoys is no longer possible, he is a weakling and no true U-boat captain. The battle of the Atlantic is getting harder but it is the determining element in the waging of the war.

This signal, once decrypted, made astonishing reading for Western Approaches Command and Canadian Northwest Atlantic Command. For the first time in history the victor literally read the mind of the vanquished at the moment when hope dies and the will begins to break. Soon even Doenitz had to accept that for the time being at least he was beaten. So the signal went out to his captains to withdraw from the fray. The North Atlantic suddenly emptied of U-boats. The convoys began to steam across virtually unscathed. It was as if a steel gauntlet had relaxed its grip on the Allied throat.

Despite Doenitz's hopes of later mounting a fresh and this time successful offensive with revolutionary new types of U-boat, the victory proved final and decisive. Thanks therefore to the Allied navies and air forces, Britain would survive; American and Canadian forces would continue to pour into the British Isles in preparation for the invasion of Europe; that invasion would successfully take place in June 1944; and in the spring of 1945, nourished by seapower, the Allied armies would advance into the heart of Germany.

In my judgement, none of all this would have been possible without that partnership between Britain and Canada which was sealed at the moment when Canada declared war on Nazi Germany on the 10th of September 1939.

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