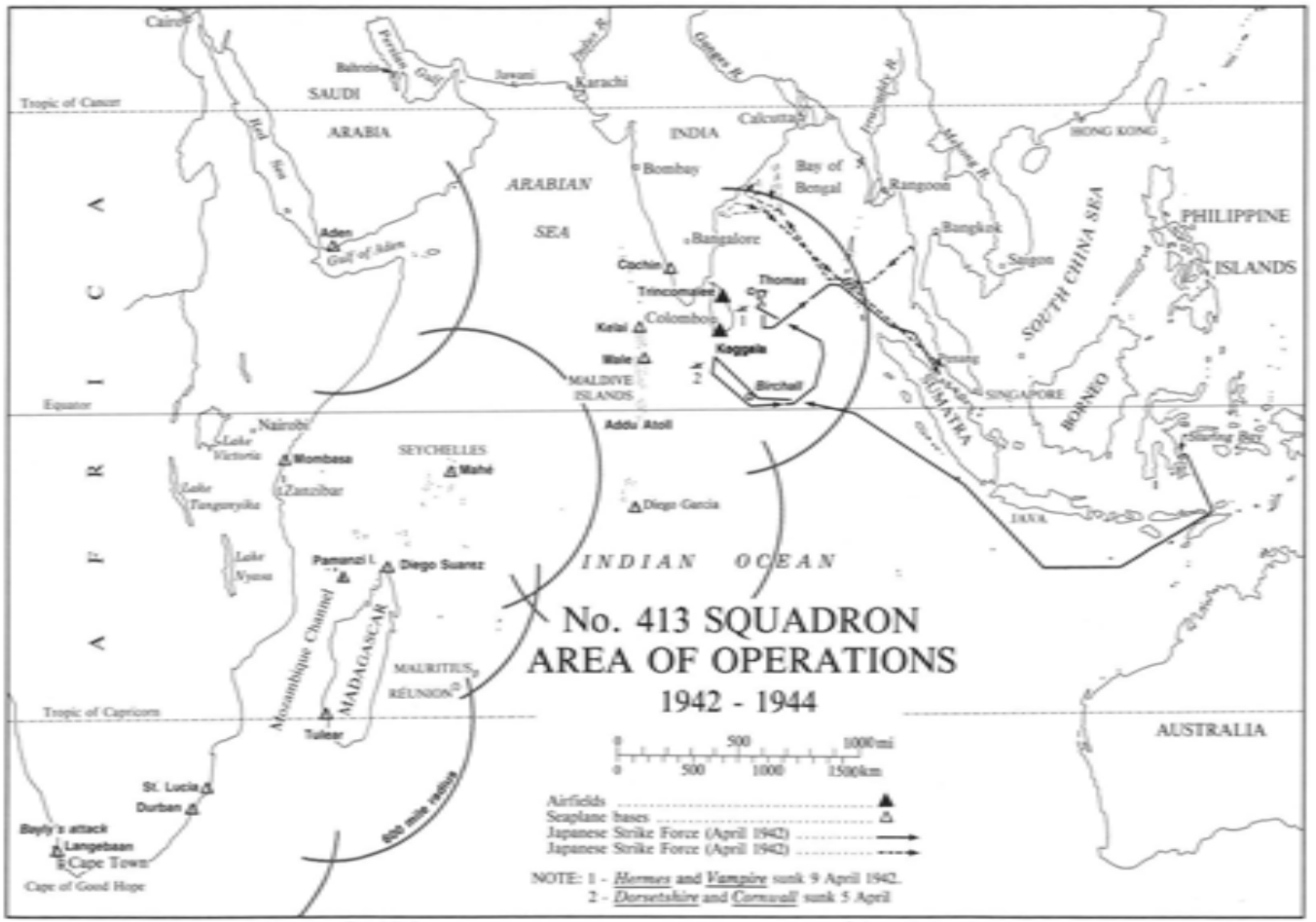
crews were rewarded with time off during slow periods, 'a procedure that was not common before,'[18] and, with so many machines fit for operations, the squadron flew 330 hours during February 1942, primarily on night reconnaissances off the Norwegian coast. At the end of the month, however, Twigg was told that his unit would be moving to Ceylon almost at once. The shift was part of a larger transfer of Catalina squadrons to the Far East, where the enemy's many successes (including the sinking of the British capital ships *Prince of Wales* and *Repulse* by air attack) had given Japan maritime supremacy in the Indian Ocean and now threatened Britain's communications with India.[19]

This unexpected move was complicated by the fact that the RAF did not want Twigg to retain command of the squadron. A personality clash with the new RAF station commander at Sullum Voe had led that officer to recommend that 'Twigg be found employment more suited to his abilities.' Overseas Headquarters quickly discovered that the fault lay more with the station commander than Twigg – who had simply refused a late-night summons from bed to join in a juvenile 'pants pulling-off' contest in the mess – but Stevenson was apparently unwilling to go head-to-head with Northwood. Twigg was sent to a bomber OTU (for familiarization on type prior to being posted to 408 Squadron), where his assessment recorded that he 'was one of the best officers ever to have gone through that OTU, is an excellent pilot, efficient officer and likeable personality.' In his new command, furthermore, he would be described by another RAF station commander as 'a courageous and able operational pilot... the all-round performance of this [408] Squadron from the point of view of discipline, flying, esprit-de-corps and operational successes has improved very noticeably and continues so to do.'[20]

Combined with the futile loss of Wing Commander Briese and his crew, this posting-out of another popular and efficient commanding officer built resentment of the RAF among the Canadians in the squadron. 'When 413 Squadron, after so short a period at Sullom Voe, was peremptorily transferred to Ceylon with the stipulation that Wing Commander Twigg was not to retain command,' one veteran recalled, 'the feeling grew ... that there was undue interference on the part of the RAF and the suspicion that they wished to be rid of us.' However, the next commanding officer, Wing Commander J.L. Plant, a prewar RCAF regular, quickly proved to be 'an outstanding personality both in his Squadron and on the Station ... His discipline and power of command of his men were above the average' – skills and talents desperately required to hold the squadron together and to restore morale.[21]

While approving the squadron's move to Ceylon, Ottawa deplored the fact that it included so few Canadians. Overseas Headquarters was instructed to 'make every effort [to] increase numbers [of] RCAF personnel with this unit,' since once it reached south-east Asia the prospects of maintaining, never mind reinforcing, a Canadian identity would inevitably fade. A large influx of RCAF groundcrew increased their proportion to 70 per cent by the time they sailed from Britain on 18 March, but the aircrew component could only



be boosted to 48 per cent. The squadron's four remaining Catalinas were flown to Ceylon by its most experienced crews.[22]

The first reached Koggala, Ceylon, on 28 March 1942, fully a month ahead of the squadron's shipborne groundcrews, but just in time to meet a crisis. Rangoon had fallen on 7 March and, with British forces in full retreat towards Mandalay, the British chiefs of staff feared on 2 April that 'an invasion of Bengal, an assault on Ceylon, or an attack on our Eastern Fleet* would each if successful prove a devastating blow ...'[23]

In order to secure the sea route from Singapore to Rangoon, the Japanese had dispatched a large fleet including five carriers and four battleships to strike at British naval bases in Ceylon, while a second, smaller fleet raided shipping in the Bay of Bengal. The Royal Navy's commander-in-chief, Sir James Somerville, wisely decided to keep his much weaker force well to the south-west of Ceylon, beyond the range of the enemy's carrier aircraft, leaving the responsibilities of reconnaissance and warning to one RAF Catalina squadron and the newly arrived boats of No 413.[24]

The first two Canadian Catalinas began patrolling soon after their arrival and, in the early morning hours of 4 April, Squadron Leader L.J. Birchall and his crew (composed of one other Canadian, Warrant Officer G.C. Onyette, and seven RAF men) took off for a patrol area 350 miles south of Ceylon. After twelve hours of fruitless searching Birchall was about to return to base when one of his crew spotted ships on the southern horizon. 'We were at about 2,000 feet altitude at the time and hence we slipped in underneath the Japanese outer air patrol,' Birchall later recalled. 'As we got close enough to identify the lead ships we knew at once what we were into, but the closer we got the more ships appeared and so it was necessary to keep going until we could count and identify them all. By the time we did this there was little chance left ... All we could do was put the nose down and go full out, about 150 knots.'[25] Without cloud cover, the Catalina was easy prey for carrier-borne Japanese fighters: 'We immediately coded a message and started transmission... We were halfway through our required third transmission when a shell destroyed our wireless equipment ... We were now under constant attack. Shells set fire to our internal tanks. We managed to get the fire out, and then another started, and the aircraft began to break up. Due to our low altitude it was impossible to bail out but I got the aircraft down on the water before the tail fell off.'[26]

Eight of the nine crewmen managed to get out of the Catalina before it sank, but two of them – badly wounded, unconscious, and in life jackets – were unable to dive and thus avoid the fighters that continued to strafe the survivors. The other six, including the two Canadians, were eventually picked up by a Japanese destroyer and spent the rest of the war in prison camps. Birchall, subsequently labelled by the Canadian press as the 'Savior of Ceylon,'†

* Consisting of four old and slow R-class battleships, the more modern *Warspite*, two large and one small aircraft carriers with seven cruisers, sixteen destroyers, and seven submarines.

† In fact, the Japanese were only concerned with destroying the remnants of Somerville's fleet and had never intended to invade Ceylon.

received a DFC for his actions that day and an OBE for his exemplary conduct while a prisoner.

Alerted by Birchall's message, Ceylonese ports were quickly cleared of shipping while forty-two fighters, mostly Hurricanes (of which at least eight were flown by Canadians in the RAF), scrambled to intercept the enemy as they struck Colombo on the morning of 5 April. The Japanese lost only seven aircraft to the RAF's nineteen, but, distracted from their bombing, they did little damage to the port. (The cruisers HMS *Dorsetshire* and *Cornwall,* which had put out to sea, were later sunk by a second strike force.)

Four days later, Flight Lieutenant R. Thomas, flying No 413's only operational aircraft (the other two were being serviced after reaching Koggala on 6 April), reported the Japanese fleet two hundred miles east of Trincomalee – just minutes after an incoming Japanese air strike had been identified by shore-based radar. His machine was also shot down, with no survivors. Although greater damage was inflicted on Trincomalee than on Colombo, the heaviest blow fell when a second strike force sank the carrier *Hermes*, a destroyer, a corvette, and two tankers which were imprudently returning to port after the first attack. Its mission accomplished, the enemy fleet then sailed back to its Japanese bases.[27]

No 413 Squadron continued to operate from Koggala with only two aircraft until late May, when four more Catalinas and the squadron's groundcrew arrived. Their appearance caused some crowding and the Canadians had to share the two landing runs on Koggala Lake with an RAF unit, while most of the groundcrew had to be quartered twenty miles away.[28] Many of them

> were disgruntled to find themselves shunted to the Far East, to a very alien environment and a base with largely non-existent barracks, messes and work-shops …
>
> … perhaps most significant was the frustration felt by all of us at being transferred from the UK just when the real Battle of the Atlantic was to start, with the opportunity for action which this offered, to the Indian Ocean backwater where we continued to play only a defensive role.[29]

In the absence of the Japanese, woefully indiscriminate pilots of the Royal Navy's Fleet Air Arm proved to be almost as dangerous. On 3 August 1942 Squadron Leader L.H. Randall and his crew were engaged in an exercise to locate, shadow, and report on a maritime task force. Sighting it, the Catalina crew began to signal their report when the 'blister watch reported two aircraft thought to be [Fairey] Fulmars on starboard quarter.'

> Catalina turned towards sun to make the expected dummy attacks more difficult. Catalina was flying at about 50' in excellent visibility. The two aircraft made a quarter attack and opened fire shooting away the rudder and aileron controls. The two aircraft then did a climbing turn to the rear. Catalina fired the correct recognition signals (Red Red) from starboard pilot's window. The two aircraft again attacked from above and astern killing the flight engineer, Sgt Meiklejohn [RAF], wounding the wireless operator, Sgt Palmer [RAF] and grazing the navigator P/O Williams and also the electrician

LAC R.L. Craggs. The two aircraft turned away and were not seen again. S/L Randall then climbed the Catalina to 1500 feet and with great difficulty managed to control the aircraft with the engines. Petrol and oil were pouring from the tank. On the approach, it was discovered that the wing floats could not be lowered. Under these conditions the aircraft was waterborne at 20.13 hrs. There is no question that the exceptional ability and the cool and level headed manner in which S/L Randall handled his aircraft saved it and the lives of the members of his crew. It was later confirmed that the two attacking aircraft were Fulmars from the Fleet Air Arm.[30]

Although the twin-engined Catalina bore a very faint resemblance to the Japanese four-engined Navy Type 97 flying-boat, the fact that the nearest Japanese base was more than a thousand miles away, together with the firing of appropriate recognition flares, should have encouraged the fighter pilots to investigate their target more closely before opening fire. A conference was convened at No 222 Group headquarters to discuss the navy's 'shoot first, ask questions later' approach, but, other than an apology, there was little that could be done. However, the 'tragic and unfortunate accident' does not appear to have had an adverse effect on squadron morale. As their living quarters at Koggala were completed, the squadron's 'generally low' morale began to show a significant improvement, although the lack of serviceable aircraft – only three out of the seven on strength – remained a major concern for several months.[31]

As fears of a Japanese invasion receded, the Catalina squadrons turned their attention to the matter of suppressing enemy submarines, a business for which they were much better fitted. But Japanese doctrine called for submarines to operate in conjunction with surface forces rather than prey on merchant shipping, and, once the fleet that had raided Ceylon returned to Singapore, they directed only a few of their smallest and oldest boats to a *guerre de course* in the Indian Ocean. The Germans, in contrast, made a determined effort to operate U-boats in the Indian Ocean throughout 1942 and 1943, despite the often dangerous voyage around the Cape of Good Hope and the logistical difficulties inherent in operating more than 10,000 miles from their Biscay bases.[32]

Given the vast extent of the Indian Ocean and the small numbers of enemy submarines there at any one time, it is not surprising that sightings were a rare occurrence. From September 1942 until November 1943, the Canadians routinely flew two Catalinas from detachments in the Persian Gulf and Gulf of Aden without ever sighting a Japanese submarine. They also maintained detachments along the African coast to counter German activity in those waters, which often worked at distances from their Ceylon base quite inconceivable to GR crews who flew in the North Atlantic and Northwest Europe theatres. One aircraft, captained by Flight Lieutenant G.H. Bayly, flew fifteen operational sorties from Langebaan, on the west coast of South Africa, over 5000 miles from Koggala. While engaged on convoy escort, on 5 June 1943, Bayly attacked U-177 with three depth charges, forcing the submarine to break contact with the convoy but not inflicting any physical damage. That was one of only four attacks – all unsuccessful – made by 413 Squadron in the Far

East. The majority of flights were, 'like those in any other coastal general reconnaissance squadron, long and monotonous. Whether a crew was tasked to patrol shipping lanes, do a sweep or search a specific area, the problems were much the same. Excitement was the exception and yet maximum effort and attention were vital.'[33]

The transfer of three Catalina squadrons to the Far East in the spring of 1942 had left Northwood with only six flying-boat squadrons in home waters. As compensation for the lost units, it was authorized to form three new units and to re-equip a fourth. Two of the new squadrons, Nos 422 and 423, were the fifth and sixth Canadian units to be established in Coastal Command, but the process of becoming both Canadian and operational was strewn with obstacles. Although No 422 was officially formed on 2 April 1942, it was not until June that its first airmen were posted to Lough Erne in Northern Ireland. The commanding officer, Wing Commander L.W. Skey, a Torontonian who had joined the prewar RAF, did not arrive until 9 July and the first boats, obsolete Saro Lerwicks allotted for training purposes only, were not received until two weeks later. The first Catalina was received on 31 July, when the squadron had attained a total aircrew strength of seventy-three, of whom nineteen, or 26 per cent, were members of the RCAF.[34]

While the majority trained on the Lerwicks, three of the most experienced crews and the only three Catalinas on strength were detached to an RAF unit in late August, in order to provide escorts on the southern portion of the convoy route between the Shetland Islands and Murmansk. A shortage of Catalinas caused by increased American requirements in the Pacific theatre – the RAF/RCAF received only what the Americans were willing to give them – meant that no more were available; and when the three on detachment returned at the end of September, the Canadians were ordered to pass them on to an OTU pending their own re-equipment with Sunderlands. The Lerwicks, meanwhile, were sent to the scrap-heap. Left without aircraft, the bulk of the squadron's aircrews were employed ferrying Catalinas from Boucherville, Quebec, to the United Kingdom, and it was not until the ferrying operation was completed in mid-November 1942 and the squadron moved to a new base at Oban, Scotland, that it received its first Sunderlands.[35]

Although the RCAF objected to the RAF's 'uneconomical as well as disconcerting' decision to re-equip the squadron with Sunderlands, Stevenson's successor, Air Marshal H. Edwards, AOC-in-C of the RCAF Overseas, was assured that it was in keeping with the 'present policy ... to restrict the employment of the Catalina in home waters.' And since many of its experienced crews had been posted out to other Catalina squadrons, No 422 required a further three months of retraining before it finally became operational on 1 March 1943, eleven months after its formation.[36]

Categorized by one impressed passenger as 'definitely a boat,' the massive Sunderland, with four engines to the Catalina's two, could not compare with the latter in terms of range and endurance, although it did have a slight advan-

tage in cruising speed.* A modification of the prewar Empire-class civil flying-boats, the Sunderland boasted 'a hull, a bilge, port holes, two decks and a galley, complete with stove.'

> The bomb bay is located on the lower deck approximately midway between the leading edge and the trailing edge of the wing [depth charges were mounted on a rack in the bomb room and slide out under the wing through a panel in the side of the hull]. Forward of the bomb bay is the galley, and next is a cabin with two bunks and a table where the crew may rest or eat. In the nose is the mooring gear, washroom and front turret. On the upper deck is the first and second pilots' cockpit and tables and instrument panels for the navigator, wireless operator, radar operator and flight engineer. Aft of the bomb bay, the combined hull and fuselage taper off unobstructed to the rear turret in the tail. The Sunderland, with its four fixed [.303] guns in the nose and also a nose turret, mid-upper turret, tail turret and [.5] galley guns is a formidable battleship.[37]

The other Canadian squadron, No 423, also got off to a slow start but generally had a less disruptive training experience than No 422. Formed at Oban on 18 May 1942, the squadron did not receive its first Sunderlands until 17 July. By the time it became operational at the end of October, aircrew strength had reached ninety-three, forty-nine of whom were RCAF, including nineteen of the twenty-five officers, although the commanding officer was English. Within days of becoming operational, No 423 was transferred to Castle Archdale on Lough Erne in Northern Ireland, its home for the remainder of the war.[38]

Throughout the fall of 1942, the RCAF took an active interest in manning both squadrons with Canadians. In September, Group Captain F.G. Wait, the director of personnel at Overseas Headquarters, had pointed out to the Air Ministry that No 422 had only '9 RCAF officer aircrew and 11 RCAF NCO aircrew on strength,' while an RAF squadron which also flew Catalinas 'had 14 RCAF officers and an unknown number of Canadian non-commissioned aircrew.' Since this appeared 'to be a little one-sided,' Wait wanted to know 'whether it would be possible to completely Canadianize No 422 as far as flying personnel is concerned,' presumably by a simple switch of aircrew between the two units. Apparently it was not possible, for nothing was done. In a similar vein, he had tried to arrange the exchange of two RAF flying-boat captains in 423 Squadron for two RCAF captains serving at Gibraltar. Despite the approval of both commanding officers, Northwood 'regretted that it is impossible, at the present time, to effect the exchange suggested owing to operational requirements.'[39]

Nor did Wait's efforts have much effect on 423 Squadron, whose Canadian aircrew component improved from 51.5 per cent to just 57 per cent between September 1942 and January 1943. Proportionally better results were achieved

* Neither boat could match the speed of a Liberator, and thus the area of ocean covered during a set period of time.

in No 422, the turnover in aircrew following its re-equipment with Sunderlands bringing an improvement from 20.8 per cent to 53.7 per cent during the same period. The lack of more substantial progress, however, was of concern in Ottawa, and in a blunt telegram to Edwards on 9 January 1943 the chief of the air staff, Air Marshal Lloyd Breadner, wanted to know why the aircrew total in both squadrons was less than 60 per cent RCAF. His query led directly to Edwards's decision to confront Air Ministry officials about the lack of progress in Canadianizing RCAF squadrons later in the month (see chapter 3 above).[40]

Meanwhile, the disagreement between the Air Ministry and the Admiralty (and within the RAF as well) over the allocation of aircraft to Coastal Coastal remained unresolved. Although Air Chief Marshal Philip Joubert de la Ferté had successfully rebutted a proposal put by Prime Minister Churchill to transfer all his land-based squadrons to Bomber Command, he was less effective in arguing for more VLR aircraft. His appeals were rejected out of hand by Sir Charles Portal, who wanted to reserve all Liberators and Lancasters – for they, too, could be modified – for other commands or theatres. The Lancaster was the best of the heavy bombers, Portal told the prime minister, and giving up as few as thirty of them would 'most seriously affect our hitting power,' since no other machine could carry large bombs to Berlin. All twenty-two Liberators, meanwhile, were earmarked for the Middle East, where they alone could be used for strikes against Tripoli or the Romanian oil fields at Ploesti.[41]

The contretemps was not finally resolved until November 1942, when Churchill was persuaded to convene a Cabinet-level committee, chaired by himself and including the chiefs of the naval and air staffs, to examine the issue. There was, by then, good reason to reconsider the security of Britain's Atlantic lifeline. In late summer, Dönitz had shifted his offensive into the mid-Atlantic air gap, that expanse of ocean between the limits of patrols from Iceland and Newfoundland. In those waters U-boats could move rapidly on the surface to concentrate against convoys, while the Allies' inability to read U-boat radio traffic (following the introduction of the new Triton cipher by BdU earlier in the year) had greatly reduced the likelihood of routeing convoys clear of the submarines' patrol lines. If losses like those between August and November – eighty ships totalling 490,511 tons – continued, both British war production and the build-up for the eventual cross-Channel invasion would suffer. Under the circumstances, the Anti-U-boat Warfare Committee's decision was inevitable. On 13 November it concluded that the minimum requirement for VLR aircraft based on the eastern side of the Atlantic was forty machines, and a reluctant Portal agreed to have thirty-three Liberators (which the Air Ministry, after much prodding, had recently allocated to Coastal Command) modified into a VLR configuration.[42]

While this decision was a vindication of Joubert's thinking throughout 1942, he had little time to savour the moment. His relations with Portal had soured since the summer, particularly during November when Joubert took the opportunity of a visit to Northwood by the deputy chairman of the Anti-U-boat Warfare Committee, Sir Stafford Cripps, to circumvent the usual chain of

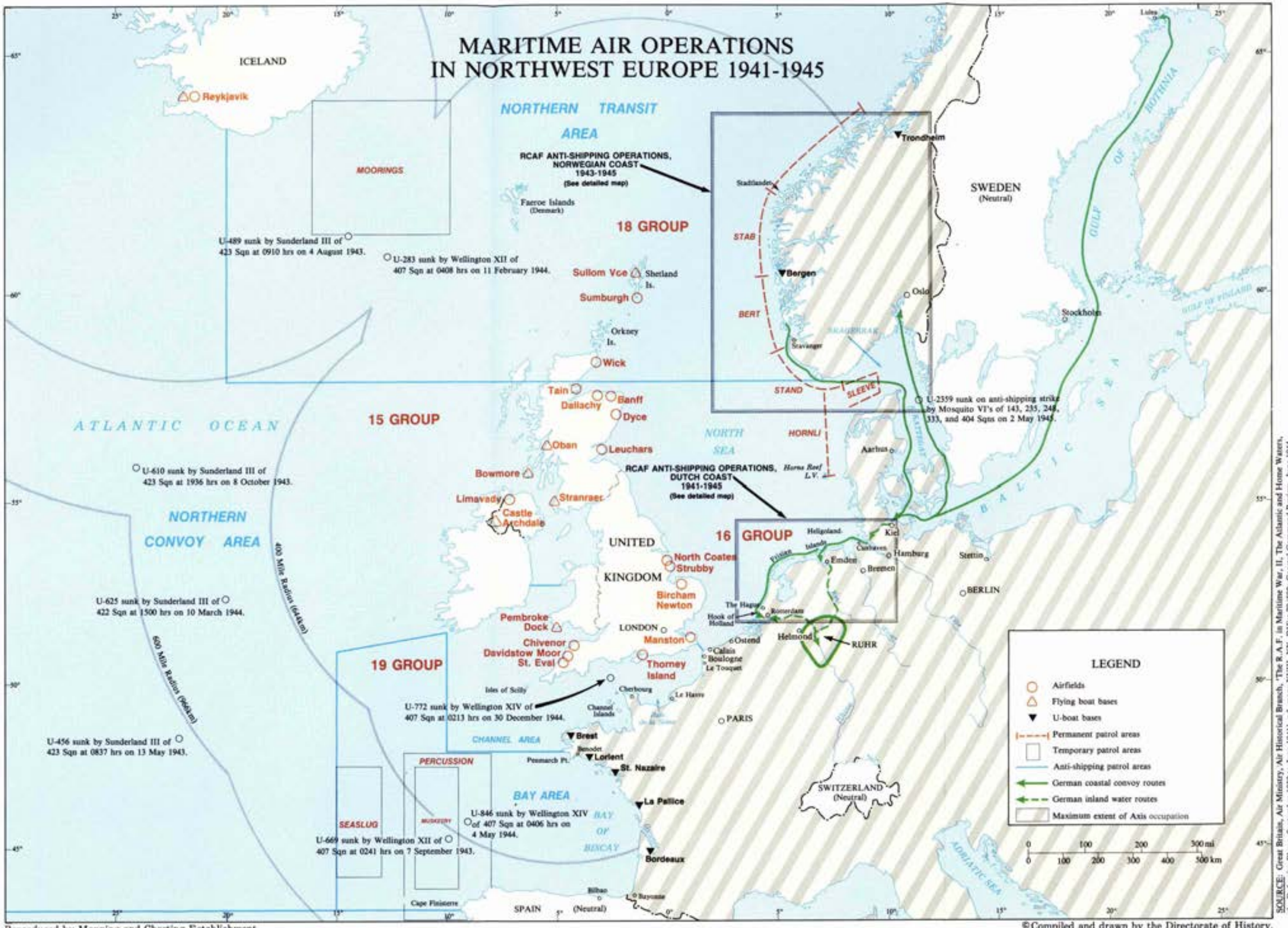
command and press his personal views on the organizational changes needed to improve the coordination of the anti-submarine campaign. He advocated the creation of a specific anti-submarine command – a matter that was essentially the Admiralty's business – which 'would have under its control all the British and Canadian anti-submarine aircraft operating in the Atlantic,' and he backed his oral argument with a letter that went to both Cripps and Portal. The latter, who always feared the consequences of treading on the navy's sensitive toes, immediately wrote to the First Sea Lord disassociating himself from the proposals.[43] He also objected to Joubert's attempt to bypass him.

> I very much doubt whether it is wise or proper for us to suggest to a member of the War Cabinet how the Admiralty are to improve their organisation. I suggest that on this we should do better to mind our own business …
>
> … I am very sorry that you should have sent this document to the Lord Privy Seal without obtaining my approval or that of the Secretary of State. This would have been incorrect even if the document had described a thoroughly worked-out scheme affecting only Royal Air Force responsibilities. It is even more regrettable inasmuch as your proposals are really very much in embryo and are not confined to Air Force matters.[44]

Within a week of receiving that letter, Joubert was informed that he would be replaced by Air Marshal Sir John Slessor.[45]

During his term as AOC-in-C, Joubert had overseen the transformation of Coastal Command from an instrument capable only of frightening U-boat commanders into submerging to one which, with the help of radar, better depth charges, and operational research, was rapidly becoming the most effective submarine killer in the Allied arsenal. More importantly, it was supplying regular, effective protection to convoys up to four hundred miles from shore and, on occasion, to much greater distances, with the precious few VLR aircraft available. It is, nevertheless, questionable whether Joubert had been a good choice to lead Coastal Command during the difficult period of 1941–2. Despite his dedication, enthusiasm, and technical expertise, he was possessed of 'a somewhat acrimonious temperament' and prone to a degree of 'outspokenness [that] did not please the politicians he had to deal with.' His determination in pressing a case, by any means at hand, was interpreted by some as disloyalty. His lobbying of Cripps was certainly seen in that light by Portal, who had undoubtedly come to the conlusion that he needed an AOC-in-C whose loyalty, both to himself and the bomber offensive, was beyond question.[46]

Slessor, a former bomber group commander and senior staff officer at the Air Ministry, combined in his person both the political sensitivity and strategic viewpoint that Portal was looking for. He was also fortunate enough to assume command at Northwood just as the balance of the Battle of the Atlantic was about to shift. The assignment of sufficient VLR Liberators to close the mid-ocean air gap, the advent of naval support groups and escort aircraft carriers, together with the repenetration of BdU's ciphers in late March 1943, would provide the Allies with the means necessary to defeat Dönitz's 'wolf packs.'[47]



SOURCE: Great Britain, Air Ministry, Air Historical Branch, 'The R.A.F. in Maritime War, II, The Atlantic and Home Waters, the Defensive Phase, September 1939 to June 1941', nd, maps XVIII, XX, DHist 79/599; Coastal Command Review, June 1944.

Slessor's first test came quickly, when he had to deal with a very strong joint United States/Royal Navy demand to increase the number of long-range patrols in the Bay of Biscay. He rejected the plan, arguing that it would not be in the best interests of either Coastal or Bomber Command.

> In spite of my bomber background I should not have hestitated to support a claim for 190 additional first-line heavies in Coastal Command if I had believed that the result would be to tip the scales of the Battle of the Atlantic in our favour. But I was convinced it would not. What I wanted was aircraft of the right type, with the right sort of radar equipment and with crews trained in the right way – and I wanted them quickly. *Now* was the time when we wanted to kill U-boats, while we had the bulge over them with the ten-centimetre ASV, and I was relatively uninterested in what would be happening in six months time …
>
> I did not believe that nearly so many aircraft were really necessary to achieve decisive results, and anyway thought that to loot Bomber Command was the wrong way to set about getting them.[48]

Unless there were drastic changes in the close but favourable balance of the air/sea war, any further expansion under Slessor was likely to be limited to occasional slight increases in squadron establishments and the re-equipping of existing squadrons with more up-to-date aircraft.[49]

Operations in the Bay of Biscay, which would eventually involve all the RCAF's maritime squadrons in the United Kingdom, occupied an increasing proportion of the anti-submarine effort during the spring and summer of 1943. Attacks on U-boats in transit to and from the Biscay ports had begun in the spring of 1941, following the formation of No 19 Group in the southwestern approaches. The effectiveness of daylight patrols was soon nullified, however, when Dönitz ordered his submarines to proceed on the surface only at night. While ASV II radar, which operated on a wavelength of 1.5 metres, could locate surfaced U-boats at distances of six miles or more, it was blinded by sea returns during the critical last mile of the approach. In moonlight the submarine might occasionally be 'eyeballed' at that range, but more often than not it was indistinguishable in the dark or masked by the electronic clutter that filled the radar screen, so that attacks simply petered out. One successful experiment, however, had involved illuminating the submarine in the beam of a powerful 24-inch naval searchlight fitted in a retractable under-turret on a Vickers Wellington. Having previously backed the disappointing Turbinlite, in November 1941 Joubert had urged the installation of these Leigh Lights in thirty Wellingtons, but the Air Ministry had ruled that the equipping of further aircraft 'must await operational results obtained by the initial six aircraft already ordered.' As a result, the first Leigh Light squadron, No 172, did not commence operations until June 1942, and then with only four aircraft.[50]

During their first two months of night operations, the four Leigh Light machines sank one submarine and damaged two others; but by September outward-bound U-boats were being fitted with the Metox search receiver, capable

of detecting metric-band radar transmissions in time for the submarine to dive before an aircraft got close enough to use its Leigh Light. Despite their growing ineffectiveness, night patrols nevertheless took on a greater significance during November and December 1942, as No 19 Group assumed responsibility for protecting the convoys supporting the Anglo-American invasion of north-west Africa. Fifteen Handley-Page Halifaxes from Nos 158 and 405 Squadrons were loaned to Northwood by Bomber Command to meet these responsibilities, as were sixteen Liberator bombers from the US Eighth Air Force. Despite the increased emphasis on the Biscay area, however, Coastal Command still had 'ample medium range squadrons,' including Nos 422 and 423, 'to afford consistent air cover to both Torch and trade convoys out to 400 miles from British bases.'*[51]

The selection of No 405 as one of the two squadrons to be transferred may well have been made in order to provide it with a respite from the heavy losses it was incurring on bomber operations. After losing fifteen crews in June and July 1942, the squadron had participated in only six missions during August, with two losses, but on resuming a heavier schedule in September and October it had lost a further ten aircraft. Unfortunately, the change of scenery, from Topcliffe in Yorkshire to Beaulieu, Hampshire, did not end the squadron's difficulties. During November one Halifax failed to return from a sortie over the bay, while the mid-upper gunner of another shot down his own machine when he accidently fired a burst into the port inner engine. Only the bomb-aimer, who managed to bail out, and the flight engineer survived the crash.[52]

Over the course of the next month, four more aircraft went down after experiencing engine failures. One crash, which killed fifteen air- and ground-crew transferring from their old base to the new one, came as a 'severe shock': the entire squadron was grounded for a week in early January while the aircraft were inspected and the problem – 'serious "engine breathing" difficulty' due to 'ring gumming' – was corrected. Wing Commander A.C.P. Clayton, a Canadian in the RAF, recalled that 'gradually, we re-built morale, and solved the aircraft serviceability shortcomings. We ended one month [February] flying more sorties than any other squadron in the group.'[53]

Frustrating all Coastal Command's efforts, a total of 286 U-boats passed through the Bay of Biscay during the November 1942 to January 1943 period, with only twenty-two being attacked by aircraft. None was sunk and only two were damaged, one of which, U-263, was heading back to port on the surface

* Contrary to the statements made on pages 537–8 of *The Creation of a National Air Force*, the delay in providing VLR Liberators for the mid-ocean air gap, once the Anti-U-boat Warfare Committee had convinced Portal to agree to the conversion in November 1942, was due to the time needed to modify the aircraft rather than an unwarranted commitment to the bay offensive. In urging the speedy delivery of further Liberators to the United Kingdom at the end of November 1942, the Air Ministry explicitly told Washington that it had been 'decided to convert to very long range ... and concentrate in two squadrons all Liberators in Coastal Command. To do this means withdrawing Liberators at present employed on anti-submarine work in the outer reaches of the Bay of Biscay.' By 1 March 1943 there were thirty-eight VLR Liberators with Nos 120 and 86 squadrons and only six LR Liberators operating in the bay with No 224 Squadron.

on 27 November when it was attacked again and further damaged by a No 405 Halifax. Despite tactical innovations such as the intermittent use of ASV, or the flooding of certain areas with radar transmissions in attempts to convince the U-boats to submerge at night (compelling them to surface during the day in order to recharge their batteries), poor results plagued No 19 Group's operations until new ASV III radar sets, whose 10-centimetre wavelength could not be detected by Metox, were introduced in the spring of 1943.[54]

The next Canadian squadron to join in the bay offensive, No 407, had spent the first eighteen months of its existence flying Lockheed Hudsons on hazardous anti-shipping strikes off the Dutch coast (see chapter 12). In October 1942, prior to the Operation Torch landings, it had been transferred to St. Eval, in Cornwall, to reinforce No 19 Group's anti-submarine patrols in the bay; after a month of uneventful daylight sorties, Northwood had decided that the Hudson did not have sufficient range and the squadron returned to Norfolk and No 16 Group. Its future appeared uncertain in early November, when instructions were received to transfer ten aircraft to other units and, with only four machines remaining on strength, the squadron was left virtually non-operational for the next two months. This lack of direction, together with the loss of two crews in training accidents (including that of its British commanding officer), did little to improve the squadron's plummeting morale. The future finally seemed resolved, however, when the Air Ministry asked Overseas Headquarters for permission to post it to the Mediterranean during November.[55]

Squadron personnel were innoculated against a range of likely African diseases and sent on embarkation leave, only to have the proposed move cancelled two weeks later, once again leaving the unit in limbo. Air Marshal Edwards considered that the time was opportune to convert it to bombers, for employment in the soon-to-be-formed Canadian bomber group; Ottawa, however, did not think he should 'press for conversion if Air Ministry hold views that such action will minimize [the] war effort.' Finally, in mid-January 1943 the Air Ministry decided that the squadron should remain in Coastal Command, to 'be re-equipped very soon,' and following a month of anti-submarine training on Wellington XIs in northern Scotland it moved to Chivenor, in Devon, on 31 March 1943. The new base, which featured 'extensive hutted accommodation,' would be No 407's home for twenty of the next twenty-six months. The squadron received new Wellington Mark XIIs equipped with Leigh Lights and the latest centimetric ASV III radar.[56]

When they began operations on the night of 19/20 April, these Canadians represented a major reinforcement to No 19 Group's night offensive in the bay, joining No 172 Squadron, the only other Leigh Light unit equipped with centimetric radar, in the latest patrol scheme. Operation Derange had commenced at dawn on 13 April and covered a large strip of ocean two hundred miles wide, extending from Cape Finisterre to the southwestern tip of Ireland. With the U-boats unable to pick up centimetric radar transmissions, the Wellingtons achieved seventeen sightings in less than five hundred hours of flying. Twelve of them resulted in attacks, and two outward-bound U-boats were

seriously damaged (both by 172 Squadron) and forced to return to port. Despite a shortage of trained crews that limited No 407 to no more than three sorties per night instead of the normal five or six, and the Canadians' relative inexperience on Leigh Light operations, the squadron managed three of the seventeen sightings and two of the attacks.[57]

To counter this renewed threat by night, U-boats in transit were ordered to submerge during darkness and to surface by day only long enough to recharge their batteries. This brought an immediate increase in the number of daylight sightings during the first week of May, and a marked increase in the lethality of attacks as four U-boats were sunk and three were damaged. However, since the only Canadian squadron operating in the area, No 407, was flying at night it did not share in these successes. Dönitz – who still directly controlled BdU despite having been promoted to be commander-in-chief of the Kriegsmarine in February – had instructed his commanders to remain on the surface and fight it out if they were caught by surprise and lacked the time to dive to safe depths. Nevertheless, most of them chose to dive whatever the circumstances. Of the forty-three U-boats attacked during the last three weeks of May, only seventeen remained on the surface to fight back; two of the three sunk were among the latter.[58]

In the absence of night-time contacts, the three Leigh Light squadrons, Nos 172 and 407 on Wellingtons and No 210 on Catalinas, turned to day patrols after 20 May, although the Canadians also continued their routine night operations. One No 407 aircraft accounted for both of the squadron's sightings and its lone attack during a daylight patrol on 24 May. In both instances the U-boats chose to submerge immediately on spotting the aircraft and were safely below the surface before the Wellington could cross their tracks. Although depth charging was not recommended if a submarine had disappeared from view for more than thirty seconds, Flight Sergeant N.C.C. Luther hopefully (but vainly) dropped his charges ahead of the swirl left by the first U-boat sighted, forty-five seconds after it had submerged.[59]

At the end of the month, Dönitz introduced yet another tactical innovation, instructing his U-boats to make the Biscay passage by daylight, in groups of up to six in order to maximize their anti-aircraft fire. Although initially successful, that tactic, too, soon proved costly. From 12 June until 2 August, when BdU finally returned to the old practice of submerging by day and running on the surface at night, twenty U-boats were sunk and twelve were damaged. Three of the boats were destroyed by ships of the 2nd Escort Group, while the remaining twenty-nine were sunk or damaged in air attacks by No 19 Group.[60]

Having withdrawn from the North Atlantic convoy routes after the catastrophic losses to U-boats there in May, Dönitz was now dispatching most of his submarines to the Brazilian and West African coasts where there were fewer air escorts. The shift had enabled Slessor to redistribute his forces in turn, moving several squadrons no longer required for Atlantic convoy escort to two new patrol areas in the bay, where the enemy's tactics were providing plenty of daylight targets. Beginning on 15 June, Nos 422 and 423 Squadrons both began patrols in the Seaslug area of the outer bay, in addition to occa-

sional convoy escorts northwest of Ireland. A further reinforcement was provided by the torpedo-bomber Hampdens of No 415 Squadron, temporarily transferred from their anti-shipping role to fly patrols in the Musketry area, east of Seaslug and northwest of Cape Finisterre. No 407 Squadron, meanwhile, continued to fly a full schedule of night Musketry patrols, missing most of the daylight action.[61]

While the decision to remain on the surface and fight it out was proving costly, a group of two or three U-boats provided a formidable target for any aircraft. The most commonly encountered boats, the Type VIIc, had a standard anti-aircraft armament of one 20-millimetre cannon and several machine guns, while the larger Type IX carried an additional 37-millimetre gun behind the conning tower; a second 20-millimetre cannon had already been mounted on some boats. Previously encouraged to attack surfaced U-boats because they presented 'a much better chance of a kill than one submerged,' pilots who sighted two or more boats obviously willing to 'fight it out' were now instructed 'to shadow and start the homing procedure until more aircraft appeared on the scene.'[62]

These instructions were acted upon on 14 June when an RAF Whitley sighted the in-bound U-564 and U-185 in the Musketry area. After being fired at, the Whitley circled just out of range and called up additional aircraft until a No 415 Hampden joined it two hours later. After receiving permission from base, the Whitley then attacked U-564, sinking her outright, but was heavily damaged by Flak and crashed into the sea during the flight home. The Hampden, regrettably, continued to shadow U-185 and did not attack even when the submarine stopped to pick up the survivors of U-564. Indeed, the Canadians were still earnestly shadowing their enemy when a flight of Junkers 88s, sent out to escort the U-boats, shot them down.[63]

The same procedure was attempted by a No 422 Sunderland when it spotted three U-boats at the southern edge of the Seaslug area three days later. The Canadians circled and exchanged gunfire with the enemy flotilla, unable to home-in other aircraft because of a transmitter failure, and they eventually lost sight of the boats in the haze. A No 423 Squadron flying-boat also began circling the three submarines it found on 3 July, while calling for back-up, but after initially holding it off with Flak the Germans chose to submerge while the Sunderland was not in position to depth charge them.[64]

Such incidents were not unique to Canadians squadrons. Other U-boat groups frequently evaded attack because of delays in homing in aircraft or a failure to coordinate the actions of those present. To increase the effectiveness of patrols, therefore, Slessor amended his orders on 22 July, directing crews 'to attack at once from low level making the fullest use of front guns to smother the U-boat flak.' The new instructions improved results immediately. Nine submarines were sunk in the two-week period following their promulgation, as opposed to the eight that had been destroyed during the previous five weeks.[65]

The RCAF squadrons were not well placed operationally to share directly in these attacks, however. The Sunderland crews responsible for sinking five of

the U-boats were all based in No 19 Group, which patrolled in the Musketry area; No 15 Group's squadrons (including Nos 422 and 423) not only covered the more distant Seaslug area but also had to provide a significant number of convoy escorts. Of the other two Canadian squadrons, No 407 worked mostly at night, when the U-boats were submerged, and No 415, inexperienced in anti-submarine operations, was unable to make more than two fruitless sightings. Despite flying over seven hundred sorties and accumulating just under seven thousand operational hours during June, July, and August, only two Canadian aircraft contributed to the destruction of any U-boats, and both of those actions occurred on 2 August, the same day that Dönitz finally acknowledged that his policy of group sailings was not paying off.[66]

Hampden A of No 415 Squadron, flown by Squadron Leader C.G. Ruttan, caught U-706 on the surface in the Musketry patrol area in mid-morning.

> Pilot immediately went in to attack, but crew of U-Boat began firing as S/Ldr Ruttan broke away to come in for attack from starboard quarter. Front gunner fired 10 rounds from A/C but guns then jammed. Attack continued and A/C A/415 dropped 6 × 250 D[epth] C[harges]s across course of U-Boat from 100 feet. Immediate results could not be seen as tail of A/C obstructed view. U-Boat did not submerge but appeared to be a little lower in the water and speed reduced to 9 knots, thus apparently being disabled. At 0917 a [USAAF] Liberator was sighted and went in for direct attack on U-Boat and dropped its [twelve] DCs. After Liberator's attack U-Boat not seen again. Three minutes later a number of bodies, about 15, were seen to come to the surface, surrounded by large quantities of wreckage and diesel oil.[67]

According to the four survivors, the bridge watch was concentrating its attention on the circling Hampden and did not see the approaching Liberator until it was too late.[68] Meanwhile, No 407 Squadron's commanding officer, Wing Commander J.C. Archer, RAF, was flying one of the unit's first daylight patrols in almost seven weeks when he attacked and damaged U-106, 250 miles northwest of Finisterre, less than an hour later. Unable to submerge, the submarine was sunk later that day by aircraft of 228 and 461 Squadrons.[69]

Having lost four submarines in the first two days of August, Dönitz signalled his captains to abandon group passages until the end of the month, when a new radar search receiver should become generally available, and to try instead to enter the bay by sailing close to the Spanish coast, surfacing only at night. An immediate decline in the number of sightings led Northwood to conclude correctly that the enemy had once again altered its tactics and, after 11 August, both Leigh Light Wellington squadrons were assigned a full schedule of night patrols. The Seaslug and Musketry schemes were cancelled and replaced by a less intensive but more widespread system of patrols known as Percussion. No 415 Squadron returned to the more hazardous task of anti-shipping strikes, and both of the Canadian Sunderland squadrons were withdrawn from the bay the following month.[70]

However, No 407 Squadron continued to operate there for the remainder of the year. Of the thirteen U-boats sighted in September, eleven were encoun-

tered at night by Leigh Light squadrons; three of them were sighted by No 407, which also recorded the only U-boat destroyed by No 19 Group. On the night of 6/7 September, Pilot Officer E.M. O'Donnell and his all-Canadian crew were some two hundred miles off Cape Finisterre when the radar operator obtained a contact at eight-miles distance. At a height of six hundred feet and less than a mile range, the Leigh Light was switched on to reveal a U-boat 'low in the water but not submerging.' Unfortunately, the Wellington's 'position was unfavourable for attack,' and the light was switched off as the pilot circled for another run. When the U-boat was illuminated a second time it had begun a crash dive, but five depth charges were dropped across its track 'from starboard bow to port quarter,' about twenty-five yards ahead of the swirl. Although assessed at the time as 'probably sunk,' O'Donnell and his crew had actually destroyed U-669.[71]

While Leigh Light operations were not particularly hazardous, especially when compared with anti-shipping strikes, No 407 Squadron's morale began to deteriorate in the fall of 1943 as a result of the inadequate living conditions encountered at Chivenor. Among the Canadians' complaints was the RAF's failure to issue airmen with sheets, which, coupled with 'the RAF standard of infrequent washing of blankets,' led to outbreaks of impetigo. Food was also poor, meals being 'unappetizing, badly cooked and sloppily served' on dishes that were 'consistently dirty,' but efforts to improve the situation, especially in the airmen's messes, proved futile. Although an RCAF squadron leader from District Headquarters in Exeter visited the squadron to try to get something done at the end of September he was unable, singlehandedly, to raise British culinary standards.[72]

The poor fare served at Chivenor was in sharp contrast with that found on a neighbouring American base, where those invited 'had a meal that reminded you of home. Everything was clean and well cooked and all food served was rationed food. Why we can't have the same in the Officer's Mess here is beyond us.' A mess meeting held at Chivenor 'turned out to be a joke as far as the officers of this Squadron were concerned,' complained the squadron diarist. 'There was definitely nothing gained by this meeting as any suggestions by 407 Squadron officers were laughed at. It was just a waste of 225 man-hours and nothing worth while gained.'[73]

Morale was not helped by the transfer of more than a hundred groundcrew to a common servicing echelon under the control of the RAF. This change was part of the increasingly centralized 'planned flying and maintenance' concept intended to maximize the use of aircraft, but it 'did not please the airmen as they regretted and resented loss of direct contact with … their own squadron and their own aircraft.'[74] They thought that it 'tends to defeat its own purpose in some degree because the groundcrew, as well as aircrew, lose personal interest in an individual aircraft. Where one aircraft is assigned to one crew and the same groundcrew services it constantly, the groundcrew becomes as much interested in the joint effort as though they were in the flying section of the team. When they no longer have constant, personal contact with one

aircrew, they are apt to become indifferent and, on occasions, even slipshod. They become merely routine mechanics.'[75]

An influx of RAF aircrew in September reduced the Canadian content of the squadron – which had stood at over 90 per cent for the past eighteen months – to 86.6 per cent.[76] The difference in numbers was small, but aircrew were the acknowledged 'cutting edge' of a unit, who supplied what prestige and glory there might be, and groundcrew – Canadian groundcrew, at least – generally preferred to work for aircrew of their own kind.

The cumulative effect of life at Chivenor became apparent at the end of September, with 'an appreciable drop in morale among aircrew over the past few months and this is reflected throughout all personnel of this squadron. There is not the former keeness to fly either on operations or on exercises and tests and this would appear to be due to a loss of confidence in the aircraft both as to its initial worth and the maintenance of it. Crews requiring two operational meals in connection with a single trip are still being asked to pay for their second meal despite the fact that they miss one and frequently two meals in the mess.'[77]

The Canadians' sagging spirits were not improved by the decreasing number of U-boat sightings being made. The squadron continued to fly night patrols until the end of January 1944, but after O'Donnell's successful attack in early September there were few sightings and only three attacks, none of which achieved success. Three aircraft were lost on operations, including that of Wing Commander Archer. Two probably fell victim to German long-range fighters patrolling the bay, while the third may have been shot down while attacking U-966 on the night of 9/10 November. When the new commanding officer, Wing Commander R.A. Ashman (a prewar regular who had entered the RCAF in January 1939 after acquiring a degree in electrical engineering), joined the squadron in early November he became the first RCAF officer to command it – and would retain his command for the next year. He already had more than a thousand hours of operational flying to his credit, in both Eastern and Western Air commands of the Home War Establishment, including a stint with 115 (F) Squadron in the Aleutians.[78]

Squadron morale improved briefly during a month-long transfer to St Eval, a move made necessary while the deteriorating runways at Chivenor were being repaired. The Canadians 'noticed the striking difference in [the] standard of messing' at their temporary station, an improvement that partially compensated for the fact that St Eval was infested with rats. On returning to Chivenor, however, the poor living conditions once again 'contributed to the general lowering of the morale of the Squadron.' Not until February 1944, when it was transferred to Limavady in Northern Ireland, did the diarist find that 'both officers and other ranks are benefiting from the improved diet and are more contented. Hence the morale of the Squadron has risen noticeably,' a state that was 'undoubtedly ... contributed to by good weather and good food, ample billet space and agreeable working conditions.'[79]

Given the difficulties that Canadians were experiencing in adjusting to Bri-

tish standards of diet and sanitation, both Ottawa and Overseas Headquarters in London were anxious to group RCAF squadrons together, perhaps on a Canadian-administered base, with an eye to developing an environment that would improve morale and unit efficiency. Air Marshal Edwards had approached the Air Ministry at the end of June 1943 to suggest that his three flying-boat squadrons, Nos 413, 422, and 423, 'be formed into an RCAF Flying Boat Wing and stationed at Castle Archdale or alternatively some other Flying Boat Station mutually acceptable.' While recognizing the difficulties of bringing 413 Squadron back from the Indian Ocean, Edwards was hopeful that No 422, then stationed at Bowmore, on Scotland's Isle of Islay, might be transferred more quickly, noting that it had 'had a particularly strenuous time, having been stationed since becoming operational in unpalatable surroundings and operating under tiring and trying conditions.' Bowmore was considered 'most unsuitable both from an operational point of view and also from the point of view of morale,' since many of the unit's maintenance and administrative tasks had to be conducted from other stations. Edwards also hoped to provide a more Canadian atmosphere by posting RCAF personnel 'to fill certain key positions in the establishment of a[ny] station' from which the Canadian squadrons would be operating.[80]

In discussing the matter with Northwood, Edwards learned that Slessor was not anxious either to move the RAF squadron at Castle Archdale or to replace the station commander. He was, however, prepared to consider transferring No 422 Squadron to the Irish base 'in a few months time.'[81] His reluctance to alter the situation at Castle Archdale was understandable given that the RAF's inspector general had already found it to be 'an excellent station. For an operational station, quite exceptional. The administration, organization and discipline of the station appeared to be on a high level and everything was found in good order ... There is a tradition growing up in too many operational stations that because the units are operational, therefore all standards of upkeep, cleanliness, tidiness and deportment may be relaxed ... Castle Archdale is a good example of the high standards that can be maintained.'[82] Even on a well-run base, however, the general cleanliness of the Canadians stood out. 'I wish in particular, to commend No. 423 (Canadian) Squadron. All their quarters, including those of the aircrew, were exceptionally well kept, and the way the quarters had been furnished by the men themselves indicated the interest that they took in making them comfortable, clean and pleasant to live in. The same applied to their workshops, hangars, technical accommodation and to the flying boats themselves.'[83]

Slessor's desire to retain the current RAF station commander until his tour expired was tempered by his view that 'one never knows with the Canadians, they are a bit liable to get on their high horse'; but when the British incumbent was posted in October 1943, he was replaced by Group Captain Martin Costello, RCAF. Costello had previously served in Eastern Air Command in Halifax as senior air staff officer and in Ottawa as deputy air member for air staff. Although he was later joined by a half-dozen more Canadian officers,

station headquarters and base administration remained, at best, Anglo-Canadian organizations.[84]

When No 422 Squadron finally joined No 423 at Lough Erne, in November 1943, the Canadian content among groundcrew of the two units stood at 72.5 and 85.6 per cent, respectively, while the continuing shortage of RCAF flight engineers and wireless operator/mechanics (who had to be trained in the United Kingdom) contributed to the relatively low figures of 52.5 and 46.5 per cent, respectively, among aircrew. Although operating out of Castle Archdale, No 422's headquarters and accommodation were located at St Angelo, several miles to the south. The separation of aircraft from living quarters 'was naturally not convenient to those who had to travel back and forth and, after many complaints, the whole squadron was finally moved to Castle Archdale in April 1944.'[85]

Although Coastal Command's primary effort during the spring of 1943 had been in the Bay of Biscay, No 15 Group had continued to provide escorts for North Atlantic convoys. It was during one of these patrols that a No 423 Sunderland spotted U-456 – already damaged following an attack by a No 86 Squadron Liberator – in the vicinity of a convoy. When it appeared that the U-boat was going to stay on the surface and fight it out, Flight Lieutenant John Musgrave decided to call in nearby naval escorts; only when the submarine began to dive in order to escape the approaching vessels did he deliver an attack. The U-boat was subsequently destroyed by depth charges from HMS *Lagan* and HMCS *Drumheller*.[86]

Responding to the build-up of submarines using Norwegian bases, in July 1943 Northwood established a new patrol scheme (codenamed Moorings) between the Faröe Islands and Iceland, to be flown daily by those aircraft not detailed for bay patrols or convoy escorts. Flying Officer A.A. Bishop* and his crew were engaged in a Moorings patrol on 4 August 1943 when they spotted the 1688-ton re-supply submarine, U-489. The U-boat remained on the surface, where its 20-millimetre and 37-millimetre cannon provided a formidable defence, and began weaving in an attempt to keep the Sunderland on its stern.[87]

> Because of this the [tactic] skipper did not go straight in but circled about a mile away at a height of 600 feet trying to find some way of getting Jerry at a disadvantage. During this time the boys in the galley were busy shooting pictures …
>
> We turned in towards the U-boat at around 1200 yards and opened fire with our .5-inch [machine] gun … then we opened fire with our .303 Vickers [machine gun].
>
> At this point the Jerries who, as far as we could tell, hadn't hit us yet, started to register a few. From there on in it was a steady rain of lead, wounding the second pilot and the second wireless operator who was down in the nose on the [.303 machine] gun …

* Wrongly identified in volume II of this history as the son of W.A. Bishop, the First World War flying ace; he was no relation.

We managed to hang on and dropped our six depth charges right up the track of the U-boat from dead astern... By the time we had released the depth charges the aircraft had a terrific fire in the port wing, the aileron controls and elevator trimming tabs were shot away and things didn't look so good ...

We bounced on the swell twice and the third time the port wing dropped ... the float broke off, the wing tip caught in the water, and the aircraft cartwheeled straight into the sea ... The starboard wing, now also on fire, and the fuselage from it back to the tail was still afloat. One of the boys sat on the tail plane for a few minutes, but soon had to jump into the water as the kite sank in four or five minutes. The skipper came up on the port side, swam back [to] where he found the second wireless operator struggling in the water, badly wounded. They stuck together until rescued.[88]

Bishop and five of the eleven crewmen managed to scramble into an inflatable dingy and were soon joined in the water by the submariners as they abandoned their sinking U-boat. 'The Jerries sat quite comfortably on their rafts 100 yards or more away, and made no attempt to come and pick us up. The first wireless operator saw smoke on the horizon, but none of the rest of us knew anything about a Destroyer coming until it was right beside us and had launched a whaler to pick us up. They had seen us go down to attack, and followed the smoke from our burning fuel to our position.'[89] Both Bishop and Musgrave were awarded Distinguished Flying Crosses.

Most patrols were less eventful. Following their withdrawal from the Bay offensive in mid-September, both 422 and 423 Squadrons were kept busy in the Moorings area.

Having reached their area they will take up a course directly east and west and continue on it for 100 or 150 miles, turn north or south 20 miles or so and return the same distance. For the duration of their patrol they continue covering that same area. They keep constant watch but that does not mean the gunners in their turrets and the two functioning pilots sit or stand there with binoculars glued to their eyes. The signals officer does the watching in his curtained-off dark room where he watches his radar equipment for any variation in landscape or seascape.

Flying evenly and uneventfully over the barren ocean at 2,000 feet rapidly becomes monotonous and surprisingly tiring. To minimize the monotony and especially give those in cramped, cold or confined positions a change, most crews normally change around every hour ...

The patrol continues, eventlessly. The navigator periodically climbs up and peers out the astrodome. Just as regularly he checks on the wind-drift, with the assistance of a spare gunner who takes the reading on the drift indicator in the tail. In between times, he continues to pore over his charts, making calculations, checking time and position, keeping his log up to date. He is the one member of the crew who works continuously throughout the trip, even eating at his little table.

The crew take turns being cooks for the day. The meal is staggered, of necessity, two or three eating at a time in the wardroom. The rest have to be on duty and, anyway, the stove is only large enough to prepare for about three at once.

The day drags on. Periodically, the radar operator picks up something which turns out to be a surface vessel. Or two or three grey corvettes, which from 2,500 feet and six or seven miles could be mistaken for submarines. The skipper has the flare pistol ready to fire off a cartridge with the colour of the day in case of doubtful identification. Perhaps a Liberator or Fort[ress] in transit crosses the patrol area.

Since a submarine-sighting is something merely hoped for and rarely attained (a large proportion of aircrew complete a whole tour of 800 hours without seeing a submarine), the biggest thrill most crews get is to come upon a big convoy spread out on the mid-Atlantic for miles, slowly crawling towards the British Isles.

To vary the long day, there's dinner. A couple of hours later there's another cup of steaming tea. Two or three hours after that, more tea with biscuits or sandwiches. Finally, tired and bored and probably cold, they leave their patrol and head for base, so as to arrive back on scheduled time.[90]

For most crews, the greatest threat they had to face was that posed by the weather, 'more dangerous and incalculable than any human enemy. And there is nothing a crew can do about it, once caught.' Weather also governed the rhythm of operations and was responsible for cancelling or curtailing about one-fifth of all sorties. Most of the time this was due to the weather at base, either at the time of takeoff or that forecast for the time of return, but unfavourable conditions in the patrol area accounted for two-thirds of weather-related cancellations of Moorings flights.[91]

By routeing his submarines independently and keeping them submerged as much as possible, Dönitz was able to pass nine boats through the Moorings area in September 1943 with only one being attacked, and that unsuccessfully, while a further twenty-six made the passage in October without being sighted.[92] The Canadians' last victory of 1943 was scored by a No 423 Sunderland, piloted by Flying Officer A.H. Russell, while escorting a convoy west of Ireland on 8 October. Dropping out of low cloud, he caught U-610 on the surface and, in an exceptionally precise attack, sank it with three well-placed depth charges.[93] Nine days later, in the same area, Flight Lieutenant P.T. Sargent of 422 Squadron attacked one of two surfaced U-boats observed while patrolling in the area of convoy ONS 20. His first run was met by a heavy Flak barrage from the two boats. What happened next was recorded by his second pilot, the senior survivor among his crew.

As the first attack resulted in an undershoot with a hang-up [of one depth charge which failed to release], the skipper pulled around sharply going into a second attack immediately. This time no evasive action was taken, the skipper apparently determined that the attack be successful and only two depth charges being left with which to attack.

On the run-in, Ack Ack hits were numerous, both front gunners and the navigator being hit, as well as some damage being caused to the engine controls in the cockpit. In spite of this, Flight Lieutenant Sargent continued his attack and, on the report of the rear gunner, obtained a perfect straddle with the two depth charges …

Exceptional courage and gallantry was shown by Flying Officer Chesley Steeves, the navigator. F/O Steeves, standing at the navigator's table on the second attack, had his left leg completely blown away by an explosive shell. In spite of this he refused to lie down … and succeeded in giving the writer [Flying Officer A.R.B. Bellis] the D[ead] R[eckoning] position of the attack and a course to steer to the nearest convoy before collapsing and dying within a few minutes.[94]

Its controls shot away, the Sunderland crash-landed within sight of a British destroyer, with three of the crew – including the group gunnery officer who had been manning one of the .5-inch galley guns – already dead. Two others were seriously wounded. Sargent himself was either killed in the crash or knocked unconscious and sank with his boat; and Bellis would have suffered a similar fate if a seaman from the destroyer had not dived overboard to pull him from the wreckage. It took 'almost two hours' of artificial respiration to revive him. Meanwhile, a 'seriously damaged' submarine fled the scene. Bellis and the radio operator who had signalled the destroyer, Warrant Officer W.F. Beals, were each awarded the DFC.[95] Neither Sargent nor Steeves were decorated, however, since only the Victoria Cross, among Commonwealth awards for gallantry, could be awarded posthumously at that time.*

Although BdU attempted to improve its fortunes in 1944 by establishing submerged patrol lines within 250 miles of the Irish coast, the continued inability of submarines to operate on the surface under the threat of Allied air power thwarted Dönitz's every effort. Underwater, the U-boats were too slow and their endurance too limited to be successful. Of the 3360 merchant ships that crossed the patrol lines, only three were sunk. German losses, however, totalled twenty-nine submarines, of which eighteen were accounted for by surface escorts and six by Coastal Command, two of them by RCAF aircraft. The first Canadian success came on the night of 10/11 February when a No 407 Squadron Wellington flown by Flying Officer P.W. Heron swept in on a radar contact and, illuminating U-283 with its Leigh Light, sank it with a stick of six depth charges.[96]

A month later a Sunderland of No 422 Squadron flown by an RAF pilot accounted for U-625. The submarine took two-and-a-half hours to sink and, during that time, bereft of more depth charges, the Sunderland circled it. Before taking to their liferafts, the Germans flashed the signal 'Fine Bombish' to the airmen. Nothing further was ever heard of the more than twenty submariners photographed in the water. BdU had received U-625's distress signals and dispatched two U-boats to attempt a rescue, but by 12 March they concluded that 'U-625 must be considered a total loss.'[97]

* When a Liberator of No 200 Squadron engaged in a similar attack was shot down on 11 August 1943 with the loss of all on board, its RNZAF captain was awarded the Victoria Cross on the evidence of German survivors. But the Liberator was a much faster machine than the Sunderland - which meant that the apparent risk was predictably less - and it had come under the fire of only one U-boat.

Planning for Operation Overlord had begun in early 1943, but those plans drawn up prior to January 1944 were primarily concerned with the forces directly involved. Coastal Command's role in protecting the flanks of the invasion corridor and its sea communications across the Atlantic had not been considered in any detail until late January, while the development of an operational plan was complicated by concurrent proposals to reduce its size and strength substantially. Seizing an opportunity presented when the prime minister suggested that some anti-submarine squadrons might be able to reinforce Transport Command during the critical initial phases of the invasion, the CAS asked for further cuts (despite warnings from his staff that any reduction in the anti-U-boat effort 'would probably lose more than it would gain')[98] on the grounds that an 'absolute minimum of resources should be devoted to the defensive and the maximum to the offensive.'

> Bearing in mind the over-riding importance of Overlord, a suitable way to tackle this problem would be, I think, something on the following lines.
>
> First of all, estimate what rate of sinkings our present strategy could stand. (It might possibly be about the 300,000 tons per month which during a period of heavy sinkings was thought to be an average loss which we could stand.)*
>
> Then estimate the minimum anti-submarine resources in aircraft, escort carriers etc. required to limit the rate of loss to this figure …
>
> We could then consider how to effect cuts in Coastal Command and overseas anti-submarine and anti-shipping forces … In the result it should be possible to throw up large man-power resources for strengthening Bomber Command, AEAF and Maintenance Command and possibly to make available a number of squadrons equipped with aircraft suitable for taking a direct part in Overlord.[99]

At Portal's behest, then, and ignoring its own previous advice, the air staff drafted a proposal recommending that Northwood give up seventeen of its thirty-four squadrons at home and an additional twenty-four overseas. The attempted finesse was foiled, however, when the director of operations (maritime) and the vice-chief of the air staff obtained a copy of the proposal before it reached Portal and amended it to take into account the Admiralty's more significant objections – much to the dissatisfaction of the CAS. Refusing to accept their greater estimate of the U-boat threat, either to Overlord or the North Atlantic convoys, and convinced that the anti-shipping strike wings would have few useful targets, Portal now instructed his personal staff officer to produce yet another draft which, as before, argued for deep cuts in Northwood's order of battle.[100]

However, at a full Air Ministry meeting held on 22 March 1944, Portal found himself virtually alone in his desire to carry these reductions through. Opposed by the VCAS, DCAS, the air member for supply and organization, and

* Actually, during the first five months of 1944 the Allies averaged only 100,000 tons of shipping lost per month worldwide.

the new AOC-in-C at Northwood, the CAS was finally persuaded that the proposed cuts would not result in any appreciable increase in Bomber Command's strength and might even make that command's future expansion more difficult to justify. After further consultation with Douglas, Portal decided that it would be wiser to 'defer the review on the needs of the Air War at sea until after Operation Overlord when there might well be grounds for a much more drastic reduction.'[101]

With the question of its future establishment settled for the moment, the staff at Northwood was able to draw up a more precise 'Directive on the Role of Coastal Command in Overlord.' The seven anti-submarine squadrons in Nos 15 and 18 Groups formerly assigned to the Northern Transit Area and Atlantic convoys were reduced to four, with most of their aircraft deployed for anti-submarine operations in the southwestern approaches to the English Channel. Although 422 and 423 Squadrons would both stay in No 15 Group at Castle Archdale, they, too, were to operate in the southwest approaches under No 19 Group's control, as was 407 Squadron at Chivenor. In all, No 19 Group would have eight Liberator, five Wellington, two Halifax, and six Sunderland squadrons available for anti-submarine operations. These aircraft were to be employed in a series of 'box' patrols, flexible enough that they could be shifted, either individually or as a whole, up-Channel towards the invasion area much as a cork might be pushed into a bottle. Those Cork patrols that abutted on the French coast would be protected by fighters of the Allied Expeditionary Air Force and were among the most important since 'the enemy will almost certainly move his U/Boats [towards the invasion corridors] under the cover of his fighters and shore defences.'[102]

No 407 Squadron returned to Chivenor in late April, in preparation for D-Day, and the airmen were pleased to find that conditions there had improved significantly during their three-month absence. The food was noticeably better, even though the medical officer reported 'mild outbreaks of stomach upsets, which may or may not be attributable to the present messing facilities.' Steps 'taken with a view to improving the washing of dishes and silverware' subsequently solved the hygiene problem, and the men's health remained 'quite good' throughout the summer.[103]

Once settled, the squadron quickly resumed its anti-submarine sweeps in the Channel and Bay of Biscay. Success came within a matter of days, during the early hours of 4 May. Flying Officer L.J. Bateman and the crew of Wellington M were about two hundred miles north of Cape Finisterre, when they obtained a radar echo which proved to be a surfaced U-846. Bright moonlight made the Leigh Light superfluous.

> M tracked dead over U-Boat and, aiming at the bow as centre of stick, released six × 250 Torpex D[epth] C[harges] from height 150 feet. Points of entry were not observed owing to glare of tracer from M's rear guns, and flak and tracer from U-Boat, while the depth charge plumes obscured any evidence of the explosions with relation [to] the U-Boat. Immediately after the DC explosions all flak from the U-Boat ceased. M continued on course and then did climbing turn to port obtaining

height of 1500 feet and circled position of attack at range two miles... When a complete circuit had been made, contact was lost.[104]

U-846 sank with the loss of all hands.

As the hours of darkness diminished with the approach of summer – a decided disadvantage for the enemy – No 18 Group launched a new offensive off the Norwegian coast following BdU's decision to reinforce its Arctic flotillas (in anticipation of an Allied invasion of Norway, part of the Overlord deception plan) and pass U-boats into the Atlantic via the northern route. Nos 422 and 423 Squadrons sent detachments to Sullom Voe from 18 May until 6 June. At 0719 hours on 24 May an RAF Catalina attacked U-476 northeast of the Faröe Islands, causing serious damage which left it dead in the water.[105] The attack began a confusing series of encounters between submarines and flying-boats that continued throughout the day as both sides searched for the disabled U-boat within a relatively small piece of the Atlantic Ocean.

Later that morning, Flight Lieutenant R.H. Nesbitt, flying a Sunderland of No 423 Squadron, made contact with the Catalina and took over the search for U-476. At 1419 hours the radio operator overheard a distress call from an unidentified source just as the second pilot glimpsed 'what appeared to be a large puff of smoke or splash 10/15 miles north.' Turning to investigate, they sighted U-921, which was searching for the crippled U-467. Heavy but inaccurate Flak and skilful manoeuvring on the part of the enemy caused the inexperienced Canadians to drop their depth charges wide of the mark, but their machine-gun fire inflicted casualties and forced U-921 to make for port.[106]

While making their approach, Nesbitt's crew had reported the wreckage of what appeared to be an aircraft in the water, 'whitish grey in colour – wing-like in shape and was amid oil or fuel slick.' Both the distress call and the wreckage may have come from Sunderland R of 422 Squadron, flown by Flying Officer G.E. Holley, which went missing during the day. U-921's log records being attacked by a Catalina at 1415 hours followed by a Sunderland at 1434 hours, but Coastal Command reports indicate that the only Catalina attack made on 24 May was the early morning encounter of the 'Cat from 210 Squadron with U-476.' Did the crew of U-921 misreport Holley's Sunderland as a Catalina? Perhaps they hit it but were unaware of its fate as it disappeared from view, desperately transmitting distress signals before crashing into the sea.

A more precise determination of what happened is complicated by the fact that a third German submarine, U-990, came across the wreckage of an aircraft's tail unit afloat in the water, five hours prior to locating the damaged U-476 at 0015 hours on 25 May. The crippled U-boat was scuttled and, after transferring to U-990, the survivors of U-476 were informed of the aircraft wreckage, which they assumed was the remains of the Catalina that had attacked them the previous morning. Based on their claim, the RAF's Air Historical Branch later credited U-476 with the destruction of the Sunderland; but since the survivors of U-476 also stated that their 'boat was not troubled for 17 hours after the attack' by 210 Squadron's Catalina at 0719 hours, and

Holley did not depart Sullom Voe until forty minutes later, it was not possible for U-476 to have shot down the missing Canadians. Sunderland R is more likely to have been the so-called Catalina that initially attacked U-921 at 1415 hours. What is certain is that the Kriegsmarine lost one submarine and the RCAF one flying-boat.[107]

Anticipating a major landing somewhere along the French coast in the summer of 1944, BdU had been holding some seventy submarines in readiness to meet the invasion fleet, half of them (including nine of the new Schnorkel boats) stationed in the Biscay ports and the other half in more distant Norwegian waters. (The adoption of Schnorkel, an air induction trunk and exhaust pipe that enabled U-boats to use their diesel engines while submerged at periscope depth, meant that submariners could now remain under water for days at a time, and by the end of May the Germans had fitted some thirty operational boats with the device.)[108] By noon on D-Day – 6 June 1944 – all the Schnorkel boats were at sea with orders to attack shipping making for the Normandy beaches. At the same time, the conventional boats from Lorient, St Nazaire, and La Pallice were dispatched to form a patrol line stretching from the Isles of Scilly to the Franco-Spanish border, in order to block the Atlantic approaches to the cross-Channel invasion corridor and screen the Biscay coast against any secondary landing there. Those at Brest were ordered to the south coast of England, between The Lizard and Hartland Point.[109]

Instructed to reach their stations quickly, most boats, including those with Schnorkel, surfaced after dark on the 6th in an effort to make a faster passage. That was a mistake. Eleven air attacks were made during the night, two submarines were sunk, and six were damaged and driven back to base. Dönitz then recommended that the others travel submerged as much as possible, but, in a region of strong, often adverse, currents and rip-tides, that could be a slow and laborious business. By the evening of 10 June, none of the Schnorkel boats had reached their assigned patrol areas, one having been sunk and two others damaged enough to compel their return to Brest; and all eight of the conventional boats sent to patrol south of the Scillies had either been sunk or damaged by air attack. On 12 June, satisfied that a landing on the Biscay coast was not going to be attempted, BdU recalled all the non-Schnorkel boats to port.[110]

The RCAF components of Coastal Command played no direct part in any of those successes. After flying convoy escorts early in the month, Nos 422 and 423 Squadrons both began a heavy schedule of Cork patrols on the 9th, but as their patrol areas, in 'choke points' off Land's End and in the approaches to the St George's and Bristol channels, were north of the region in which the U-boats were deployed, no sightings were made.

No 407 Squadron's night-time Cork patrols in the Bay of Biscay and the approaches to the English Channel were of an entirely different character. Two crews flew on D-Day and one, led by Squadron Leader D.W. Farrell, never returned, possibly having been shot down by U-621 during the early hours of 7 June. More positive results were achieved late on the 20th. Southwest of the

Isles of Scilly, Flying Officer F.H. Foster and crew located U-971, a Schnorkel boat based in Norway and ordered to the Channel area on 9 June.[111]

The submarine had had a complicated passage. Attacked by a four-engined aircraft while on the surface just north of the Faröes on 15 June, 'U-971 opened fire with all her armament and the aircraft [probably from an OTU] turned away.' When attacked by Foster's crew just before midnight, U-971 suffered severe damage and was forced to submerge. Engaged repeatedly over the next few days, the U-boat was eventually finished off by HMCS *Haida* and HMS *Eskimo*. The captain and fifty-one of his fifty-three man crew were rescued.[112]

Their movements inhibited by day and night, few of the Schnorkel boats ever reached the invasion corridor. By daylight, Schnorkels left a small but visible wake and an exhaust trace, while at night the 3-centimetre ASV sets now coming into use could detect a Schnorkel head in seas less turbulent than those produced by winds of Force 3 on the Beaufort scale. If they chose to run submerged without their Schnorkels, however, the drain on their batteries whenever the tidal stream was adverse often prevented U-boat commanders from using their electric motors. They were also unwilling to use their transmitters, thereby leaving BdU unaware of their progress and unable to coordinate operations.[113]

Indeed, only U-621 reached the invasion area by 15 June and that to little effect. Three more boats arrived during the last week of June, but only U-984 was able to achieve significant results, sinking three large cargo ships. Meanwhile, a combination of dense air cover and roving groups of escort vessels accounted for seven of the Schnorkel boats in transit, three sunk by surface vessels, two by aircraft, and two shared. Again, the three RCAF squadrons, continuing their uneventful Cork patrols and until now equipped with the old metric radar, had no part in these successes. In late July, however, Nos 422 and 423 Squadrons were both withdrawn from operations for two weeks in order to train on the 10-centimetre ASV III radar with which they were finally being supplied.[114]

Operation Cobra, the American breakout from the Normandy beachhead, began on 25 July; and by the first week of August, with the US Third Army racing into Brittany, the German submariners were forced to abandon their northern Biscay ports. Dönitz sent sixteen boats to La Pallice and Bordeaux, but (proving beyond doubt how dangerous these waters now were) only nine arrived. Many were sent to Norway and it was in the north, therefore, that Coastal Command gathered its strength to destroy those making that passage. Nos 422 and 423 Squadrons flew an increasing number of sorties after returning to operations on 6 and 7 August, and they were soon joined by 407 Squadron when that unit moved from Chivenor to Wick on the 24th.[115] Successful or not, these patrols, lasting up to fourteen hours, could be gruelling.

> The engines were started at 1330 hours, moorings were slipped and we taxied on to the Lough [Erne]. By that time the engines were warmed up and … the Sunderland with its 11 tons of petrol and depth charges became airborne and we set course for St.

Johns Point in Donegal Bay. The radar was checked as we were approaching Church Hill, and then picked up St. Johns Point, bang on. The guns and camera mechanisms were then checked, bomb doors opened and the trolleys were run out with the depth charges. The depth charges were then brought back into the bomb bay and the doors closed. Having cleared the coast line, we set course for the patrol area and arrived there at approximately 1600 hours.

... it was estimated that we would be able to make two complete sweeps of the patrol area during our allotted time. St. Kilda, which is a dot on the map, appeared out of the mist as an immense barren rock rising sheer from the sea and was apparently a valuable aid to the navigator in an otherwise empty expanse of water.

Hot tea, prepared by one of the crew, was passed around with sandwiches at approximately 1700 hours and was a welcome break. Flying at 800 ft. we continually ran into wisps of cloud below the cloud base and visibility was not good. During the patrol we made five radar contacts which were investigated and found to be small surface craft. We could imagine the feeling of the crews of these ships at seeing an aircraft without warning appear from the clouds and flying straight for it. Fortunately, they have probably reached the stage in this war that all aircraft which they encounter over this stretch of water are friendly. We had a hot meal in considerable comfort at about 1900 hours. It was prepared on the galley stove and consisted of potatoes, beans, canned beef and an egg, and was delicious.

... We had to drop down to 600 feet to get under the cloud base. The skipper took a turn at navigating while the navigator had his meal. Periodically during the trip the gunners and wireless operators changed watches as the first gunner detailed each person over the intercom to his position. From time to time came a voice on the intercom checking the D[ead] R[eckoning] compass, which is located in the tail, against the reading of the repeater on the bridge. Between times the binoculars were in constant use, scanning the horizon, and a radar operator was perpetually watching the radar screen in the darkroom and reporting the blips to the skipper. The navigator was busy at all times at his table, plotting courses, getting drifts, fixes, three-course winds with flame floats, and altering courses.

On leaving the patrol area at approximately 0100 hours we set course for base and got into clearer weather where the beacons along the coast were visible for miles. We soon picked up the ... lights at Castle Archdale and became waterborne without incident at approximately 0300 hours in a downfall of rain ... No incidents to report.[116]

Despite the hazards, Dönitz kept some boats in the English Channel to continue the attack on Allied supply lines and, perhaps, to tie down some aircraft that might otherwise have been seeking U-boats making for Norway. He also moved some Schnorkel boats to inshore positions along the convoy routes south and northwest of Ireland and off the north coast of Scotland, thus forcing Northwood to give priority to its inshore patrols over ocean convoy support and to curtail operations against the escaping Biscay boats in the Northern Transit Area. No 407 Squadron continued to fly in the Transit Area, but both of the Canadian Sunderland squadrons flew an increasing number of their patrols in inshore waters, either southwest of England or northwest of Scotland.[117]

Dönitz's move of his most modern boats to coastal waters marked the beginning of the final phase of the submarine war. By the fall of 1944 U-boat commanders were using their Schnorkel only at night for a short time to recharge their batteries and were remaining submerged for their whole patrol. As a result, contacts became relatively rare events, and the meagre results reflected this new reality. In September 1944 nearly 14,000 flying hours resulted in only five sightings and no actual attacks, although a promising contact by a No 423 Squadron Sunderland on U-482's Schnorkel, which was 'about 2 ft out of the water,' was wasted. 'Unfortunately the D/Cs failed to release as A/C tracked directly over submarine, and before another attack could be made the Schnorkel had disappeared.' October, which saw the number of U-boats on patrol reduced to a mere five as BdU reorganized its submarine fleet and expanded its Norwegian port facilities, was similarly frustrating. Despite a further 5445 hours on inshore patrols, there were no U-boat sightings to report.[118]

The monotony of fruitless patrolling, compounded by the relative remoteness of Castle Archdale from any major town (the gloriously green, notoriously quiet, Irish countryside held little appeal for young men who dreamed of bright lights, dances, and noisy 'pubs'), no doubt exacerbated the tensions which continued to plague RCAF/RAF relations. In October, a visiting RCAF historian commented on the problem.

> Because of the comparative isolation of 'C.A.,' much more than average of the off-duty time of the staff is spent around the messes. Where messes in bomber stations in Yorkshire, for example, are almost completely deserted early in the evening, there is always a fair crowd in the messes at 'C.A.,'
>
> Despite that added use, little apparent effort was made to bring the appearance and comfort of Castle Archdale messes even up to average. That fact, combined with almost maximum monthly [financial] assessments on the officers, caused constant irritation. If they could see a good part of the money being spent, instead of merely building up mess reserves, Canadian officers said they would be glad to pay in any reasonable amount.
>
> This whole question adds to the ill-disguised feeling between the RAF and the RCAF groups on the station. Normally there seems to be a degree of cleavage between S[tation] HQ and the squadrons on any station but when SHQ is RAF and the squadrons are RCAF, the situation calls for unusual diplomacy. And the Canadian officers consider it inappropriate to have a somewhat arbitrary RAF officer, who reputedly openly professes his dislike of Canadians, as P[resident of the] M[ess] C[ommittee] of a mess in which a substantial majority are Canadians. The sergeants' mess similarly has an RAF PMC.
>
> The cleavage is furthered by the fact that the SHQ staff in general is older than the aircrew officers and, as a whole, by age and custom, is not given to as boisterous goings-on in the mess. There is difference of opinion over the almost-constant playing of 'hot' popular orchestral recordings on the record-player attached to the radio. Aircrew suggest those who don't like it could use the other, quieter lounge, where bridge is played almost day and night. They take a 'dim view' when the radio is sent

out to be overhauled and comes back fixed so that the radio receiver works but the record-player won't.

These undercurrents, of course, are rarely obvious in the mess and do not seem to interfere with amiable relations between individuals. However, there is a natural tendency for anyone to mingle more readily with those he already knows or with whom he has common work interests.'[119]

Notwithstanding the undertone of danger implicit in mounting long, maritime patrols, the lack of operational excitement had its own distinct impact – or, rather, lack of impact.

There seems a great lack of tension and little 'shop talk' ... They grouse about the almost constant cloudiness, which is depressing; about the rain which falls several times a day for eleven months a year; about the monotony of their patrols which are exhausting without resulting in a sense of something specific accomplished (like dropping a bomb on a target). Many claim they would prefer to be flying bombers, despite the much higher loss ratio, because they would be 'doing something.' In a second tour in Bomber [Command], too, they would have a definite number of trips to do. 'When you get them in, you pick up your bets and you're through,' as one navigator put it ... Navigators especially complain that they were put into Coastal involuntarily; that when they did well at Observers' School, they were then sent on a GR course, which permanently earmarked them for Coastal Command.

Despite all that and perhaps because of the difference in tempo on a flying boat station, life seems to move along in an easy, regular way. The age-range of the aircrew is approximately the same as on any bomber station. If there is any difference in temperament and attitude, it is probably the result of environment rather than original selection.

A fundamental variation which doubtless has much to do with shaping mental attitudes is that the 'boatmen' feel they can look ahead; in short, that they have a much better than even chance of surviving a tour. So they become interested in saving pay, in taking classes or courses in their spare time. They take a more responsible attitude about their diversions, with V[eneral] D[isease] no problem on the station. Because they are under less constant worry, they can sit and play bridge or sit around the mess sipping a Guinness without continually talking 'shop.'[120]

After moving to Wick in August, 407 Squadron spent two-and-a-half months flying over the Northern Transit Area, recording three U-boat sightings and two well-executed attacks in October, although only that of Flying Officer J.E. Neelin on the 30th did any damage. Neelin's depth-charging of the torpedo transport submarine U-1061 off the coast of southern Norway left the U-boat unable to dive. Although subsequently attacked by an RAF Liberator while on the surface, it reached Maalöy Sound, where BdU hoped 'to repair her as she is particularly valuable.'[121]

October's 17,800 hours of inshore and transit-area flying produced only eleven actual sightings – ten of which occurred off the Norwegian coast – and led to an understandable feeling of frustration throughout the command. Unfor-

tunately, it also led Northwood to accept as authentic a number of reported Schnorkel sightings that were, in fact, naturally occurring disturbances on the ocean's surface, such as spray-filled whirlwinds or innocent spouting whales. Prior to the advent of Schnorkel, Coastal Command had correctly identified aircrew reports of slow-moving waterspouts as a small surface whirlwind, colloquially known as a 'willywaw.' These natural phenomena were soon forgotten, however, when the desire to find U-boats began to exceed the ability to do so. Indeed, these false sightings were given added credence when the December issue of *Coastal Command Review* published a picture of a willywaw described as 'the "smoke and wake" type of target' that 'confirm[s] the presence of a *SCHNORKELLING* U-boat.'[122]

For the remainder of the war, aircraft routinely attacked any willywaw, whale, oil slick, or piece of flotsam that an active imagination could possibly construe as evidence of a submarine. During the last four months of 1944, for example, No 423 Squadron made seven sightings of the 'smoke and wake' type that were undoubtedly whirlwinds or spouting whales, and four of them were attacked. On 11 September a Sunderland on an inshore patrol southwest of the Hebrides spotted 'whitish vapour or steam on the surface about 9 mi[les] distant' that 'dispersed freely as it was blown away.' On the aircraft's approach, 'the vapour disappeared, as if cut off and a slight wake was seen extending some 100 ft. from the apex.' Although the aircrews' description is of a willywaw rather than a Schnorkel head, the phenomenon was depth-charged; the original postwar analysis credited the Sunderland's attack with the probable sinking of U-484. In retrospect, it seems far more likely that the German submarine was sunk by HMCS *Dunver* and HMCS *Hespeler*.[123]

By early November BdU had routed a dozen of its Norwegian-based boats back to the English Channel in a vain attempt to reopen the attack on cross-Channel shipping. Informed by special intelligence – Ultra – of the move, Northwood redeployed squadrons to patrol the threatened area. No 407 was transferred back to the familiar surroundings of Chivenor on 11 November and began patrolling the English Channel two nights later, while the small Canadian enclave at Castle Archdale was broken up when 422 Squadron was dispatched to Pembroke Dock, in south Wales, on 4 November. This move does not appear to have been made for operational reasons, however, since the Canadian squadron simply exchanged bases with an identical RAF unit. No explanation was provided to Overseas Headquarters and, reflecting the indifference of Air Marshal Breadner, the AOC-in-C Overseas, none was asked for – a somewhat disappointing ending, given the great difficulty his predecessor had originally experienced in persuading the British to co-locate the two squadrons.[124]

The new dispositions did little to alter the previous pattern of inshore operations. Only three U-boats achieved any success during November and December (sinking seven merchant ships and one frigate and damaging two other vessels), while six were lost. Four of the six were sunk by warships, one by air attack, and one foundered after running aground.[125] On the night of 29/30

December a Leigh Light Wellington, flown by Squadron Leader C.W. Taylor of 407 Squadron, was on patrol when it homed onto the Schnorkel of U-772.

> There was full moonlight at the time 2/10 cloud and [the sea was] smooth. Weather was fair but visibility impaired by haze. Captain immediately altered course to 151° and at 0211 in Pos. 50.05N – 02.31W Captain and second pilot sighted, up-moon, dead-ahead, one half mile away, a very pronounced wake and then a schnorkel on Course 300° Speed 6 knots. A/C was too high to attack during first run and Captain turned to port and made 2nd run on course 270°. During this time contact was maintained on Radar at 3/4 mile. L/L was switched on at 250′ but illumination was affected by haze although target was picked up by it. Target was also clearly visible by moonlight. At 0213 6 D[epth] C[harge]s were dropped from 125′ … and all were seen to explode by rear gunner. The first thirty yards on starboard quarter. No's 2 and 3 straddling schnorkel about 10 to 15 yds astern of it … Schnorkel disappeared immediately after the attack and radar contact was lost and not picked up again.[126]

The sinking of U-772 was the sole victory that Coastal Command aircraft could claim exclusively during the last three months of 1944. It marked the end of a year in which considerable improvements were made in the number of Canadian aircrew serving in both 422 and 423 Squadrons, much of the progress resulting from a Canadian proposal made in January 1944 to transfer up to 150 flying-boat crews a year from the Home War Establishment to Coastal Command. After undergoing an OTU course in the United Kingdom, the first four such crews were posted, two to each squadron, in May 1944. Two more arrived at 422 Squadron in June, and with these additions both units could finally claim two-thirds of their aircrew to be Canadian. Although more crews continued to arrive during the remainder of the year, the posting out of tour-expired airmen meant that the net increase in Canadians was relatively small. Only in March and April 1945 were sufficiently large numbers of Canadians posted to 422 and 423 Squadrons to bring their strengths to 84.5 and 82.8 per cent, respectively.[127]

In the Indian Ocean, meanwhile, No 413 Squadron had spent most of 1944 flying uneventful convoy escorts, offensive sweeps, and search and rescue missions. The squadron's employment and its 'consistently small percentage of Canadian aircrew' – less than 50 per cent since April 1943 – led the minister of national defence for air, C.G. Power, to recommend converting it to an RAF squadron in June 1944 and reforming a new 413 Squadron in No 6 Group in an attempt to 'do away with as many orphan squadrons as possible.' While Breadner initially (and typically) recommended against taking action, arguing that No 413's 'operational employment now appears satisfactory,' by October he was willing to agree to its withdrawal from the Far East and its conversion to a bomber unit. On 8 December the squadron became non-operational pending its return to the United Kingdom. A few crews with less than two years service in Ceylon were transferred to RAF squadrons – a most unusual pro-

cedure at this stage of the war – while the remainder embarked for England on 21 January 1945.[128]

The new year brought little change in the monotonous but effective patrols being flown by most of Coastal Command. While No 423 Squadron continued to range over the northwest approaches from its Castle Archdale base, both 407 and 422 Squadrons, as part of No 19 Group, provided air cover in the St George's, Bristol, and English channels. Willywaws and oil slicks continued to be the most common targets attacked. In the inshore and transit areas surrounding the United Kingdom, aircraft reported 149 sightings during the 1 January–8 May period. In only fifty-two instances, however, was a German submarine present in the vicinity of the sighting. Of the thirty-four attacks made on genuine targets in these waters, twelve were successful, with eight U-boats being sunk in the transit areas and four inshore. Two other sinkings were shared by both air and naval forces. None of these successes involved RCAF anti-submarine aircraft in Coastal Command, which, by the end of the war, had accounted for eight U-boats.[129]

12
In Search of a Strike Force, 1940–2

Although the Kriegsmarine and the facilities in German harbours had featured prominently in the RAF's prewar plans, the Air Ministry had not made any specific preparations to attack enemy merchant shipping at sea. Rather, Coastal Command's principal duties were seen as 'trade protection, reconnaissance and co-operation with the Royal Navy' – of which reconnaissance was considered to be the most important. On the outbreak of war in September 1939, the British government implemented a general air policy (discussed in more detail in chapter 14) aimed at limiting civilian casualties. Initially, operations were to be directed against only the most unambiguous military targets: 'enemy warships, troopships and auxiliaries in direct attendance on the enemy fleet, provided that these targets had been previously identified beyond doubt.' Merchant vessels were simply to be identified and shadowed, their movements being reported to the Royal Navy, and for a time crews were even prohibited from retaliating against ships that opened fire on them.[1]

These restraints on offensive action were largely irrelevant, however, since Coastal Command's only strike capability in September 1939 consisted of two squadrons of obsolete Vickers Vildebeest torpedo-bombers. As a temporary measure, Bomber Command loaned it two squadrons of Handley-Page Hampdens, equipped and trained exclusively for bombing operations, to act as a strike force should air reconnaissance discover suitable targets of the battleship or cruiser class.[2]

The German invasions of Denmark and Norway in April 1940 forced Whitehall's hand, however, and as the campaign in Norway developed the Air Ministry gradually relaxed its restrictions on what could be attacked. In July a 'sink at sight' policy was adopted for the North Sea, from just south of Tromso almost to the Hook of Holland, while the English Channel and Bay of Biscay were added in September. But the mere declaration of such zones did not mean that Northwood's ability to conduct an effective anti-shipping campaign had in any way increased. Although the two Vildebeest squadrons had been re-equipped with Bristol Beaufort torpedo-bombers by early 1940, one of them had been assigned to minelaying activities before it could be trained in anti-shipping strikes, while the other had such difficulty converting to its new

type (and the engines on its Beauforts were so unreliable) that it was not permitted to fly out to sea.[3]

For anti-shipping operations, then, Air Chief Marshal Sir Frederick Bowhill was left with five squadrons of less-than-satisfactory Lockheed Hudsons, two of Bristol Bleinheims – not much better – and one of Avro Ansons, much worse. These were supplemented during the summer of 1940 by two more Blenheim squadrons from Bomber Command and a mixed and doubtful bag of three of the Royal Navy's Fleet Air Arm (FAA) squadrons: one of Fairey Swordfish, one of Blackburn Skuas, and one of Fairey Albacores.[4] Crews on reconnaissance flights were now permitted to initiate attacks on shipping as opportunities arose, although results were understandably meagre. Between April and September 1940 Coastal Command sank only two small vessels in direct attacks at sea, while Bomber Command and the FAA added another ten. Aerial mining, carried out by both Bomber and Coastal commands but largely by the former, accounted for fifty-six enemy ships, totalling over 58,000 tons.[5]

Such sluggishness in anti-shipping policy and operations did not fit with the priority that the British government attached to the economic blockade of Germany. Of particular importance were German iron-ore imports – ten million metric tons in 1938, half of it from Sweden – but the significance of the Swedish supply went beyond quantity alone. Production of high-grade steel suitable for armour plate and gun barrels depended largely on the Bessemer process which, in turn, required ores of high phosphorus content. This Swedish iron had in plenty, and German foundries relied especially on supplies mined from the Kiruna and Gällivare districts of northern Sweden. Swedish ore was so essential to the German armaments industry, in fact, that as late as 1944, when the Reich's inland transportation network was under considerable strain, Germany went to great lengths to sustain its coal exports to Sweden in order to complete the exchange for ore.[6]

In summer, the iron was usually shipped from the Swedish port of Lulea on the Gulf of Bothnia, through the Baltic to Kiel, from where it went by canal to Rotterdam and thence up the Rhine to the Ruhr. In winter, when the gulf froze over, it went by rail from Sweden to the ice-free port of Narvik in northern Norway. From Narvik, freighters followed the Inner Leads between the mainland and the numerous offshore islands which sheltered the convoys from both Atlantic weather and surface attack. Ships were not forced into the open sea until they reached the southern coast of Norway, and once they entered the Skaggerak, en route to Kiel, they were again safe from most threats.

In addition to Swedish ores, the Narvik convoys also carried copper, pyrites, fertilizers, fish products, and pulp and paper. At Kiel the southbound convoys were joined by grain and timber shipments from the Baltic, and all these goods were then moved through the Kiel Canal into the Heligoland Bight and along the North German and Dutch coasts to Rotterdam. 'Of that part of the traffic that penetrates to the West, a very important part is destined for Rotterdam. It is estimated that some 3,000,000 tons of Swedish iron ore reaches this port each year, for unloading into barges for onward transmission to the Ruhr. Other cargoes reaching Rotterdam consist of some 100,000 tons of fertilisers,

150,000 tons of pulp and paper, 100,000 tons of pyrites and copper ore, 400,000 tons of grain and 100,000 tons of timber … Returning vessels carry coal, coke and general cargoes, and the route followed is again outside the [Frisian] Islands, through the Kiel canal, where part disperses into the Baltic, and the remainder goes through the Great Belt, to re-appear later off the Norwegian Coast.'[7] Shipments of coal and coke paid for the iron ore, while up to half of northbound traffic carried military supplies for the German occupation forces in Norway. Although the importance of these cargoes could be – and was – overestimated by the Ministry of Economic Warfare (MEW), they were, nevertheless, significant components of Germany's industrial system and the Wehrmacht's logistics, and the vessels that carried them were the prime objectives of anti-shipping operations in the North Sea.[8]

As in the case of the U-boat war, anti-shipping operations were coordinated by Coastal Command and the appropriate Royal Navy headquarters. Once the threat of invasion had receded and there was less need for defensive reconnaissance, Northwood was able to transfer more resources to anti-shipping activities. By the turn of the year, four patrols along the Danish and Norwegian coasts, between the Horn Reefs and Stadtlandet, were being flown three times a week by aircraft of No 18 Group – always provided there was sufficient cloud cover for them to evade enemy fighters. When weather conditions were suitable, sorties were occasionally carried out to the north, between Stadtlandet and Trondheim, or further east into the Skagerrak. No 16 Group was responsible for the area between the Horn Reefs and Cherbourg, and No 15 covered the Brest and Lorient shipping routes. Patrols were normally carried out by single aircraft, usually Blenheims or Hudsons armed with 250-lb general purpose (GP) bombs. Of the sixty-three attacks made by Coastal Command aircraft between June and December 1940, forty-one were made from heights between 500 and 2000 feet and only seven were delivered from below 500 feet.[9]

Without an effective bombsight, low-level approaches seemed to be the only tactic that offered a reasonable chance of success. The Hudsons were equipped with the Mark IX sight, but since it required accurate data on the aircraft's ground speed, wind speed, and direction and the ballistic characteristics of the bomb being dropped, it was seldom used. In fact, even when fed the correct information, the Mark IX still lacked that degree of accuracy required to hit a target as small as a coastal freighter. Accordingly, low-level attacks in which the pilot 'eyeballed' the target and released his bombs when it seemed to him the correct time to do so – usually just as the target disappeared from sight beneath the nose of his aircraft – were the preferred technique and, understandably, the number of enemy merchantmen sunk continued to be disappointing. The Germans lost only nine vessels totalling 15,468 tons throughout the April 1940–March 1941 period. A further sixteen, totalling nearly 50,000 tons, were damaged, for the loss of fifty-one aircraft.[10]

The aerial minelaying campaign (code-named Gardening) begun in April 1940 achieved better results. By the end of March 1941 nearly 1500 mines had been laid in 'gardens' from the Bay of Biscay to the western Baltic, one-third

of them by Coastal Command and two-thirds by Bomber Command. They accounted for ninety-nine ships averaging a thousand tons each, and damaged another thirteen, for the loss of only thirty-nine aircraft.[11]

Canadian participation in the early stages of the anti-shipping offensive was limited to an uncertain number who were already serving in the RAF. Of the six Canadian maritime squadrons eventually formed, only three, Nos 404, 407, and 415, would take part in Coastal Command's anti-shipping campaign. Moreover, even their story was not a cohesive one. Flying different types of aircraft, in different roles, from different stations, they seldom saw each other and, for most of the war, all they had in common was their link to RCAF Overseas Headquarters in London.

The first squadron, No 404, was formed on 15 April 1941 at Thorney Island, just east of Portsmouth, as a coastal fighter unit in No 16 Group. April was a cruel month for the Allies, one which saw shipping losses reach the highest tonnage yet as Admiral Dönitz's U-boats began to develop 'wolf-pack' tactics in the North Atlantic. The RAF's search for air superiority over France was costing Fighter Command dearly (see chapter 6) and its strategic bomber offensive was making minimal impact on the German economy while incurring persistent casualties. The Soviet Union was still linked to Germany, and the United States, though generally sympathetic to the allied cause, still showed no signs of formally entering the fight.[12]

It was during these grim times that No 404 Squadron would, 'to commence with, be found from the RAF except in so far as RCAF personnel [are] immediately available. It is the intention, however, that the RAF personnel will be gradually replaced by RCAF personnel as pilots ... of requisite experience become available either from the Empire Training Scheme [BCATP] outputs or from existing RCAF Units.' The first to join the squadron was its commanding officer, Squadron Leader P.H. Woodruff, a native of Edmonton, Alberta, who had joined the RAF in 1937 on a short service commission. Although one complete crew was posted in from an RAF squadron, there was some difficulty in obtaining any more 'due to the Coastal Command OTUs being filled and Fighter and Bomber Commands being unwilling to part with their OTU graduates.'[13]

As an interim measure, and as a means of providing Canadian aircrew immediately, the air officer commanding, RCAF, in Great Britain, Air Commodore L.F. Stevenson, suggested 'that as the Commanding Officer, No 404 Squadron, is a fully qualified Coastal Command twin-engined Fighter instructor and that as the Squadron is starting from scratch, it might be reasonable in this instance to post aircrew straight from P[ersonnel] R[eception] C[entres] to the Squadron.' On this occasion the Air Ministry concurred and eight pilots and five wireless operators/air gunner (WOAG), all RCAF, arrived at Thorney Island on 10 and 11 May – prompting Stevenson to predict that the squadron would be '50 per cent Canadian in one month 75 per cent Canadian in three months and 100 per cent Canadian in five months.' He was quite wrong. The squadron was still only 45 per cent Canadian in aircrew, and 4.3 per cent in groundcrew, when it became operational four months later.[14]

To carry out its coastal fighter role, the squadron was equipped with the same variant of the Blenheim IV used by three of Coastal Command's four other long-range fighter units. The Blenheim had been designed as a light bomber (a role which it was still fulfilling with No 2 Group in Bomber Command) and modified for use as a fighter by adding a pack of four fixed, forward-firing .303 machine-guns beneath the fuselage. Although its top speed of 260 miles per hour was quite fast by prewar standards, the Blenheim fighter variant could 'no longer be regarded as a match for enemy fighters or more recent long-range bombers.' The Blenheims IV have neither the armament nor the speed to give combat on anything like even terms to the Focke Wulf [200] or the He 111, and they cannot therefore be expected to give adequate protection to our shipping in the local areas and convoy routes where enemy long-range bombers are operating with such success against our shipping.'[15] Moreoever, the machines allocated to No 404 Squadron had been transferred from an RAF unit, which was re-equipping with Beaufighters, and five of the fifteen were in such poor condition that they could not be restored to operational standards.[16]

The second squadron, No 407, was formed at Thorney Island on 8 May as a general reconnaissance unit under an English commanding officer, Wing Commander H.M. Styles, who had been a flying training instructor since the outbreak of war. Described by one of his Canadian pilots as 'good-looking, blond, blue-eyed, the Hollywood director's idea of an RAF operational wing commander,' Styles was handed the difficult task – on his first operational assignment – of turning untrained crews into an operational squadron in just three months; but 'God was with us,' one pilot recalled, 'and our successes were due in large measure to his leadership.' Once again, since there were no RCAF aircrew immediately available with GR training, No 407 received RAF aircrew posted from other squadrons. Canadian pilots did not begin to arrive until mid-June, following completion of their course at the GR school at Squires Gate, and a few more were found by posting in men who had already been GR-trained in Canada before they were transferred overseas. By the time the squadron became operational in early September, fourteen of the eighteen crews were captained by RCAF pilots. Since twenty-eight of the thirty-eight WOAGs were RAF, however, only 45 per cent of the total aircrew component was Canadian, and a shortage of Canadian groundcrew meant that the squadron commenced operations with only fourteen of its more than two hundred tradesmen being members of the RCAF. It was not until March 1942 that training establishments in Canada could produce sufficient graduates for the groundcrew to become 50 per cent Canadian.[17]

Although No 407 had initially been designated to fly Blenheim IVs, it was informed at the end of May that it would be equipped instead with Lockheed Hudsons, ordered in 1938 as a navigation trainer but pressed into an operational role because of the woeful inadequacy of the Avro Anson as anything else. The Hudson's bomb-carrying capacity of 1000 pounds was barely adequate for anti-shipping operations, and the two fixed .303 machine-guns firing forward, together with two more in a rear-upper turret, were certainly not

enough for the crew of four – pilot, second pilot or observer, and two WOAGs – to hold their own in air combat, never mind to suppress enemy Flak. Indeed, before No 407 began to receive its Hudsons, other anti-shipping squadrons had already concluded that they 'do not appear to be suitable for operations.'[18]

The various shortcomings of his aircraft were well known to Sir Frederick Bowhill, and he put his concerns in writing shortly before relinquishing command to Sir Philip Joubert de la Ferté on 14 June 1941. Not only had Northwood 'not been consulted as to what types of aircraft we require and what are necessary,' Bowhill complained, but there seemed a strong possibility that in the future Coastal Command would be 'saddled with any cast-off aircraft that [the Air Ministry] do not know what to do with.' What he wanted was the de Havilland Mosquito 'or some American aircraft with sufficient speed and endurance and … adequate defensive armament' for reconnaissance work and 'the [Douglas A-20] Havoc or some suitable fighter-bomber' for anti-shipping operations, since 'the attack on shipping can only continue to be carried out by Hudsons at great hazard and with heavy losses.'[19]

Submitted just two days before he left Northwood, Bowhill's proposals gathered dust in London while his successor took some time to confer with his staff and think things through for himself before recording his opinion. Eventually, however, Joubert came to the same conclusion as his predecessor, telling the Air Ministry on 14 September that there was a need 'for faster and better armed aircraft to carry out visual reconnaissance of the enemy coast-line where fighter opposition may be expected. At the present moment such reconnaissances are being carried out by Hudson and Blenheim fighters. The casualties suffered by these aircraft are becoming serious and it is considered that something of the nature of a Mosquito, i.e., a fast two-seater with good armament and fair navigational facilities and with long endurance, will be required in the very near future if this work is to continue effectively.'[20]

Through no fault of his own, Joubert's timing could scarcely have been worse. Sir Charles Portal, the chief of the air staff, was preoccupied with protecting Bomber Command and saving the bombing offensive – and, indeed, with persuading Winston Churchill that the strategic bomber force be increased to four thousand front-line machines – and the question of improving Coastal Command's anti-shipping capabilities was very low on his list of priorities. It was only on 1 December 1941, for example, that the CAS promised Joubert that he would 'receive an official reply in the near future.'[21]

Six days later Japan attacked Pearl Harbor, Germany declared war on the United States, and the nature of the war changed fundamentally. Although the United States was now an ally rather than a cooperative neutral (and so perhaps better able to simplify the rules regarding British procurement of American-built machines like the Havoc), the matter of actual supply became more complicated, as the Americans began to build up their own forces more rapidly. With most of the early Mosquitoes reserved for Bomber Command or night-fighter duties, and with Beaufighters being used as night-fighters, Intruders, and in the Middle East (Northwood would not have enough of them to form an effective strike force until the fall of 1942), Joubert would have to

make do for the time being with obsolescent Hudsons and Blenheims for reconnaissance and bombing; while the only torpedo-bombers available were four squadrons of Beauforts, severely limited by their operational radius of 420 nautical miles. Since Hampdens, with their greater range, could be used as torpedo-bombers against targets as far away as Kiel and to lay mines in the Kattegat, Joubert hoped to have three squadrons equipped with that type.[22]

While Coastal Command's immediate strengthening was not one of Portal's top priorities, it did not stagnate altogether in 1941. Two new squadrons were formed in August, both on Beauforts. No 489 was designated as a Royal New Zealand Air Force unit, while No 415 became the RCAF's thirteenth Article XV squadron when it came into existence at Thorney Island on 20 August. Its commanding officer was Squadron Leader E.L. Wurtele, a Montrealer who had joined the RAF in 1935, spent most of his prewar career in the Fleet Air Arm, and more recently had flown Blenheims on convoy escort duties and Beauforts on minelaying sorties. This experience counted for little during Wurtele's first five-and-a-half months on the squadron, however, because a lack of equipment severely limited the amount of flying training that could be conducted. With just six Beauforts on hand, the squadron managed an average of only eighty-six flying hours per month and, since it was acting as a temporary OTU and had more than twenty pilots under training, each of them averaged fewer than five hours per month.[23]

Nos 404 and 407 Squadrons were more fortunate in acquiring aircraft and managed to complete their training by late August. No 404, flying out of Skitten, a satellite station of Wick in northern Scotland, was part of No 18 Group and flew its first operational sorties on 22 September 1941, supplying four Blenheims for convoy escort in the North Sea. To the south, No 16 Group, in which 407 Squadron became operational on 1 September, covered the English Channel as well as the North Sea from the Channel Islands to the Horn Reefs. It was engaged in anti-invasion searches at dawn and dusk (although there was little prospect of an invasion of England once Hitler began preparing for his attack on Russia), protection of convoys, and night-time anti-shipping patrols and strikes. Daytime responsibility for the 'Channel Stop' in the Strait of Dover, meanwhile, was turned over to the Hurricane fighter-bombers of Fighter Command's No 11 Group in early October.[24]

Lacking the fast, cannon-armed torpedo-bombers that would later encourage the development of 'strike-wing' tactics, No 16 Group tried to use the cover of darkness or foul weather along with a low-level approach to elude enemy fighters and provide a measure of surprise. Even when operating at night, however, these tactics proved too costly to be effective – Coastal Command lost fifty-three crews on anti-shipping strikes from January to June 1942, twenty-five of them in May alone – and such attacks were finally abandoned in June 1942.[25]

Nowhere was the deadly combination of inadequate aircraft and low-level tactics more clearly demonstrated than by the experience of No 407 Squadron during its first ten months of operations. Flying out of North Coates, on the east coast of England, the Canadians were one of seven squadrons available to

No 16 Group for its night offensive. Since its Hudsons were equipped with air-to-surface vessel (ASV) radar, one of the squadron's main tasks was to carry out Rovers off the Dutch coast between Borkum and the Hook of Holland. Rovers were free-ranging patrols 'by varying numbers of aircraft according to … availability. On some occasions aircraft would carry out individual reconnaissances and strikes; at other times a combined operation in force would be the order of the day. Variety in the place, time and numbers of aircraft taking part were the keynotes.'[26]

Northwood took little interest in establishing tactical doctrines for anti-shipping operations, beyond prescribing low-level night attacks in principle, and much was left to individual units. The tactics employed by No 407 Squadron were developed by Wing Commander Styles and seem to have been better than most. 'Hit and run with the emphasis on the unexpected … was an approach well suited to the temperaments of the individualistic Canadians. Mass attacks were out, and individual attacks would take place during twilight hours, at night, or during bad weather in daylight, and the dirtier the day or night the better. Long run-ins that gave the defenders a chance to get set were a no-no. You took one pass and got out. Radar would lead us to the convoys, and German fighters were to be avoided.'[27]

Logic would seem to dictate that a Hudson crew, catching sight of enemy shipping, should have transmitted its location back to base before launching an attack and running the risk of being shot down. That way, others could then respond even if the first crew on the scene was lost, but most Rovers attacked first and reported later, either by radio on their way home or sometimes not until they had actually reached base and could make a verbal report. There were good reasons for delaying the report: although 'Special Intelligence' – decrypts of high-grade German cyphers – was not often 'of direct importance in guiding the RAF's bombing attacks on coastal shipping to their targets' at this time, the combination of that intelligence, coastal radar reports, and increasingly useful interpretations of reconnaissance photographs provided 'a virtually complete knowledge of the enemy's coastal shipping routines in the entire area from the North Cape to the Spanish frontier which in turn determined the RAF's reconnaissance programme.' Sometimes, then, the existence, general whereabouts, and movements of German convoys were well known to the Admiralty. In addition, the German radio intelligence service (Horchdienst) was so efficient and the Luftwaffe's fighters so responsive that an immediate reaction to an intercepted sighting report risked being met by fighters scrambled specifically to meet just such a blow. Better, perhaps, to let the enemy wonder whether the initial contact would be followed up or not?[28]

In addition to its attacks on merchant shipping off the Dutch coast, No 407 was also responsible for conducting Hoden patrols against light naval forces. With the approach of winter came an increase in the activity of German light surface forces, and the squadron's task was to locate and shadow these E-boats, using ASV radar, until surface craft or heavily armed Beaufighters could reach the scene. Once either arrived, the Hudsons would illuminate the E-boats with parachute flares.[29] This proceedure, however, held little attraction for the Cana-

RCAF ANTI-SHIPPING OPERATIONS, DUTCH COAST 1941-1945

ATTACK NO.	DATE	SQUADRON	SHIP	TONNAGE SUNK	TONNAGE DAMAGED
1	[illegible]	407	[illegible]		5,896
2	[illegible]	59, 407	Vios IV	190	
3	[illegible]	407	[illegible]	1,950	
			[illegible]	1,250	
4	[illegible]	407	Cornelis Maersk	1,892	
5	[illegible]	407	[illegible]	4,647	
6	[illegible]	407	[illegible]	5,728	
			[illegible]		2,000
7	[illegible]	320, 407	Selje	6,698	
			Madeleine Louise	484	
8	[illegible]	59, 320, 407	Niels R. Finsen	1,850	
			[illegible]	750	
			[illegible]	285	
9	[illegible]	59, 320, 407	[illegible]	2,950	
10	[illegible]	407	Senta	1,497	
11	[illegible]	320, 407	Algeria	1,619	
12	[illegible]	415	Borga	4,821	
			[illegible]		2,092
13	[illegible]	415	Ernst von Briesen	408	
14	[illegible]	254, 415	Diana	1,878	
15	[illegible]	144, 404, 455, 489	Ernst Brockelmann		1,900
			Stadt Riga	3,002	
16	[illegible]	144, 236, 254, 404	[illegible]	1,923	
			[illegible]	1,407	
			Miranda	776	
			[illegible]	487	
			[illegible]	78	
			[illegible]	150	
17	[illegible]	144, 236, 254, 404	Orient	4,160	
18	[illegible]	144, 404, 455, 489	[illegible]	637	

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dians. 'To get good coverage you had to stay on a steady course dropping flares at fairly short intervals, so you flew across the sky telling every German night fighter in the vicinity precisely where you were and the course you were flying. In a shipping attack you could sneak in and get out quickly, but with the Hodens you flew along counting the flares and praying. The moment the last flare was gone you went into a great slipping turn to get to sea level, and thanked your lucky stars you had made it once again.'[30]

During No 407's first month of operations, September 1941, fourteen Hoden sorties failed to find a single E-boat, while twenty-three Rovers led to nine attacks on merchant vessels, with the squadron claiming three direct hits. Although postwar research revealed that no German ships were, in fact, damaged by air attack off the Dutch coast during September, the safe return of all the attacking aircraft bolstered the squadron's confidence in its hit-and-run night-time tactics.[31]

The increasing amount of shipping to be found in the hours of darkness off the Dutch coast – a result of daylight attacks by No 2 Group of Bomber Command – led Joubert to intensify his night Rover effort in October. During the final quarter of 1941, No 407 made fifty-two attacks on enemy ships, sinking only three and damaging one other, while in No 16 Group as a whole, ninety-eight were attacked, of which seven (totalling 23,558 tons) were assessed at the time as sunk and twenty-two as damaged. The true figures were six (12,698 tons) sunk, three of them by 407 Squadron, and only two damaged; but the perceived results were enough for Northwood to declare that 'the quarter has been unquestionably the most successful since the start of attacks on enemy shipping.'[32]

Despite the emphasis that Styles had initially placed on individual attacks, sighting reports now often resulted in the dispatch of a multi-aircraft strike force to engage a convoy. A Hudson piloted by Sergeant D.A. Ross was flying a Rover along the Dutch coast just after dusk on 31 October when its radar indicated a convoy of ten to fifteen ships off Terschelling. Selecting a merchantman of about 4000 tons, Ross attacked from a height of fifty feet, subsequently claiming that one of the bombs was believed to have hit at the foot of a mast.[33] After landing back at North Coates some two hours later, Ross's report was forwarded to Group Headquarters at Chatham, and a strike force of eight more Hudsons from No 407 and three Blenheims from an RAF squadron was dispatched between 2252 hours (a lapse of one hour and ten minutes) and 0039 hours (just under three hours after Ross's return) on 1 November. One machine came back early, but seven of the Hudsons located the convoy and carried out low-level attacks.

P[ilot] O[fficer] Cowperthwaite attacked a vessel of 5,000 tons N. of Terschelling from 50 ft. As a result of the attack a large dull red flash was seen from the vessel. P/O McCulloch attacked an M[erchant] V[essel] of 3–4,000 tons off Vlieland the results of the attack were unobserved. Considerable flak was forthcoming and the aircraft received two hits in the port wing. There were no casualties. P/O Codville attacked an 800 ton MV north of Terschelling. No results were seen. P/O Shankland saw a large