

**“THE ROYAL CANADIAN NAVY COMES OF AGE:**

**JUNE 1943 - APRIL 1944”**



**HMCS Swansea in a Rough Sea, January 1944.**

A nice study of the River class frigate, **Swansea**, off the Flemish Cap in January 1944. Designed by William Reid, who also conceived the corvette, the frigate was a more habitable vessel with twice the range of the corvette. **Swansea** entered service in October 1943 and became one of the RCN's most successful ASW vessels, accounting for three U-boats. In this photograph she is shown with Type 271 radar in its perspex dome mounted above and behind the bridge but only a single 4-inch gun in her forward, and a 12-pdr. gun in her stern position. (Photograph by G.A. Milne, courtesy National Archives of Canada, PA 107941)

### The navy at mid-war: Problems and possibilities

By the middle of 1943, although it still faced many problems, the Royal Canadian Navy was beginning to mature as a fighting service. Fortunately, manpower was no longer an issue as there were about 50,000 officers and sailors in service.\* Contrary to popular myth, the region of Canada that contributed the greatest percentage of recruits to the RCN was not the prairie provinces, but Prince Edward Island and British Columbia, followed closely by Nova Scotia. Expressed as a percentage of males of military age in the prime 18-45 age group, the wartime enlistment in the RCN by province



**Lieutenant-Commander D.W. Piers, DSC, RCN**

A prewar regular officer, Piers commanded the River Class destroyer, HMCS **Restigouche** in the North Atlantic from June 1941 to June 1943. In the early summer of 1943 Piers wrote a memorandum to his superiors about the backward state of the equipment on Canadian escort vessels which later came, with a growing body of other evidence on the technical deficiencies of the Canadian warships, to the attention of the naval minister who removed Admiral P.W. Nelles from his position as Chief of the Naval Staff. Piers's action did not affect his career -- he assumed command of the V Class destroyer, HMCS **Algonquin**, a prime assignment, in February 1944, and later reached flag rank. (Courtesy, Canadian Forces Photo Unit, PMR 92-548)

was as follows: Prince Edward Island (7.3 per cent); British Columbia (6.9 per cent); Nova Scotia (5.6 per cent); Ontario (4.9 per cent); Manitoba (4.9 per cent); Alberta (4.2 per cent); Saskatchewan (3.4 per cent); New Brunswick (2.9 per cent); and Quebec (1.8 per cent). RCN standards regarding age, health and education were high, more so than for the army, and many a would-be sailor was turned away from a naval recruiting centre with directions to the nearest army equivalent. Shore-based training, which had been minimal during the first two or so years of the war, was now fairly extensive and no longer were raw crews thrown into brand-new ships and sent to the North Atlantic to do battle with Dönitz's submariners. There was time for newly-commissioned vessels to do some basic training or "working up" in Canadian coastal waters before being assigned to escort duties – it was not much but it was a big improvement over 1941 and 1942.

The RCN's troubles lay with the state of its ships and their equipment. The workhorse of the mid-ocean escort groups was still the Flower Class corvette and would remain so until the new frigates began to enter service. Originally christened the "twin screw corvette," the frigate was another brainchild of William Reed, the designer of the corvette. The shortcomings of the Flower Class vessels had quickly become obvious to the RN after they began to enter service in early 1940 and, at the suggestion of the Admiralty, Reed had designed the frigate, an improved ASW vessel with better speed and armament. The RN ordered its first frigates from British yards in the spring of 1941 and the advantages of the new design were so readily apparent to NSHQ that it decided in 1942, after the current orders for Flower Class corvettes were completed, that only frigates would be constructed in Canada. Unfortunately, the size of the vessel meant that it could not be built in yards on the Great Lakes as it could not pass through the narrow locks on the St. Lawrence to gain the open sea. It was also a more sophisticated and expensive vessel than the corvette and required a level of technical expertise that was not common in wartime Canada. Nonetheless, in early 1942, orders for 30 frigates, later increased to 70, were issued to Canadian yards but

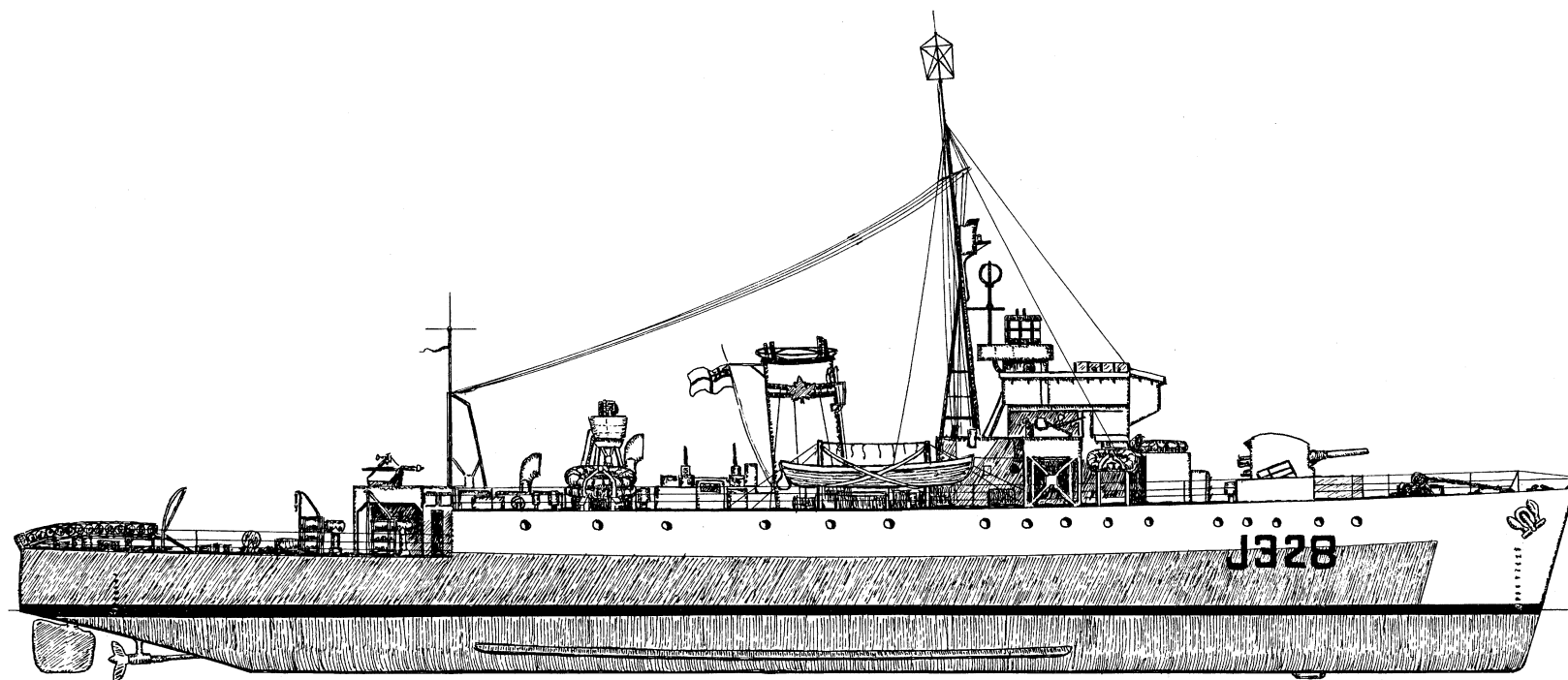
their construction and commissioning were delayed, and in any case the first 10 vessels built in Canada were destined for the RN. The RCN did not receive its first frigate until June 1943 and the last was not commissioned until the end of 1944.

In the meantime, in 1943, the RCN had to work with what it had. In June of that year, the escort fleet consisted of 5 pre-war -destroyers (soon to be increased by the transfer from Britain of six sister ships), 8 ex-American “four-stackers” (of which only 2 really had the range to serve in the North Atlantic) and 65 corvettes. The large fleet of 60 Bangor and Algerine Class minesweepers were utilized mainly for local -escort in coastal waters. The corvette, designed as a stopgap vessel for coastal escort, remained the largest single class of Canadian warship available for mid-ocean work, and by mid-1943 Canadian corvettes lagged far behind their British counterparts in terms of modernization and equipment. In June 1943, few of the RCN’s corvettes had undergone the very necessary refit – which included a larger bridge, increased armament, -extension of the foc’sle, resiting of the masts and the installation of gyro compasses, as well as other upgrades – while only two of the RN’s 60 Flower Class corvettes had *not* been modernized. There were not enough facilities in Canada to upgrade its corvette fleet, and in any case NSHQ’s attention was distracted by the frigate and its long-term ambition to acquire larger warships.

The backward state of the RCN’s escorts compared to their British counterparts was obvious to their crews and it affected their performance. In the first six months of 1943, at the height of the battle for the sea lanes, the RN sank 110 submarines in the North Atlantic while the RCN, although it provided nearly half the escorts in this theatre, shared only a third of a kill. This striking disparity and the reasons for it were touched on in a lengthy and detailed report dated 1 June 1943 written by Lieutenant Commander Desmond W. Piers, RCN, captain of HMCS *Restigouche*. It contained a precise summary of the Canadian navy’s strengths and weaknesses including:

a blunt statement of fact that R.C.N. Ships are outdated in the matter of A/S Equipment by 12 to 18 months, compared to R.N. Ships doing the same job of convoy escort. Unfortunately this gross disparity is not taken into consideration when comparisons of U-boat sinkings and merchant shipping losses are made between British and Canadian -[Escort] Groups.<sup>1</sup>

Piers’s report was passed on to NSHQ with approving comments from his immediate superiors but, as regards ship modernization, nothing came of it. A more scathing criticism and one that could not be ignored resulted from the visit to Ottawa of the Anti-Submarine Board, a panel of senior Allied naval officers, tasked with co-ordinating the war against the submarines. The Board, while acknowledging the constraints under which the RCN had expanded and was operating, was highly critical of the backwardness of the Canadian navy. This did cause NSHQ to make some changes, albeit, as usual, very slowly. The problem, however, was not going to go away.



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Algerine Class Minesweeper  
HMCS KAPUSKASING  
June 1945

225 feet

#### HMCS Kapuskasing, Algerine Class Minesweeper

Twelve Algerine Class minesweepers were commissioned in the RCN in 1943-1944. Somewhat larger than the Flower Class corvettes, they were not as seaworthy and were used as coastal escorts. Vessels of this class displaced 990 tons, were 225 feet long, had a top speed of 16 knots, carried a complement of 107 and were armed with one 4-inch gun, four 20 mm AA guns and Hedgehog. In this drawing, she is also equipped with Type 271 radar (the dome on top of the bridge and HF/DF antenna on her foremast. **Kapuskasing** served in the Western Escort Force until 1945 when she was placed in reserve. In 1949 she was transferred to civilian control as a hydrographic survey vessel before being sunk as a target in 1978. (Drawing by L.B. Jensen, courtesy Directorate of History and Heritage, DND)

as Hedgehog and Squid, HF/DF and, above all, with the advent of large numbers of new and modern ASW vessels, this outlook changed. The Allied navies now began to think in offensive terms, of killing the enemy whether he attacked convoys or not. The traditional defence of merchant shipping would remain the concern of the close escort groups, but the offensive would now be taken to the enemy by the new support groups, which would have the best commanding officers, vessels and equipment. These support groups would not be tied to a single convoy but would have a roving commission to attach themselves to any convoy that came under heavy attack. Their value had been demonstrated in the convoy battles of the spring of 1943 and if the RCN wanted to achieve a position as a major participant in the offensive against the U-boats, it was clear that it would have to gain membership in these new and elite forces.

Given the state of the Canadian escort force in mid-1943, this would be difficult. After several false tries, two Canadian support groups, Escort

Groups 5 and 9, were formed, but they were commanded by British officers and built around British frigates. The best that Canada could do was contribute a single four-stacker destroyer and a few modernized corvettes. Escort Group 5 was created in June 1943, and, after a period of training in the UK, was assigned to the Bay of Biscay area, where an air and surface offensive was underway.

This was bringing the war to Dönitz's doorstep and it gave him some uncomfortable moments. When he had ordered his submarines out of the North Atlantic in May 1943, Dönitz believed he had lost only a battle, not the campaign he had been waging since September 1939. "We have succumbed to a technical problem," he stated, referring to the efficient radar now mounted on Allied aircraft and escort vessels, "but we shall find a solution."<sup>2</sup>

As he contemplated the strategic situation, Dönitz was fully aware that, although he commanded Germany's most powerful offensive weapon, his future operations would be increasingly defensive in nature. It was clear to him that it would be impossible to starve Britain into submission and that the objective of his operations had to be to sink enough Allied shipping to prevent the build-up in Britain of the troops and supplies necessary to mount an invasion of the European mainland in 1944. And there was no doubt that this invasion would come as, while his submarine crews had been battling at



**Grey warrior – HMCS Athabaskan, March 1944**

Possessing large warships such as the big fast, powerful Tribal Class destroyers was the ambition of the prewar regular Canadian navy. Unfortunately, by the time the Tribals entered service in 1943, the RCN's primary task was anti-submarine warfare, which required smaller and more specialised vessels. Athabaskan was sunk in action in the spring of 1944. She displaced 1,917 tons, carried a complement of 259, and was armed with six 4.7-inch high angle guns, four 21-inch torpedo tubes, four 2-pdr anti-aircraft guns and six 20mm AA guns.(National Archives of Canada, PA115361)

sea, the war had been going badly for Hitler's Third Reich. The German invasion of the Soviet Union in June 1941 had opened a vast new theatre that ultimately engulfed most of Germany's land forces and by the summer of 1943 they were being pushed steadily back. The Allies had eliminated the German and Italian armies in North Africa the previous spring and, following their invasion of Sicily in late July, Mussolini's Fascist dictatorship collapsed and Italy had surrendered. Germany's only hope for victory lay in bringing the Soviet armies to a standstill and preventing, or defeating, a major invasion of the European mainland.

After withdrawing from the North Atlantic, Dönitz had redeployed his submarines against the Britain-Gibraltar and central Atlantic convoy routes but the power of the US Navy, which guarded the middle Atlantic and the ever-increasing numbers of Allied aircraft, whether carrier-borne or operating from land bases, blunted his attempts to maintain a threat. No longer could his submarines take ad-

vantage, as they had previously, of resupplying at sea from the large Type XIV "milk cows" or supply boats, in areas not patrolled by Allied aircraft. The number of radar-equipped aircraft, either VLR or shipborne, in service and the formation of support or "hunter-killer" groups resulted in these supply boats being tracked down and destroyed throughout 1943.

Even worse for Dönitz, the Commonwealth navies now brought the fight to the Bay of Biscay, which the U-boats had to cross to reach the open seas. For much of the war, they had been able to sail through this area on the surface but, beginning in 1942, British air and naval forces mounted offensive patrols in the Biscay to prevent the enemy from gaining the wider ocean. Attempts by German submarine commanders to use their AA armament to ward off air attacks often resulted in their boats being sunk or heavily damaged and Dönitz's "wolves of the sea" were forced to cross the Biscay submerged or to creep along the north coast of Spain, which consumed time and fuel with the result that both their range and time on patrol were severely restricted.



**The Enemy Below is listening (2) -- U-boat Captain Oberleutnant zur See Hans-Edwin Reith, captain of U-190, listens on a lead to his boat's hydrophone as Allied warships hunt for his submarine in British waters during the summer of 1944. Funkobergefreiter Kurt Petereit, the hydrophone operator, mans the wheel which can turn the hydrophone a full 360 degrees. (Courtesy, Werner Hirschmann)**

In late August, the RCN's Escort Group 5, consisting of the British frigates *Nene* and *Tweed* and the Canadian corvettes *Calgary*, *Edmundston* and *Snowberry*, participated in the latter stages of the bay offensive, carrying out sweeps near the border between France and Spain. The group was backed up by two larger warships, the British destroyer *Grenville* and the Canadian Tribal Class destroyer *Athabaskan*, the second of these large, fast and powerfully armed warships to join the RCN and the pride of the regular Canadian navy. Unfortunately, it became the first target of a new German weapon – the aircraft-launched and controlled guided missile – which sailors, with good reason, nicknamed "Chase Me Charlies." On two successive days, German aircraft attacked EG 5 with this weapon, sinking the sloop HMS *Egret* with the loss of most of her crew and heavily damaging the *Athabaskan*. Soon afterward, operations in the Biscay, which had been garnering fewer results all the time, were ended.

#### **"Dying struggle of a caged tiger:" The U-boats return to the Atlantic, autumn 1943**

Both Dönitz and his opponents knew that ultimately the U-boats would have to return to the North Atlantic. It was not only the main shipping route from

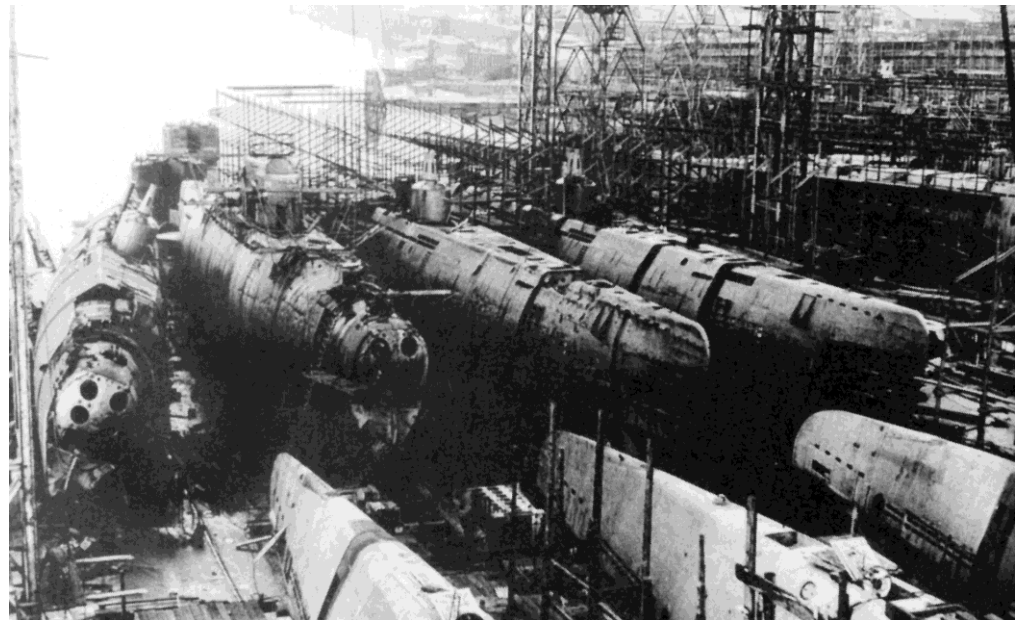
America to Britain, it was also the area closest to his bases in western France and this proximity, given the recent Allied restrictions imposed on his operations, had become increasingly important. On 30 July, the situation was summed up by Commander Rodger Winn, RN, who supervised the Submarine Tracking Room at the Admiralty:

*It is common knowledge both to ourselves and the enemy that the only vital issue in the U-Boat war is whether or not we are able to bring to England such supplies of food, oil and raw material and other necessities, as will enable us, (a) to survive and (b) to mount a military offensive adequate to crush enemy land resistance. Knowing this is so, the enemy in withdrawing from the North Atlantic must have intended an ultimate return to this area, so soon as he might be able, by conceiving new measures and devising new techniques, to resist the offensive which we might be able to bring to bear upon there ..... but it might be the last dying struggle of a caged tiger for the enemy to send back in September or October into the North Western Approaches his main U-Boat forces unless in the meantime, he acquires by sheer luck, or the brilliance of some unknown inventor, the antidote and the panacea to all those well proven weapons which our -armoury contains.<sup>3</sup>*

Winn's assessment proved to be entirely accurate as by the late summer Dönitz felt that he did possess the antidote to the Allied navies' "well proven weapons." It had long been obvious to Dönitz that the Type VII and Type IX boats were at the limit of their development and needed to be replaced by

#### **Type XXI U-boats Under Construction**

In 1943, Dönitz instituted a massive construction programme of submarines to replace his aging fleet of U-boat. Delays caused by shortages of labour, raw materials and the Allied air forces' disruption of the German transportation system doomed his plan to commission hundreds of the new Type XXI U-boats in 1944 and only one of these craft had reached operational status by May 1945. Shown here are unfinished Type XXI boats in a Bremen shipyard. (Courtesy, National Archives of the United States, NA 80G 705573)



more modern craft. In early 1943, he had chosen two designs, the Type XXI and Type XXIII, based on research by a German naval engineer, Helmut Walter, which incorporated many innovations, including increased numbers of electric batteries that gave these craft an impressive underwater speed. The Type XXI also possessed extremely long range – a boat of this type could journey to the Cape of Good Hope and back without refuelling. In April 1943 Dönitz ordered 450 of the ocean-going Type XXI and 250 of the smaller, coastal Type XXIII from German shipyards and he expected these new

vessels would be entering service by the summer of 1944.

For the time being, the Type VII and Type IX would have to fight on, but during the summer of 1943 Dönitz ordered their anti-aircraft armament upgraded so that, if attacked by Allied aircraft on the surface, his commanders had a chance of defending themselves. Boats operating in the Atlantic now carried as many as eight 20mm AA guns although this increased armament still proved inadequate when they tried to fight off Allied aircraft. The U-boats also received radar search detectors to warn if they had been detected by shipborne and aerial radars, allowing them to dive to safety in time. Finally, the first T-5 *Zaunkönig* acoustic torpedoes, which the Allies termed the GNAT (German Naval Acoustic Torpedo), had now entered service. The T-5 did not have to be fired directly at its target and a submarine commander therefore did not have to manoeuvre into the best firing position, often a lengthy and risky operation. He simply let a T5 loose and it homed in on the target ship's propellers to accomplish its purpose.

In September Dönitz decided that, with this new equipment and weaponry, he would resume operations in the North Atlantic. During the first days of that month, 29 U-boats, most equipped with radar detectors and acoustic torpedoes, sailed into the Atlantic to form *Gruppe Leuthen* with the objective of intercepting a major westbound convoy. The *gruppe* was to remain unseen both during passage and while formed in a patrol line but Dönitz emphasized that once a convoy was sighted *Leuthen* was "to make full use of the surprise blow," by attacking the convoy escort with acoustic torpedoes:

*The decimation of the escort must be the first objective. The destruction of a few destroyers will have considerable moral effect upon the enemy and will greatly facilitate the attack on ships of the convoy in addition. .... I expect of all commanding officers that each chance of a shot at a destroyer will be utilized. From now on, the U-boat is the attacker – fire first and then submerge.*<sup>4</sup>

The stage was now set for the last of the great Atlantic convoy battles.

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## THE ROLE OF OPERATIONAL INTELLIGENCE

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On both sides, the forces employed in the Battle of the Atlantic were subject to highly centralized command from shore-based headquarters. The Allied convoy system depended on rigid control of sailing schedules and routes, while Dönitz's employment of wolfpack tactics depended on frequent radio communication between his headquarters and U-boats at sea. The result was that both combatants generated a tremendous amount of radio communications that provided an important source of intelligence for their opponent.

### Ultra intelligence

The Allied code breakers' success in unravelling the mysteries of cyphers generated by the Enigma machine was a war-winning asset. Information derived in this manner, termed "special intelligence" or Ultra, was not the most important weapon possessed by Allied naval intelligence, and perhaps too much emphasis can be put on the effect of Ultra in the Battle of the Atlantic as it did have weaknesses. It was subject to a delay and might not reach





**Kriegsmarine Schlüssel M4 Enigma Machine, 1942.**

The Enigma machine was an electronic coding machine that was adopted by the German armed forces in the 1930s. The **Kriegsmarine** introduced an upgraded model, the **Schlüssel M4** in late 1941. Up to that time, thanks to the efforts of the codebreaking organization at Bletchely Park in England, the Allies had been able to read much of Dönitz's signal traffic but **Schlüssel M4**, which possessed a more complicated enciphering mechanism produced a sophisticated code called "Triton" that baffled Allied codebreakers from early 1942 to March 1943. "Triton" was broken just in time to have a major effect on the highpoint of the Battle of the Atlantic. (Courtesy, Steve Fahie)

the relevant command in time, and there was always great concern about security – if the Germans learned that their Enigma-generated cyphers had been broken by the Allies, they would switch to a completely different system and this valuable asset, which affected land and air as well as naval operations, would be lost. For this reason, circulation of Ultra was restricted to a very few senior officers.

Ultra was also sensitive to procedural changes on the part of the *Kriegsmarine*. Most simply put, Allied code breakers were able to read the German *Heimisch* or "Dolphin" traffic, the code used for *Kriegsmarine* surface vessels and U-boats in home waters, without delay from the summer of 1941 to early 1942. At that point, changes made to U-boat coding systems and the introduction of the M4 Enigma machine led to the creation of a new cypher, called *Triton* by the Germans and "Shark" by the Allies, which baffled code breakers until late 1942 when they were able to read it intermittently but with considerable delay. *Triton* was completely broken in March 1943, just in time for the high point of the battle, but it was still subject to delays. From September 1943 to the end of the war, however, -advances in code breaking technology led to *Shark* being read within 24 hours.

It should be remembered that both sides were involved in code breaking. The German signals intelligence organization, the *B-dienst*, had broken the major British naval cypher before the war and were able to read it until the late summer of 1940 when Naval Cypher No. 3 was introduced. The Germans broke Cypher No. 3, used for the routing of convoys and escorts, in the first part of 1942, and from July 1942 to June 1943 were able to read almost all communications in this cypher with little delay, which offset the Allies' possession of Ultra. *B-dienst* lost this powerful asset in June 1943 when Cypher No. 5 was introduced and never regained it during the war.

### Other intelligence

As discussed above, HF/DF, "Huff Duff," or High Frequency Direction Finding, was another crucial weapon for Allied intelligence. Land-based HF/DF stations that picked up a U-boat's signal could provide an approximate location although with some degree or error. Those signals would then become the subject of traffic analysis, the rigorous appraisal of the characteristics, frequency and form of the transmission that might give some clue as to its contents. Traffic analysis was made simpler by the fact that many U-boat transmissions were highly stylized. Weather, position, and sighting reports were often prefixed with a "Beta-Beta" code, giving them priority over other communications on the same radio frequency. Termed "B-bar" signals by Allied intelligence organizations, such transmissions hinted at their contents and a B-bar signal from a U-boat in the known vicinity of a convoy, for example, was an indication that it had been sighted and might be attacked.

Information provided by Ultra, HF/DF and traffic analysis was combined with other intelligence, such as U-boat siting reports made by vessels and aircraft or information provided by agents (the many French civilian staff employed at U-boat bases in France proved very useful in this regard). No matter what its source, all information relating to the U-boats ultimately arrived at the Operational Intelligence Centre at the Admiralty in London.

### Collection, analysis and dissemination of operational intelligence

The OIC and its component, the Submarine Tracking Room, correlated and analyzed all this information and then disseminated it to the relevant naval and air commands. Up to 1943, the major use of operational intelligence was to re-route convoys around the known or estimated positions of U-boat packs, and, if at all possible, an attempt was made to provide accurate information about possible U-boat locations before a convoy sailed. From 1943 onward, it was also used offensively in providing Allied "hunter-killer" groups with locations for U-boats that would then be attacked. The OIC in London most often dealt with the headquarters of Western Approaches Command in Liverpool, which assumed responsibility for operations in much of

the North Atlantic and the RAF's Coastal Command but, if relevant, it would also share information with the OICs in Ottawa and Washington (known as Op-20-G to the USN), which would then warn any threatened naval or air force commands in their areas of responsibility.

If a situation developed where recent intelligence revealed a shift in German dispositions, an attempt was made to actually divert convoys at sea. On many occasions, however, this information did not arrive in time to prevent a convoy being attacked and in other cases Dönitz received timely information from the *B-dienst* to counter such a move.

### **Convoy SC 42, September 1941**

The map opposite provides an illustration of how operational intelligence was used in September 1941 to frustrate German attacks on a number of convoys, but unfortunately not the luckless Convoy SC 42, which suffered heavy losses.

On 4 September 1941 Dönitz, having failed to intercept a number of convoys which had been routed around his patrol lines because of timely information, ordered 14 U-boats to form *Gruppe Markgraf* to patrol a large area off the southeast coast of Greenland (shaded area on map). This order was decoded by Bletchley Park on 6 September, and although the area to be patrolled by *Markgraf* was not exactly clear to the Allied intelligence, four convoys were routed north or south of the suspected German locations (lines on map). Convoy SC 42, 64 merchant ships escorted by a Canadian destroyer and three corvettes, had been battling headwinds, rough weather and heavy seas since it had left Sydney, Nova Scotia, on 4 September. The escort vessels were too short on fuel for SC 42 to be re-routed to the south so it was diverted north up the coast of Greenland in an attempt to make an end run around the location of *Markgraf*.

Unfortunately for SC 42, a straggler from the convoy was sighted and sunk by *U-81* on 8 September (1 on the map) and the following day the convoy was sighted (2 on map) by *U-85*, which sent a sighting report and began to track it. Dönitz's response was to order all boats in *Markgraf* to concentrate and attack. At this point, the situation favoured the Germans because SC 42 was beyond air cover from either Newfoundland or Iceland and the U-boats could therefore proceed on the surface using their superior speed to catch the convoy. The German transmissions were decoded by Bletchley Park but there was little that the OIC in London could do to prevent what was about to happen.

During the night of 9-10 September, at least five U-boats came into contact with SC 42 (at 3), sinking five merchantmen despite the best efforts of the escort. The score was evened somewhat when two Canadian corvettes, HMC Ships *Chambly* and *Moose Jaw*, under the command of Lieutenant Commander J.D. Prentice, arrived from Newfoundland. Prentice, who had been watching the situation develop around SC 42 on the naval plot at St. John's, had asked for and received permission to put to sea to reinforce the escort and had fortuitously appeared just in time to sink *U-501* ahead of the convoy.

The U-boats reported their victories to Dönitz by radio during the day of 10 September, and since it was clear that they were in good contact with a slow convoy, he ordered them to attack without mercy. The escort, however, was assisted on that day by a Catalina aircraft flying from Iceland at extreme range (4 on map), which patrolled briefly over the convoy and made it difficult for the attackers to manoeuvre into the best positions. Over the next two days, 10-11 September, SC 42 would enjoy intermittent air cover (5 on map) but not in strength enough to prevent the U-boats mounting further attacks which resulted in the loss of 11 more merchantmen. In all, 11 U-boats made 25 separate recorded attacks on SC 42 before the arrival of escort reinforcements and continuous daylight air cover forced Dönitz to call off the attack at this position (6 on map).

As the experience of SC 42 demonstrates, although operational intelligence could prevent or reduce losses, it was not always successful in doing so when other factors such as weather, seas, availability of air cover, strength of escort and fuel states affected convoys. Operational Intelligence was a means to an end – and an important means – but the outcome of the tactical battle was often resolved by the skill and determination of the escorts and their German opponents.

# Operational Intelligence and Convoy SC 42, September 1941

