Britain and the Delay in Closing the Mid-Atlantic "Air Gap" During the Battle of the Atlantic[1]

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En 1942-1943, les navires U faisaient des ravages dans les convois circulant dans la « bulle d'air », un trou géant de 300 miles sur 600 dans la couverture des routes de navigation de l'Atlantique Nord. Les aéronefs long-courrier dont on avait besoin pour en faire la couverture devinrent une pomme de discorde entre le commandement de l'aviation côtière de l'Aviation royale, qui préconisait une stratégie maritime défensive, et le Bomber Command, qui favorisait plutôt une stratégie de bombardement offensive. C'est cette dernière qui domina jusqu'à la fin de 1942, et les pertes en marine marchande dans la « bulle d'air » causèrent une crise sérieuse dans le camp des Alliés. Cet article démontre que cette crise aurait pu être évitée. .

During the Battle of the Atlantic the airplane was one of the key weapons that the Allies employed in the war against the U-boats. Indeed, a U-boat captain would dare not surface his vessel in the presence of an enemy aircraft for fear of it either alerting nearby naval vessels to his presence or attacking his submarine with air-launched weapons.[2] Nonetheless, the study of maritime air power has largely been ignored in the historiography of the Battle of the Atlantic. This is striking, for, as Canadian naval historian Marc Milner has noted, "it was airpower, after all, which shaped the pattern of the U-boat war."[3] Maritime air power is not specifically naval, nor does it focus on the traditional air force history of fighters and bombers. The result, as Milner has noted, is that it has become "a subject [that] mainstream air enthusiasts ignore utterly and naval historians treat only in passing."[4] This paper will attempt to address some of the silences regarding the maritime air war against Hitler's U-boats by focussing on the British attempts to close the mid-Atlantic "Air Gap."

The air gap, also known as the "Black Pit," consisted of a giant hole in the air cover

[1] The author wishes to thank Dr. Alec Douglas for his kind and valuable assistance.

[2] John Buckley, *The RAF and Trade Defence, 1919-1945: Constant Endeavour,* (Keele, U.K.: Ryburn Publishing, Keele University Press, 1995), 123-124.

[3] Marc Milner, "The Battle of the Atlantic," in *Decisive Campaigns of the Second World War,* John Gooch, ed. (London: Frank Cass Publishing, 1990), 58.

[4] Milner, *Battle of the Atlantic,* 59.

over the main trade routes between Britain and North America that stretched 300 miles across from east to west and 600 miles north to south from Greenland to the Azores Islands. In 1942 and early 1943 Germany focussed the bulk of its U-boat fleet against Allied convoys in this area. Free from the aircraft threat, U-boats were easily able to move on the surface at night and press home attacks on poorly protected convoys. The results were devastating, as shipping sunk in this 1942-1943 period amounted to over six million tons, a great deal of which was at the hands of U-boats operating in the air gap.[5] One of the greatest issues of the Battle of the Atlantic for the Allies was the need to provide adequate numbers of aircraft to close the air gap and thereby ensure that the convoys had complete air coverage throughout their voyage. Although the British recognized this problem by late 1941,[6] the air gap was not in fact closed until the spring of 1943. The reasons for this delay are complex, and have led Milner to emphasize that "the failure to of the Allies to close the air gap before 1943 remains one of the great historical problems of the war."[7] Focussing on the British, this article will attempt to address this historical void.[8]

The main burden of closing the air gap fell to the Royal Air Force's (RAF) Coastal Command. To reach convoys at such great distances, Coastal Command required aircraft with long range. However, not only were these machines in short supply, they were also the very same aircraft that the RAF's Bomber Command required for its strategic bombing

[5] See, for example, J. Gordon Mumford, *The Black Pit... and Beyond (Bumsiovjn,* ON: General Store Publishing House, 2000).

[6] See discussion on the air gap during the 22nd and 24th Meetings of the Battle of the Atlantic Committee, 21 & 28 October, and 11 November 1941, respectively, The National Archives of the United Kingdom (TNA), Public Records Office (PRO), London, Admiralty File (Adm) 205/23. All of the Public Records Office Files cited in this article are available in Canada: most of the Prime Minister's Papers (PREM), Robarts Library, University of Toronto (microfilm); most of the Cabinet Files (CAB), Mills Memorial Library, McMaster University, Hamilton (microfilm); Air Ministry (Air), Admiralty (Adm), some Prime Minister's Papers, and some Cabinet files, the Directorate of History and Heritage (DHH), Department of National Defence, Ottawa (paper photocopies). Indeed, there is a virtual treasure trove of PRO files in Canada which remain largely untouched. It is therefore recommended that researchers consult the following two helpful research guides: George Urbaniak, *International, Military & Intelligence History Archival Sources in Southern Ontario: A Practical Guide and Compendium* (Waterloo: Laurier Centre for Military Strategic and Disarmament Studies, 1994), available from LCMDS (contact info atwww.canadianmilitaryhistory.com); Warren Sinclair, *Finding Aid to the PROs (Public Records Office)* (Ottawa: Directorate of History and Heritage, 2003), available at DHH.

[7] Milner, "The Battle of the Atlantic," 59. The best works do date that discuss air gap issue are a book by John Buckley and an article by W.A.B. Douglas & David Syrett. Buckley, *Constant Endeavour,* Chapter 5 (see especially pages 132-137); David Syrett and W.A.B. Douglas, "The 'North Atlantic Triangle" in Disarray: Closing the Greenland air gap, 1942-43," English version of article published in *Marine-Rundschau,* October 1985, DHH 99/36, W.A.B. Douglas Fonds, Box 69, File 10 9-6-87, 11-12. The original version of this article in German is David Syrett, W.A.B. Douglas, "Die Wende in der Schlacht im Atlantik: Die SchliePung des 'Grônland-Luftlochs,' 1942-1943," *Marine-Rundschau,* Januar/Februar 1986, 83, Jargang, Heft 1, 2-11 und Marz/April 1986, 83. Jahrgang, Heft 2, 70-73.

[8] To be sure, the air gap situation was also problem for Royal Canadian Air Force (RCAF) and American air forces operating from bases in the Western Atlantic. However, for the sake of brevity, this article focuses on the main party involved in the air gap problem, Britain. For an examination of RCAF efforts see W.A.B. Douglas, *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II* (Toronto: University of Toronto Press and the Department of National Defence, 1986), Chapters 14 and 15.

campaign against Germany. This put the two RAF commands at loggerheads over the priority of long-range aircraft resource allocation.[9]

Essentially, the main dispute between the two parties was one over strategic focus. Coastal Command desired to utilize bomber aircraft primarily in *defensive* roles to protect shipping from U-boat attack. Bomber Command, on the other hand, was unwilling to allow any of its forces to be diverted from the strategic bombing *offensive* against Germany.[10] The result what became to be known as the "Battle of the Air,"[11] a conflict that pitted Coastal Command backed by the British Admiralty against the Air Ministry, allied with Bomber Command and supported by Prime Minister Sir Winston Churchill, over the allocation of aircraft resources.

The crux of the issue was regarding which strategy, an offensive one advocated by Bomber Command, or a defensive one advocated by the Admiralty and Coastal Command, would dictate the allocation of long-ranged aircraft resources in the Royal Air Force.[12] Until late 1942 it was the former strategy that dominated, and as a result Bomber Command received the lion's share of the longer-ranged aircraft for what historian Brian Farrell has termed the Air Staffs "private war over Germany."[13] It was not until shipping losses reached alarming numbers that threatened both Britain's import situation and Operation "Bolero," the build-up of Allied forces in Britain for D-Day, that the authorities in Britain gave priority of aircraft allocation to Coastal Command. Nonetheless, it was only at the end of April 1943 that sufficient aircraft became operational with Coastal Command, and in March of that year the Allies suffered their heaviest shipping losses of the war.[14] The sinkings in the air gap in the winter and early spring of 1943 amounted to a serious crisis for the Western Allies during the war - one which they narrowly survived. Yet, as this article will demonstrate, it was a crisis that could and should have been avoided.

[9] John Terraine, *Business in Great Waters: The U-Boat Wars, 1916-1945* (London: Leo Cooper Ltd., 1989), 366; Michael Howard, *Grand Strategy Volume IV, August 1942-September 1943* (London: HMSO, 1972), 24

[10] Buckley, *Constant Endeavour,* 115, 118. S.W. Roskill, *Churchill and the Admirals* (London: Collins, 1977), 133. Bomber Command's strategic bombing strategy and doctrine centred around the idea of a "knock-out" blow that had been widely canvassed in the RAF during the inter-war era. Simply put, it entailed a large bombing campaign that would destroy the enemy's industry, denying him the means with which to fight. If implemented, Bomber Command believed that such a campaign could bring a war to a quick and decisive end and avoid the carnage and stalemate of the trench warfare of the First World War. Colonel Philip S. Meilinger, "Trenchard and 'Morale Bombing' : The Evolution of Royal Air Force Doctrine Before World War II," *The Journal of Military History,* Vol. 60 (April 1996), 243-270; Allan D. English, "The RAF Staff College and the Evolution of British Strategic Bombing Policy, 1922-1929," *Journal of Strategic Studies, Vol.* 16, No. 3 (September 1993), 408-431; Scot Robertson, *The Development of RAF Strategic Bombing Doctrine, 1919-1939* (Westport, Conn.: Praeger, 1995).

[11] Admiral Sir Dudley Pound, First Sea Lord, quoted in Correlli Barnett, *Engage the Enemy More Closely: The Royal Navy in the Second World War* (Toronto: Hodder & Stoughton, 1991), 459.

[12] See, for example, DHH 87/89, Portal Papers, Chief of the Air Staff (CAS), Air Chief Marshal Sir Charles Portal, to Air Officer Commanding-in-Chief (AOCinC), Coastal Command, Air Marshal Sir Phillip Joubert de laFerté, 11 June 1942.

[13] Brian P. Farrell, *The Basis and Making of British Grand Strategy, 1940-1943: Was there a Plan?,* Studies in British History Volume 47 (Queenston: The Edwin Mellen Press, 1998), 117.

[14] Buckley, *Constant Endeavour,* 115-116; Syrett & Douglas, "North Atlantic Triangle," 8.

Coastal Command began the war at a disadvantaged position in terms of its capabilities for defending shipping from submarine attack. A lack of inter-war anti-submarine training and doctrine development, coupled with the leading strategic bombing strategy in the RAF meant that the RAF maritime air power arm continually struggled in its efforts to secure adequate resources for the U-boat war. In June 1941, Air Chief Marshal Sir Phillip Joubert de la Ferté became air officer commanding-in-chief, Coastal Command, and he immediately sought to improve the aircraft shortfall. In doing this, however, Joubert ran into direct conflict with his colleagues in Bomber Command and the Air Ministry, who were intent on keeping the offensive bombing strategy as the top priority of the RAF.[15] To add to his difficulties, Joubert also had to deal with Bomber Command's key supporter, Prime Minister Sir Winston Churchill.

In his memoirs, Joubert referred to his frustration with Churchill's propensity to give his "favourite child," Bomber Command, the priority in aircraft allocation: "In the [Battle of the] Atlantic Committee many battles were fought. The First Sea Lord [Admiral Sir Dudley Pound], supported by his staff, with an occasional friendly squawk from C.-in-C. Coastal, fought to increase the volume of air power devoted to the war at sea. Embattled against him were the Prime Minister, cigar in mouth, Professor Lindemann [Lord Cherwell], thumbing over a vast book of statistics... the Chief of the Air Staff [Air Chief Marshal Sir Charles Portal] and the C.-in-C. Bomber Command [Air Marshal Sir Arthur Harris]... Bomber Command always won, though a few crumbs would be thrown to Coastal."[16] The problem for Churchill was that he needed a means by which Britain could directly attack the German enemy. By mid-1941, with France defeated, the British Army evacuated from the Continent, and the USSR facing the weight of the German *Wehrmacht,* Churchill needed to do something to relieve pressure on his Soviet ally. However, since Britain was not at that time strong enough to mount a cross-Channel invasion of western Europe, the British prime minister seized upon strategic bombing as a means by which to strike back directly at the enemy. Churchill thus became Bomber Command's greatest supporter, and he was very reluctant to weaken Britain's only direct means to take the offensive to the Germans. This "Tilt to the Air," as historian Brian Farrell has termed it, would prove to have a significant negative effect on Coastal Command's efforts to protect convoys. Indeed, as we shall see, Coastal Command throughout 1942 had to play second fiddle to Bomber Command, as the latter received the lion's share of long-range aircraft resources for its strategic bombing campaign against Nazi Germany.[17]

The strategic bombing focus definitely found favour with many of the leaders of the RAF. This was especially true for Air Marshal Sir Arthur "Bomber" Harris, who in 1942 became the air officer commanding-in-chief of Bomber Command. Harris developed an

[15] Joubert had also previously been AOCinC of Coastal Command in 1936-1937. Terraine, *Business in Great Waters,* 365, 367; Buckley, *Constant Endeavour,* 125-126.

[16] Air Chief Marshal Sir P.B. Joubert de la Ferté, *Birds and Fishes* (London: Huchinson, 1960), 150.

[17] Farrell, *Basis and Making of British Grand Strategy,* Chapter 4 and 367-368; Alfred Price, *Aircraft Versus Submarine: The Evolution of the Anti-Submarine Aircraft, 1912 to 1972* (London: William Kimber and Co. Ltd., 1973), 112; Howard, *Grand Strategy,* IV, 24-25.

early dislike of maritime aviation in the late 1920s when he was assigned to command a flying boat squadron. During his tenure in this position, Harris felt that he was "wasting time" and that the flying boats under his command were "almost entirely useless."[18] It is thus not surprising that during the war Harris detested any diversion from the bombing campaign. The following extract from a memorandum was typical of the Bomber Command chiefs opinion: "The purely defensive use of air power is grossly wasteful. The naval employment of aircraft consists of picking at the fringes of enemy power, of waiting for opportunities that may never occur, and indeed probably will never occur, of looking for needles in a haystack. They [i.e., Coastal Command] attempt to sever each capillary vein, one by one, when they could, with much less effort, cut the artery. Bomber Command attacks the source of all [German] Naval Power rather than the fringes of one type of enemy Naval operations which obviously menace us - the submarine."[19] Harris therefore considered the defence-oriented Coastal Command as "merely an obstacle to victory."[20] Importantly, his opinions held sway with Churchill, and the Bomber Command chiefs personal access to the prime minister, in historian Michael Howard's words, "gave him a remarkable degree of independence, not only from the Chiefs of Staff Committee, but from the Air Staff itself."[21]

Lord Cherwell (Professor Frederick A. Lindemann), Churchill's scientific advisor and long-time friend, was also an outspoken advocate of the strategic bombing campaign, and he concurred with Harris' distaste of diverting aircraft for maritime operations. The arguments of these two men held significant weight with the prime minister and also with the Air Staff, and this body expressed that "defensive bombing" such as Coastal Command attacks on U-boats could "never win the war."[22] It was thus in this atmosphere that Coastal Command and the Admiralty struggled to secure aircraft with adequate range to close the air gap in 1942. As Coastal Command's official motto indicates, it would prove to be a frustrating "constant endeavour."

It was during 1942 that U-boat, now entering the Atlantic campaign in continuously growing numbers, began to have a significant effect on shipping. The head of the German U-boat Arm, Grand-Admiral Karl Dönitz, at this time began to deploy the bulk of his submarine fleet into the air gap. By the end of 1941, improved Coastal Command coverage of convoys in the areas surrounding the British Isles had forced the U-boats to begin operating out of aircraft range and into the mid-Atlantic air gap. Since successful wolf pack operations depended on the free movement of U-boats on the surface, the presence of aircraft proved to be a great hindrance to the German submarines.[23] Aircraft forced the U-boats to submerge, where they could not run on their diesel engines. Instead, the German submarines

[18] Marshal of the R.A.F. Sir Arthur Harris, *Bomber Offensive* (New York: The Macmillan Company, 1947), 25.
[19] Harris Memorandum, 24 August 1942, quoted in Howard, *Grand Strategy,* IV, 21.
[20] Harris, *Bomber Offensive,* 57-58; John Terraine, *The Right of Line: The Royal Air Force in the European War, 1939-1945,* (Toronto: Hodder and Stoughton, 1985), 426.
[21] Howard, *Grand Strategy,* IV, 20.
[22] C. Webster and N. Franklin, *The Strategic Air Offensive against Germany, 1939-1945, Volume I* (London: HMSO, 1961), 330.
[23] Grand Admiral Karl Dônitz, *Memoirs: Ten Years and Twenty Days,* R.H. Stevens, transi. (New York: Da Capo Press, 1997), 234.

had to operate on their electric engines, which made them several knots slower. This meant that the U-boats could not keep up with the convoy, thereby forcing them to lose contact with their prey. Therefore, by focussing on air sweeps around and in the track ahead of the convoy, the aircraft proved to be a crucial weapon in hampering the U-boats' ability to launch mass attacks.[24]

The presence of aircraft during wolf pack operations was thus very frustrating for U-boat commanders. Dônitz attested to this fact in an account of a failed wolf pack attack in his War Diary: "By systematically forcing the U-boats to submerge, it made them lose contact at evening twilight and thus spoiled all the [U-]boats' best chances to attack during the first four moonless hours of the night. The enemy made clever use of the boats' loss of contact to make a sharp leg, [i.e., the convoy made a sharp turn in its course] so that contact was not regained until [later on] and it was no longer possible to get the boats of the Group (except 2) near to the convoy. The convoy operation has to be broken off... in the morning, as it no longer seemed possible for them to haul ahead in the face of the strong enemy air activity."[25] It is then no surprise that Dönitz began concentrating his U-boats in the air gap in 1942, noting: "we did our utmost to attack convoys in mid-Atlantic, where they were beyond the range of land-based aircraft, and where we could be sure of finding them with no cover at all."[26]

The German admiral directed the U-boat campaign primarily against shipping assigned to Britain so as to strike against British war industry and to threaten Operation "Bolero," the build-up of supplies in Britain for D-Day.[27] By the end of November 1942, British industry began to draw on its energy reserves at an increasing rate, threatening essential war work. A cutback in war production would have been devastating, as it would have meant massive unemployment and subsequent domestic morale problems. Just as sensitive was the morale of the already-overburdened merchant marine. If shipping losses in the air gap did not start to drop soon, the Allies would have faced the complete collapse of the morale of the crews of the ships that supplied British industries.[28] The key to this problem was providing more aircraft to close the air gap. Dônitz understood this, and he noted in September 1942 that he was "gravely concerned" that the Allies would soon supply more aircraft to deprive his U-boats their free movement on the surface in this area.[29] How, then, could the air gap be closed? Since aircraft carriers were not available for convoy operations until April 1943,[30] the responsibility for the aerial defence of convoys and the

[24] DHH 181.003 (D309), "Submarine Warfare, World War II," Report, prepared by Wing Commander C.L. Annis, RCAF, 29 January 1943, 7.

[25] DHH 79/446, *Befehlshaber der Unterseeboote* War Diary (BdU War Diary), translation, 3 September 1942.

[26] Dônitz, *Memoirs,* 242.

[27] Douglas, *Creation of a National Air Force,* 539.

[28] Marc Milner, *North Atlantic Run: The Royal Canadian Navy and the Battle for the Convoys,* (Toronto: University of Toronto Press, 1986), 186.

[29] DHH 79/446, BdU War Diary, 3 September 1942.

[30] TNA, PRO, CAB 65/28, Meeting of the British War Cabinet, 29 October 1942. See also Syrett & Douglas, "North Atlantic Triangle," 4-5 and *The Development of British Naval Aviation 1919-1945 Volume II* (U.K.: Admiralty Historical Section, 1954), 105, 113-128.

CF photo PL 21759

A 10-cm air-to-surface (ASV) equipped VLR Liberator on the tarmac. The battle between Bomber Command and Coastal Command centred around which strategy, an offensive bombing one or a defensive maritime one, would have priority for the allocation of these aircraft

closing of the air gap thus fell to the RAF's Coastal Command.

The key problem of closing the air gap was not simply in the *number* of aircraft it needed but the *type.* Coastal Command required not just long-range aircraft, but *very*-long-range (VLR) ground-based airplanes, specifically four-engined "heavies" like the Stirling, Lancaster and especially the Liberator. The dilemma was that these aircraft were exactly the type that Bomber Command wanted for its strategic bombing campaign against long distant targets in Occupied Europe.[31]

On 2 June 1941, Coastal Command had taken delivery of a squadron of American-built Consolidated B-24 Liberator Mark I bombers. Amalgamated into Number 120 Squadron RAF, these 4-engined aircraft were modified to extend their range to VLR standards so that they could meet convoys in the middle of the air gap. These modifications consisted of removing equipment not strictly necessary for anti-submarine work and replacing it with additional fuel tanks. Armed with eight depth charges, these aircraft could provide protection from 700 to 1,000 miles out from base and still spend at least one-third of their time in the vicinity of a convoy, thereby making them the first VLR aircraft of the Battle of the Atlantic.[32]

[31] Buckley, *Constant Endeavour,* 133; Farrell, *Basis and Making of British Grand Strategy,* 376.

[32] Wing Commander C.G. Jefford, *RAF Squadrons: A Comprehensive Record of the Movement and Equipment of all RAF Squadrons and their Antecedents since 1912* (Shrewsburry, England: Airlife Publishing Ltd., 1988), 58; Denis Richards, *The Royal Air Force Volume I: The Fight at Odds* (London: HMSO, 1974), 348; DHH 79/599, RAF Air Historical Branch Narrative (AHB), Captain D. V. Peyton-Ward, *The RAF in the Maritime War,* Volume II, n.d., 304; Brereton Greenhous, Stephen J. Harris, William C. Johnston and William G.P. Rawling,

Owing to the number of modifications that needed to make the aircraft to VLR standards, 120 Squadron's nine Liberators did not enter service until the end of September 1941. One squadron was not enough to close the air gap, but thanks to the brilliant tactical innovations of Squadron Leader Terrence Bulloch, these Liberators were quickly able to demonstrate their effectiveness, making their first attack on a U-boat in October.[33] Nonetheless, by February 1942, 120 Squadron was wasting away due to a lack of replacements. Only one more Liberator aircraft was put into operation with the squadron by this time, bringing the total to ten. Since there was no promise of replacements, it was only a matter of time before wear and tear reduced the total of operational Liberators down to even lower numbers.[34] Replacing the Liberators with other aircraft in Coastal Command's arsenal was impossible, for none of them had the operational range required to closing the air gap: Catalina (600 miles), Sunderland (440 miles), Wellington (340 miles), Whitley (340 miles), and Hudson (250 miles).[35] Liberators - especially those equipped with the latest air-to-surface (ASV) radar[36] - were thus key to Coastal Command's success. Joubert and his backers in the Admiralty therefore set about securing as many of these American-built aircraft that they could.

In addition to the opposition of Churchill, Cherwell, Harris and most of the Air Staff, Coastal Command and the Admiralty also had to contend with the wishes of the US Army Air Forces (USAAF). As historian John Campbell has noted, since the USAAF adhered to a "knock-out blow" bombing strategy of daylight precision bombing, it "had a huge *doctrinal* and industrial investment in both the B-17 and B-24, the mainstays of their Victory Program."[37] As a consequence, the USAAF was very much adverse to the idea of the RAF

The Crucible of War, 1939-1945: The Official History of the Royal Canadian Air Force Volume III, (Toronto: University of Toronto Press in cooperation with the Department of National Defence and the Canadian Government Publishing Centre, Supply and Services Canada, 1994), 379-380. One VLR Liberator sortie could last up to 14 hours.

[33] TNA, PRO, Air 27/911, 120 Squadron Operations Record Book; Price, *Aircraft Versus Submarine,* 94-99. Bulloch's improvement of depth charge attack tactics allowed him to sink one U-boat and damage two more before the end of his tour of duty.

[34] TNA, PRO, Adm 205/23, 24th and 30* Meetings of the Battle of the Atlantic Committee, 11 November 1941 and 10 February 1942, respectively; DHH 79/599, AHB, *RAF in the Maritime War,* III, 10.

[35] Greenhous, et al, *Crucible of War,* 380-381; DHH 79/599, AHB, *RAF in the Maritime War,* III, 10; Milner, "The Battle of the Atlantic," 59.

[36] The radar issue in 1942 centred around which RAF Command, Bomber or Coastal, would be given priority over new sets of 10-centimetre ASV radar. Unsurprisingly, Bomber Command won this battle, and the new radar went to the RAF organization's Pathfinder squadrons. Shortly thereafter, just as the Admiralty and Coastal Command feared, one of these bombers was shot down over Germany. The Germans found the new equipment in the wreckage, and began developing countermeasures to 10cm radar. TNA, PRO, Adm 205/20, D.P. to First Lord of the Admiralty, 23 December 1942; Terraine, *Business in Great Waters,* 515; Roskill, *Churchill and the Admirals,* 134, 138.

[37] John. P. Campbell, "Baptism of Fire: The RAF and the 'Flying Fortress,' 1941," *Airpower History,* Vol. 45, No. 2 (Summer 1998), 48. Emphasis added. For a discussion of the USAAF's doctrinal focus on daylight strategic bombing see Lt. Colonel Peter Faber, "Interwar US Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," in Colonel Phillip S. Meilinger, ed., *The Paths of Heaven: The Evolution of Airpower Theory* (Maxwell, Alabama: Air University Press, 2001), 183-239.

utilizing American four-engined aircraft such as the Liberator or the Fortress in anything other than their intended role: bombing.[38] In a letter to Churchill in March 1942, the chief of the air staff, Air Chief Marshal Sir Charles Portal, warned the prime minister about "serious trouble with the Americans about our using their best heavy bombers for reconnaissance over the sea." If the RAF decided to allocate future deliveries of Liberators to Coastal Command, Portal continued, "I am afraid that the Army Air Corps may cut down our allotment on the plea that the aircraft were built as heavy bombers and that if we do not use them for that purpose they will do so themselves."[39]

Given these USAAF concerns and the RAF focus on the strategic bombing campaign, it is not surprising that Coastal Command and the Admiralty had a very difficult time in their efforts during 1942 to secure more Liberators to close the air gap. In February, the Admiralty, concerned with the poor state of Coastal Command, sent a memo to the war cabinet committee asking that shortfalls in deliveries of long-range aircraft be made good before allocating resources to the bomber offensive. A.V. Alexander, the first lord of the Admiralty, wanted the Air Ministry to transfer nine squadrons of American B-24 Liberators and B-17 Flying Fortresses from Bomber Command to Coastal Command in order to close the air gap. He felt that the shipping situation at the time was so bad that Coastal Command must be strengthened, and, if necessary at the expense of Bomber Command.[40] The Air Staff refused, arguing that "the bomber force is always available to be concentrated on the most effective and decisive objects in fulfilment of our changing strategical [sic] needs, but it cannot be either trained or employed effectively unless squadrons are used for the primary bombing duties for which they were established."[41] Although noting that American long-range aircraft were not due to be delivered to Coastal Command until June, the Air Staff told the Coastal Command chief that he simply would have to make good with what he had until then.[42]

Undaunted, Joubert and the Admiralty persisted in their efforts to secure VLR aircraft. Stressing that "if we lose the war at sea we lose the war," they made a number of

[38] See, for example, TNA, PRO, Adm 205/8, Portal to Pound, 5 May 1941.

[39] TNA, PRO, PREM 3/97/1, Portal to Churchill, 29 March 1942. In the United States at the time there was a huge debate raging between the USAAF and the US Navy over control of maritime air power, and this had a negative effect on the supply of Liberators to Coastal Command. In addition, although the US.Navy did receive a great deal of the B-24 Liberator production (400 by one count), Admiral E.J. King, the Commander-in-chief of the USN, preferred deploying them in the Pacific. TNA, PRO, Air 8/1399, RAFDEL Washington to Air Ministry, 24 March 1943; Farrell, *Basis and Making of British Grand Strategy,* 384; Sir John Slessor, *The Central Blue: Recollections and Reflections* (London: Cassel and Company Limited, 1956), 499; Roskill, *Churchill and the Admirals,* 135.

[40] TNA, PRO, Adm 205/23, 30"' Meeting of the Battle of the Atlantic Committee, 10 February 1942; TNA, PRO, PREM 3/97/1, A.V. Alexander, First Lord of the Admiralty, to the War Cabinet Defence Committee, "Requirements of Long Range G/R Aircraft For Coastal Command and in the Indian Ocean," 14 February 1942; DHH 79/599, AHB, *RAF in the Maritime War,* III, 10.

[41] Quoted in Buckley, *Constant Endeavour,* 132.

[42] TNA, PRO, PREM 3/97/1, Air Ministry to War Cabinet Defence Committee, undated but most likely in late February or early March.

direct appeals during the month of March.[43] Again and again the Air Staff rebuffed them, and the reasoning behind the refusals was all too familiar. In the words of the secretary of state for air, Sir Archibald Sinclair, to allocate Liberators to Coastal Command, "would be a dispersion of our bombing resources in an attempt to contribute *defensively* to the control of sea communications over immense areas of ocean where targets are uncertain, fleeting and difficult to hit. Their efforts in this direction would be wasted... at a moment when German morale is low and when the Russians are in great need of our assistance."[44] As Portal explained in a letter to the prime minister that month, to divert "heavies" to Coastal Command would "most seriously affect our hitting power." This was especially crucial given the fact that these aircraft were the only ones capable of carrying large loads of bombs and striking at long-distance targets such as Berlin, Tripoli, and the Romanian oil fields at Ploesti.[45]

Joubert and the Admiralty, however, were still not dissuaded, and they continued to press for further allocations of Liberators to Coastal Command. Finally, on 1 April, the British War Cabinet Defence Committee reached a compromise: eight of the 22 Liberators earmarked for the RAF would go to Coastal Command. Although this was a victory for Joubert and the Admiralty, it was a minor one only. The Mark II Liberators that Coastal Command received did not form the nucleus of a new V L R squadron, but instead were only enough to be "fed into No. 120 squadron whose Mk. I Liberators were rapidly dying out."[46] Coastal Command was therefore still short of the V L R aircraft that it needed to close the air gap-

By the spring of 1942, the pressure on Joubert regarding the V L R aircraft allocation issue put the Coastal Command chief in a precarious position, as he was "kicked by the Admiralty for not asking enough and blamed by the Air Ministry for asking impossibilities."[47] With numbers of U-boats operating in the air gap growing steadily, the first lord of the Admiralty, in an effort to take some of the pressure off of Joubert, wrote to Churchill requesting further aircraft resources for Coastal Command. In two letters, dated 1 and 10 May, Alexander asked the former first lord of the Admiralty for the loan from Bomber Command of two squadrons of either Lancasters, Liberators, Stirlings or Warwicks. These aircraft, Alexander explained to Churchill, could strike a heavy blow to U-boats operating in the air gap. Since the U-boat captains would not be expecting an aerial threat in the mid-Atlantic, it was a good bet that they would remain on the surface, and this would expose them to air attack.[48]

Since such a transfer would have affected Bomber Command directly, Churchill

[43] TNA, PRO, Air 19/243, Pound Memorandum, "Air Requirements for the Successful Prosecution of the War at Sea," 5 March 1942.

[44] TNA, PRO, PREM 3/97/1, Memorandum by the Secretary of State for Air, "Requirements in Long-Range General Reconnaissance Aircraft," 8 March 1942.

[45] TNA, PRO, PREM 3/97/1, Portal to Churchill, 29 March 1942 and War Cabinet Chiefs of Staff Committee Meeting, 27 March 1942.

[46] DHH 79/599, AHB, *RAF in the Maritime War,* III, 11.

[47] Captain S.W. Roskill, R.N., *The War At Sea, 1939-1945, Volume II,* (London: HMSO, 1954), 82.

[48] TNA, PRO, PREM 3/97/1, Alexander to Churchill, 1 May and 10 May 1942.

forwarded Alexander's letters to "Bomber" Harris. The Bomber Command chief wrote back immediately, expressing to Churchill that he needed these aircraft and their experienced crews for the strategic bombing campaign.[49] Armed with Harris' opinion, Churchill refused Alexander's request, explaining that "I cannot further deplete Bomber Command." Coastal Command would simply have to once again make due with what it had until deliveries of new aircraft arrived in eight months.[50]

In June Coastal Command and the Admiralty tried again, and this time it was Churchill's scientist friend Lord Cherwell who stood in their way. Endeavouring to avoid any depletion of the Bomber Command's resources, he accused Coastal Command of inefficient management and maintenance. Cherwell suggested to the prime minister that the solution to Coastal Command's problem was not a matter of a need for greater numbers of certain types of aircraft, but an increase in the number of sorties of aircraft already in its possession. Portal agreed with this conclusion, and this convinced Churchill. As such, when First Sea Lord, Admiral Sir Dudley Pound, put forward a proposal at the 16 June Chiefs of Staff Committee to prioritize the defence of shipping by increasing Coastal Command's VLR forces, he was once again met with disappointment.[51]

Following up on Cherwell's conclusions, Churchill informed Alexander that there would be no transfers of long-range aircraft from Bomber Command until Coastal Command became more efficient.[52] In response, Coastal Command began a "Planned Flying and Maintenance" programme. Designed to "cut a maximum coat out of a meagre amount of cloth," the programme sought to extract "the last ounce of operational effort per maintenance man-hour out of the available aircraft."[53] Although it helped Coastal Command by ensuring that the RAF maritime element got the best use out of its aircraft, it did not answer the most pressing need to secure VLR aircraft to close the air gap.

By the summer of 1942, the deliveries of Liberator aircraft to Coastal Command began to increase. In July, the RAF command received five of these aircraft; 12 in August; and 15 more in September. The problem was that they were Liberator Mark IIIAs, which was the standard type then in production in the United States, but which lacked the range of the modified VLR Liberator Mark Is in 120 Squadron. Although Coastal Command could have modified these aircraft to VLR standards (2,400 miles) so that they could be employed in the air gap, they instead modified the Liberators only to general reconnaissance standards (1,700 miles) and implemented them in the Bay of Biscay offensive.[54]

[49] TNA, PRO, PREM 3/97/1, Harris to Churchill, 10 May 1942.

[50] TNA, PRO, PREM 3/97/1, Minute by Churchill on the first lord of the Admiralty's memorandum, 10 May 1942.

[51] TNA, PRO, Air 19/243, Cherwell to Churchill, 4 June 1942; TNA, PRO, PREM 3/97/1, Portal to Churchill, 16 June and 5 July, 1942; TNA, PRO, CAB 79/21, "The Bombing of Germany," Meeting of the Chiefs of Staff 16 June 1942; Buckley, *Constant Endeavour,* 134, 182-183.

[52] TNA, PRO, PREM 3/97/1, Churchill to Alexander and Sinclair, 14 July 1942; DHH 79/599, AHB, *RAF in the Maritime War,* III, 17-18.

[53] DHH 79/599, *RAF In Maritime War,* III, 17; Hilary St. George Saunders, *The Royal Air Force Volume III: The Fight is Won* (London: HMSO, 1975), 62.

[54] DHH 79/599, AHB, *RAF in the Maritime War,* III, 519-520; Syrett & Douglas, "North Atlantic Triangle," 9.

Beginning in early 1942, the bay offensive was an air campaign by Coastal Command on U-boats to strike at the enemy where they were thought to be most concentrated. There was an area of water about 300 by 120 miles in the Bay of Biscay through which U-boats based in France had to pass while on their way to and returning from their operational areas in the Atlantic. The Bay of Biscay was therefore one place where Coastal Command and the Admiralty were "absolutely certain there would be U-boats found and killed."[55] Coastal Command's efforts in this endeavour were also predicated on the RAF's focus on the offensive. In endorsing the bay offensive, the Coastal Command chief himself even stressed that "offensive action against submarines is much more valuable than the passive defence which is afforded by the close escort of convoys."[56] Believing that the morale of U-boat crews would collapse under the strain of unremitting air attacks, it was in the Bay of Biscay where Joubert dedicated a great deal of Coastal Command aircraft in 1942.

For the first half of 1942, these operations did not hamper Coastal Command's convoy protection efforts because the aircraft employed in the bay offensive were largely of medium-range, and therefore would not have been able to reach convoys sailing far out in the Atlantic. However, when Coastal Command, supported by the Admiralty, decided in summer 1942 to implement some of its newly acquired Liberators in the bay offensive, they made a crucial mistake, as these aircraft were more urgently needed to help close the air gap. As W.A.B. Douglas and David Syrett have noted, "mesmerized by the possibility of destroying or at least seriously weakening the U-boat fleet, they [the Admiralty and Coastal Command] were in fact weakening the air forces they needed to achieve their real aim, the safe passage of convoys."[57] Therefore, one can understand that it was not only the offensive mindset of Bomber Command and the Air Ministry that deprived Coastal Command of the VLR aircraft that it needed to close the air gap, but also the Admiralty and Coastal Command's faith in the effectiveness of the bay offensive.

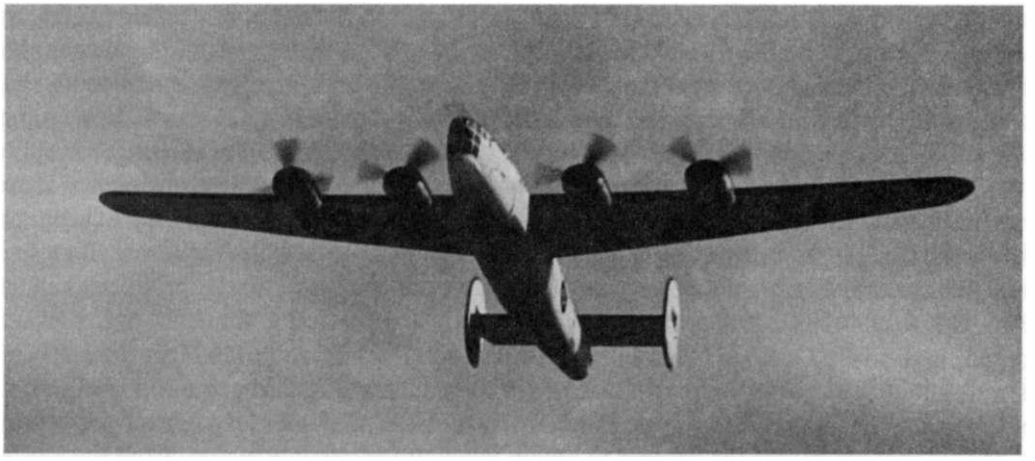
That the Liberators would have been more effective in operations in the North Atlantic was made clear by 120 Squadron's efforts in the air gap during the summer of 1942.[58] By the second week of August, the squadron's VLR aircraft had sighted seven U-

[55] Slessor, *The Central Blue,* 512. See also Terraine, *Business in Great Waters,* 581-583.

[56] DHH 87/89, Portal Papers, Joubert to Portal, 20 September 1941. As we shall see, this belief proved to be quite incorrect.

[57] Syrett & Douglas, "North Atlantic Triangle," 12. Joubert and Pound also strongly advocated that Bomber Command aircraft be diverted from their main sorties over France and Germany to bomb the U-boat bases on the French Coast. This proved to be detrimental to Coastal Command's defensive efforts in two ways: 1) such bombing was essentially ineffective due to the hardened concrete pens in which the U-boats were housed; and 2) the requests further agitated Bomber Command and the Air Ministry, and therefore hardened their view on the maritime war. For discussion on this issue, see TNA, PRO, Adm 205/23, 10 February and 9 June 1942 Meetings of the Battle of the Atlantic Committee, and Roskill, *Churchill and the Admirals,* 136.

[58] 1 20 Squadron's Liberators consisted of the following: six Mark I (2,400 miles range) and four Mark II (two with 1,800 mile range and two with 1,680). By July 1942 they were operating out of Reykjavik, Iceland, in an attempt to provide better protection for convoys in the air gap. DHH 79/599, AHB, *RAF in the Maritime War,* III, 477; Jefford, *RAF Squadrons,* 58.



CF photo PL 17138

The view that a U-boat captain feared most: a VLR Liberator flying overhead. By forcing a U-boat to submerge, Liberators were key to frustrating massed U-boat pack attacks on convoys in the Air Gap.

boats and made three attacks. Although they were not lethal,[59] the attacks were effective in that they forced the U-boats to submerge and thereby lose contact with the convoy. During one operation in the air gap in early September 1942, a 120 Squadron Liberator was able to force no fewer than eight U-boats concentrated against a convoy to submerge, thereby ensuring that no ships were sunk while the aircraft was present.[60] So effective was this particular operation that it led Admiral Dônitz to write in his war diary on 3 September that he was "gravely concerned that the prospect of the same unfavourable air situation over the convoys extending to almost all parts of the North Atlantic, the main battleground of U-boats."[61] Should the Allies close the air gap by providing "constant air patrol... over the whole of the Atlantic," Dönitz worried, "then the mobility of the U-boats would vanish and their system of joint surface attacks be defeated."[62] Fortunately for the German admiral, it would still be another seven months before the Allies would realize that scenario. Indeed, it was during those seven months that the U-boats had their greatest successes against convoys in the air gap.

During mid-September, there was, for the first time, no fewer than twenty U-boats

[59] The main weapon that Coastal Command utilized against the U-boats, the depth charge, still did not have a setting that was shallow enough to destroy a U-boat on the surface or in the process of submerging. This problem was finally solved in October 1942 when modified depth charges with a "genuine twenty-five foot setting" came into service with Coastal Command. Price, *Aircraft Versus Submarine,* 95.

[60] *Development of British Naval Aviation,* 110.

[61] DHH 79/446, BdU War Diary, 3 September 1942.

[62] Dônitz, *Memoirs,* 234-235.

operating simultaneously in the North Atlantic. By October, U-boat numbers had risen to the point that Dônitz was able to permanently operate two large wolf packs in the air gap, one on its eastern edge and the other on the western.[63] Shipping losses began to rise steadily, and the Admiralty and Coastal Command once again began clamouring for more VLR aircraft to be allocated for convoy defence. Nevertheless, in what historian John Buckley has called a "vainglorious attempt to prove their pre-war strategies correct," the supporters of the strategic bombing campaign refused to budge. Fearing further transfers of Bomber Command aircraft "to bolster further the already overswollen establishments of the purely defensive Coastal Command," this group put increasing pressure on the prime minister to strengthen the RAF's bomber fleet.[64] Unfortunately for Coastal Command, this pressure worked, and on 24 October Churchill released the following memorandum: "There preys upon us as the greatest danger to the United Nations and particularly to our Island, the U-boat attack. The Navy call for greater assistance from the Air. I am proposing to my colleagues that we try for the present to obtain this extra assistance mainly from the United States, and that *we encroach as little as possible on our Bomber effort against Germany...* The issue is not of principle, but of emphasis. At present, *in spite of U-boat losses, the Bomber Offensive should have the first place in our air effort."*[65] Thus, it seemed that the air gap problem would continue to take a back seat to the strategic bombing campaign.

A week and a half after releasing the above memorandum, however, Churchill made an abrupt about-face. It was at that time that the figures for the October shipping losses came to the attention of the prime minister. U-boats, largely operating in the air gap, had sunk ninety-four ships for an incredible 619,417 tons. Finally realizing that a continuation of this monthly rate would seriously endanger British imports and an Allied re-entry on to continental Europe, Churchill in early November 1942 convened the Cabinet Anti-U-Boat Warfare Committee. Chaired by the prime minister, the new committee consisted of those "who were responsible for the conduct of the war at sea."[66] This group included Joubert, Pound, Portal, Alexander, Sinclair (secretary of state for air), plus scientists from Coastal Command's operational research section. They handled all matters of policy concerning the war in the Atlantic, and their main priority, as Brian Farrell has noted, was to discover "how to bring about first quick relief then achieve a solution" to the U-boat threat.[67] Finally, and most importantly, because it was a cabinet-level body, the Anti-U-Boat Warfare Committee

[63] Dônitz, *Memoirs,* 249, 272. Dônitz explains that "the task of the eastern group was to gain contact with the west-bound convoys while the western group intercepted eastern convoys before either type of convoy [i.e., slow or fast] entered 'the U-boat zone of operations,' that area in the mid-Atlantic which could not be reached by land-based aircraft."

[64] Buckley, *Constant Endeavour,* 135; Roskill, *Churchill and the Admirals,* 136.

[65] TNA, PRO, CAB 66/30, Memorandum by the Minister of Defence (Churchill), 24 October 1942. Italics added.

[66] DHH 79/599, AHB, *RAF in the Maritime War,* III, 35. The committee had actually been formed in August 1942, but for some unknown reason Churchill did not decide to hold the first meeting until November. Howard, *Grand Strategy,* IV, 23.

[67] Farrell, *Basis and Making of British Grand Strategy,* 425.

"could instantly impose its will on any Ministry or Headquarters."[68] In short, their decisions were final and binding.

At the committee's first meeting on 4 November, members immediately tackled the air gap issue. In a telling memo, the first lord of the Admiralty stressed that "the air had been of great help in meeting the U-boat menace; but there was a blind spot in the centre of the North Atlantic where no air cover was provided and it was here that our heaviest losses occurred. Aircraft with an overall range of2,500 miles would be needed to cover this area."[69] Joubert immediately concluded that he could close the air gap with 40 V L R Liberators. This number, he noted, was a very small percentage of the total Allied four-engined bomber force, and, as Marc Milner has pointed out, it was "the same number of Liberators lost from the first Ploesti raid [on Romanian oil fields] alone."[70]

At that very moment in the air gap, the most disastrous convoy battle for the Allies was raging around convoy SC 107. The engagement was a crucial example of both the need to close the air gap and the effectiveness of V L R aircraft in the defence of convoys. Consisting of forty-four ships sailing from New York on 24 October, SC 107 was besieged by a large number of U-boats once it passed out of the range of air cover from Newfoundland. For the next few days, the wolf packs devastated the convoy, sinking fifteen ships for a total of 87,818 tons.[71] It was only on 5 November that 120 Squadron was able to provide coverage for the convoy 650 miles southeast of Iceland. The V L R Liberators sighted four U-boats and made attacks of two of them, causing Dônitz to break off the wolf pack attacks.[72]

It was with engagements like those of convoy SC 107 in mind that the Cabinet Anti-U-Boat Warfare Committee set about to secure more V L R Liberators to close the air gap. The problem was that prospects Liberator deliveries from the United States to Coastal Command at the end of October did not look very promising. Only four aircraft were expected in November, seven in December and eight in January. It was with these small numbers that Coastal Command was to attempt to both equip new squadrons and replace wastage in the existing V L R and Bay Offensive Liberator squadrons.[73]

Since the priority was now to close the air gap, the Cabinet Anti-U-Boat Warfare Committee made an important decision at its second meeting on 12 November. They concluded that the only solution was to remove the thirty-three Liberators from the bay

[68] DHH 79/599, AHB, *RAF in the Maritime War,* III, 35, 475; Slessor, *The Central Blue,* 483-484.
[69] Quoted in Buckley, *Constant Endeavour,* 136.
[70] Buckley, *Constant Endeavour,* 136-137; Milner, "The Battle of the Atlantic," 59.
[71] Milner, *North Atlantic Run,* 180.
[72] Syrett & Douglas, "North Atlantic Triangle," 9. One of these attacks, made by Squadron Leader T. Bulloch, severely damaged *U-89,* forcing the vessel to return to port. Norman L.R. Franks, *Search, Find and Kill: Coastal Command's U-boat Successes* (Buks, UK: Aston Publications Limited, 1990), 127. For a complete account of the battle for SC 107, see W.A.B. Douglas and Jurgen Rohwer, "'The Most Thankless Task' Revisited: Convoys, Escorts, and Radio Intelligence in the Western Atlantic, 1941-43," in James A. Boutilier, ed., *The RCN in Retrospect, 1910-1968* (Vancouver: University of British Columbia Press, 1982), 207-221.
[73] TNA, PRO, Air 20/4562, DONO to DGO, 31 October 1942; DHH 79/599, AHB, *RAF in the Maritime War,* III, 520.

offensive, convert them to VLR, and allocate them to serve with 120 Squadron and the recently created No. 86 VLR squadron.[74] At their third meeting on 18 November, the committee finally sanctioned a change in strategy: the defence of trade was put above the bomber offensive and the bay offensive in the list of priorities.[75] It had only taken three years for the British to give adequate precedence to the defensive. The second sea lord observed, "Our fight with the Air Ministry becomes more and more fierce as the war proceeds. It is a much more savage one than our war with the Huns, which is very unsatisfactory and such a waste of effort."[76]

This switch in strategy demonstrated how poorly the Air Ministry and Churchill evaluated Britain's economic situation in the first half of the war. The Second World War signified the continuation and evolution of a theme of attritional struggle between a nation's people and economy that had begun in the First World War. The British, excluded from mainland Europe since 1940, had pegged their hopes on victory through the destruction of German industrial economy by bombing. In so doing, they highly overestimated the Nazis' economic vulnerability.[77] Germany, on the other hand, after being forced to abandon their planned invasion of Britain in 1940, decided instead to concentrate on the U-boat assault on shipping as the means to bring its enemy's economy to a collapse. Therefore, as Correlli Barnett has noted, "Germany and Britain were each pursuing the same basic strategy against one another. The difference lay in the effectiveness of the means the two opponents were employing."[78] In June 1942, Churchill produced a memorandum that seemed to recognize this fact: "It might be true to say that the issue of the war depends on whether Hitler's U-boat attack on Allied tonnage, or the increase and application of Allied air power, reach their full fruition first."[79] The problem for the British was that they were losing this race.

From 1939 to mid-1943, Donitz's U-boats were overwhelmingly the most effective at waging economic warfare.[80] Therefore, as Marc Milner has noted, by failing to allocate the necessary VLR aircraft to Coastal Command in order to counter the U-boat assault, the Air Ministry failed to realize that "the very strategic campaign upon which airmen staked their reputations, and the outcome of the war effort, was dependant upon securing the

[74] TNA, PRO, CAB 86/3, Secretary of State for Air Memorandum, "Modification of aircraft to provide an operational range of 2,500 miles," 12 November 1942; TNA, PRO, Adm 205/23, Memorandum, "Aircraft for the Bay and for Convoy Escort in Mid-Atlantic," n.d. [early November 1942]; Greenhous, et al, *Crucible of War,* 391; Syrett & Douglas, "North Atlantic Triangle," 13.

[75] Admiral Pound's comments were telling: Far the most effective way by which we can reduce the losses, restore morale and retain our ability for offensive action is to ensure that we have air escort for all threatened convoys. It is well known that, not only is this the most effective defence, but has a most heartening result on crews of ships in convoys." TNA, PRO, Adm 204/14, Pound Memorandum, "U-Boat Warfare Meeting, 18th November, 1942," 19 November 1942.

[76] Quoted in Roskill, *Churchill and the Admirals,* 139.

[77] Farrell, *Basis and Making of British Grand Strategy,* 156.

[78] Barnett, *Engage the Enemy More Closely,* 463. See also Farrell, *Basis and Making of British Grand Strategy,* 388-390.

[79] Churchill Memorandum, 21 July 1942, quoted in Howard, *Grand Strategy,* IV, 19.

[80] A post-war study by the British Bombing survey unit using German data estimated that 1942 bombing reduced German war production by only a paltry 0.5%. Buckley, *Constant Endeavour,* 135.

Atlantic."[81] Put simply, Bomber Command relied on the convoys to provide them with the capability to carry out their offensive. Unless Coastal Command received the V L R aircraft that it needed to protect convoys in the air gap, there was a very real possibility that U-boat attacks would sink enough ships, especially tankers, to ground Bomber Command aircraft for lack of aviation fuel. The result would be a severe curtailment on the strategic bombing campaign against Germany and, more importantly, there would be no chance of the Allies launching offensive operations onto mainland Europe from Britain. The German U-boat offensive would effectively cut Britain off from its supplies.[82] It is therefore truly unfortunate that it was only when Britain reached an import crisis point in November 1942 that the British leadership finally decided to allocate the necessary resources for the protection of trade.

Although the acquisition of V L R aircraft became the R A F's first priority, it still did not help the immediate situation in the air gap. To say verbally that V L R Liberators would be provided for Coastal Command was one thing, but to deliver on this promise soon proved to be an entirely different matter. At its 18 November meeting, the Cabinet Anti-U-Boat Warfare Committee ordered that the thirty-three Liberators currently in Coastal Command for the bay offensive were to be modified to V L R standards by the Scottish Aviation Company at Prestwick, at the rate of three a week.[83] The program for the delivery of these modified Liberators was as follows: one in November; nine in December; seven in January; seven in February; seven in March; and two in April.[84] As it turned out, however, this proved to be an overly optimistic projection.

The modification of Liberators did not go as quickly as had been originally projected. To convert these aircraft to V L R standards for operations in the air gap required the following: fitting two 335-gallon tanks in the bomb bay; the removal of 2,000 lbs. of equipment (the upper turret, the tunnel gun, the mid-side gun and ammunition); and the fitting of long-range 10-cm radar. Since such modifications were not simple tasks, it meant that the entry of the new V L R Liberators into operations became a slow process.[85] That was not comforting news for those who continued to sail in convoys through the air gap. With one hundred and nineteen ships sunk for 729,160 tons, November's shipping losses were even higher than those in October. As we have seen, a continuation of these losses seriously threatened Britain's war industries and the morale of the merchant marine. This was made all the more prevalent by the figures which accounted for only eighty-seven U-boats being

[81] Milner, "The Battle of the Atlantic," 59-60. See also Farrell, *Basis and Making of British Grand Strategy,* 44-45, for a discussion of the Admiralty's focus on controlling the Atlantic sea lanes.

[82] By mid-December 1942 there was only 300,000 tons of commercial bunker fuel left in Britain, and consumption was at about 130,000 tons a month. Price, *Aircraft Versus Submarine,* 112; Farrell, *Basis and Making of British Grand Strategy,* 487; Buckley, *Constant Endeavour,* 135.

[83] TNA, PRO, Air 20/3094, HQ, Coastal Command to Air Ministry, Kingsway, 27 November 1942; Syrett & Douglas, "North Atlantic Triangle," 13.

[84] TNA, PRO, Air 20/3094, Air Ministry to HQ Coastal Command, 30 November 1942.

[85] TNA, PRO, Air 20/3094, Air Ministry to HQ Coastal Command, 30 November 1942; TNA, PRO, Air 8/1400, D.O.R. Memorandum, "Modification Work Carried out on Liberator Aircraft on Arrival in the United Kingdom," 9 March 1943; Greenhous, et al, *Crucible of War,* 391.

destroyed in 1942, while during the same period two hundred and forty U-boats had been built and put into commission.[86]

When western Allied leaders met at Casablanca in January 1943, they were faced with the very real possibility that failure to secure the main trade routes would seriously endanger any attempt to secure a second front on mainland Europe. As a result, the Combined Chiefs of Staff concluded that "the defeat of the U-boat must remain a first charge on the resources of the United Nations."[87] The word "remain" in this statement was a questionable one, given the neglect for Coastal Command's VLR capabilities throughout 1942. Furthermore, as historians Denis Richards and Hillary St. George Saunders have noted, "no sudden stream of long-sought equipment began to pour into Coastal Command as a result of this ruling."[88] What it did accomplish was a combined staff planners' study indicating that a minimum of 80 VLR aircraft were needed to close the air gap, 60 from Britain and Iceland (Eastern Atlantic) and 20 from North America (Western Atlantic). To speed up the delivery of Liberators to Coastal Command, the Combined Chiefs of Staff changed the allocation from the previous four per month to 15 for January, 20 for February and 25 for March.[89] Furthermore, the combined chiefs decided that 20 Liberators per month would be first modified to general reconnaissance and fitted with long range radar in the United States before being sent on to the Scottish Aviation Company in Prestwick for further modification to VLR standards. Anticipating that the modifications in the US would take two months and that those in Britain would take one more month, the combined chiefs therefore predicted that 40 VLR Liberators should be available to Coastal Command by April.[90] Once again, such predictions were overly optimistic.

When Air Chief Marshal Sir John Slessor replaced Joubert as air officer commanding-in-Chief of Coastal Command on 5 February 1943, the RAF maritime organization still had only one VLR squadron (a daily average of about fourteen aircraft) available for convoy support in the air gap.[91] Delays at Prestwick had meant that only two of the promised thirty-three modified Liberators had been put into operations. These two aircraft had taken 53 and 25 days, respectively, to modify to VLR standards. One reason for the delay was due to the poor workmanship done on the tail turrets at the Liberator factory in Fort Worth, Texas.[92] Another was the fact that Scottish Aviation had "a very full program" of work. In summarizing the situation, a RAF official noted that "In view of conflicting

[86] Dônitz, *Memoirs,* 295; DHH 79/599, AHB, *RAF in the Maritime War,* III, 30.

[87] Terraine, *Business in Great Waters* 515.

[88] Denis Richards and Hilary St. George Saunders, *The Royal Air Force Volume II: The Fight Avails* (London: HMSO, 1975), 113.

[89] Slessor, *The Central Blue,* 523; DHH 79/599, AHB, *RAF in the Maritime War,* IV, 21-22. These numbers were to increase to 35 in April, 40 in May and 45 per month thereafter.

[90] DHH 79/599, AHB, *RAF in the Maritime War,* IV, 21-22.

[91] DHH 79/599, AHB, *RAF in the Maritime War,* IV, 21; Slessor, *The Central Blue,* 465-466; *Development of British Naval Aviation,* 114.

[92] TNA, PRO, Air 2/5298, ADAO(A) to DDOHC, 27 January 1943; TNA, PRO, Air 20/3094, DgofS to VCAS, 7 February 1943. A RAF official noted that "we are having to carry out checks which amount virtually to the removal and reinstallation of each turret."

priorities, and the amount of work involved, a turn around of three weeks cannot be considered excessive. The position will improve rapidly as soon as Scottish Aviation have disposed of the additional demands that have been made on them."[93] As usual, Coastal Command would have to make do with what it had.

By the beginning of March, Dônitz, with over one hundred and sixty U-boats available for operations in the Atlantic, inflicted the heaviest losses to date on Allied shipping.[94] In the first ten days of the month, the Allies lost forty-one ships, in the second ten days, fifty-six, combining for more than half a million tons of shipping. These figures led the Admiralty to question seriously the entire convoy system. More importantly, these losses put an even greater strain on Britain's import programs. As Marc Milner notes, unable to withstand such losses, "the British threatened to withdraw all their commitments to BOLERO in order to concentrate on their own imports."[95] Only President Franklin Roosevelt's personal intervention to re-direct American shipping to Britain prevented the British from carrying out this threat.[96]

While the convoy battles were raging, senior officers of the navies and air forces of Britain, Canada and the United States met in Washington at the Atlantic Convoy Conference in March to discuss the current shipping problem. One of the several recommendations that they made was to allocate more VLR to air forces on *both sides* of the Atlantic.[97] This conclusion did not, however, help the immediate VLR situation in the air gap. Despite British Cabinet Anti-U-Boat Warfare Committee pressure on the Scottish Aviation Company to expedite the modification of Liberators, by the end of March Coastal Command only had 34 of these VLR aircraft in the Atlantic, of which only 20 were operational.[98] This number was not enough to close the air gap, and such was the devastating sinking numbers during this month that Captain Stephen Roskill, in the official history of British naval operations, made the following comment: "In the early spring of 1943 we had a very narrow escape from defeat in the Atlantic; and that, had we suffered such a defeat, history would have judged that the main cause had been the lack of two more squadrons of very long range aircraft for convoy escort duties.[99] A paltry two squadrons was indeed a very "small national effort,"[100] and what made it even more remarkable was the fact that the Liberator was the largest-produced aircraft, not only during the Second World War, but in American history itself,

[93] TNA, PRO, Air 20/3094, DgofS to VCAS, 7 February 1943.

[94] Convoys ONS 166 and SC 122 lost twenty-one ships each during this month. Slessor, *The Central Blue,* 498; Dônitz, *Memoirs,* 315, 341. Dônitz notes that in the first half of 1942, 39 per cent of sinkings were ships in convoys, but that in the first three months of 1943 this figure rose to 75 per cent.

[95] Milner, "The Battle of the Atlantic," 61; DHH 79/599, AHB, *RAF in the Maritime War,* IV, 23-24.

[96] Milner, "The Battle of the Atlantic," 62.

[97] TNA, PRO, Air 8/1398, RAFDEL Washington to Air Ministry, DONC, & HQ Coastal Command, 8 March 1943 and Breadner to Portal, 9 March 1943; DHH 181.003 (D5027), Report of Atlantic Convoy Conference, Sub-Committee # 3 on Air Support, 12 March 1943.

[98] TNA, PRO, Air, 8/1398, Extracts of the 10th and 11th Meetings of the Anti-U-Boat Warfare Committee, 10 and 17 March 1943; DHH 79/599, AHB, *RAF in the Maritime War,* IV, 22, 27.

[99] Roskill, *The War At Sea,* II, 371.

[100] TNA, PRO, Adm 205/23, Rear-Admiral E.J.P. Brind, ACNS (Home), to Slessor, 29 October 1942.

with 19,203 in total being built.[101] It was therefore truly incredible that the comparatively tiny number of Liberators that Coastal Command required could not be met when they were needed the most.

Nonetheless, some good did come out of the situation of March in that it forced the Allies to make some long-needed changes to their effort to protect convoys. Although Allied representatives at the Atlantic Convoy Conference had agreed to allocate more V L R aircraft to close the air gap, they still had trouble in convincing the USAAF that convoy protection was the best way to use its treasured "heavies" at that time.[102] When the sinking totals for March caught the attention of the White House, the US President, fearing the delay or even collapse of Operation "Bolero," acted quickly. As we have seen, one measure that he took was to allocate American shipping to Britain in order to help that country's import crisis. Nonetheless, this new shipping still needed better protection, and Roosevelt immediately began to make inquiries regarding the "number of V L R aircraft which were operating on the whole route at the time of these sinkings."[103] When the President discovered how low the numbers of aircraft operating in the air gap (including zero from the Western Atlantic), *and* when he learned of the USAAF's reluctance to surrender its Liberators, Roosevelt threatened to intervene directly if none of these aircraft were allocated for convoy defence.[104]

The completion of significant and substantial research reports by Professor P.M.S. Blackett, the brilliant head of Coastal Command's and later the Admiralty's operational research section, also went a long way to convince those who had previously doubted the value of the V L R aircraft in the defensive. These reports, based on intricate yet logical mathematical and scientific studies, demonstrated clearly that V L R aircraft operating near a convoy saved large numbers of ships from being sunk.[105] Perhaps even more importantly, Blackett's convoy defence studies also appealed to those who advocated the offensive focus of sinking U-boats. He proved that the most likeliest place to find (and kill) U-boats was not in the Bay of Biscay transit routes, but around the convoys themselves. Since the number of U-boats in the air gap meant that the wolf packs could no longer be avoided by evasive routing, and since the U-boats were drawn to the convoys, it was here where the escorts, both ships and aircraft, could have the greatest success at sinking enemy submarines. In a way, then, the convoys acted as "bait" to draw the U-boats in where surface and air escorts could pounce.[106]

[101] Terraine, *Business in Great Waters,* 539.

[102] TNA, PRO, Air 8/1398, Air Ministry to Britman, RAFDEL Washington, 19 March and RAFDEL Washington to Air Ministry, 20 March 1943.

[103] TNA, PRO, Air 8/1399, Roosevelt to Churchill, 20 March and Air Ministry to RAFDEL 30 March 1943; Buckley, *Constant Endeavour,* 154; Farrell, *Basis and Making of British Grand Strategy,* 568.

[104] Terraine, *Business in Great Waters,* 540; Buckley, *Constant Endeavour,* 153-154; Farrell, *Basis and Making of British Grand Strategy,* 568.

[105] TNA, PRO, CAB 86/3, Blackett Memorandum, "Value of Escort Vessels and Aircraft in Anti-Submarine Warfare," 11 January 1943; P.M.S. Blackett, *Studies of War* (New York: Hill and Wang, 1962), 188-195.

106 *YNA,* PRO, PREM 3/414/3, Blackett Memorandum, "Progress of Analysis of the Value of Escort Vessels and Aircraft in the Anti U-Boat Campaign," 5 February 1943; Roskill, *Churchill and the Admirals, 23*1 ; Farrell, *Basis and Making of British Grand Strategy,* 425, 569. It could be argued that this idea was a good example of military theorist Carl von Clausewitz's concept of the "defensive-offensive." For a discussion on this concept,

These reports were indeed decisive in convincing the chief of the air staff, Air Chief Marshal Portal, to allocate the necessary Liberator aircraft to Coastal Command. In fact, so convinced was Portal "of the correctness of the policy of attacking U-Boats around threatened convoys rather than in other areas," that he decided to convert all of the ninety new Liberators due to be delivered to the RAF for VLR duties.[107] The effect was also significant on the Combined Chiefs of Staff. On 29 March, this body gave first priority to the modernization of Liberators to VLR standards, ordered that "the greatest practicable number of existing VLR ASV equipped aircraft... now assigned to other duties, be diverted to anti-submarine operations in the Atlantic."[108]

Movement on the issue was quick, and deliveries of Liberators to Britain began to speed up. This not only proved beneficial to Coastal Command's efforts in the mid-Atlantic, but also permitted the RAF to allocate fifteen of the newly modified VLR aircraft to the RCAF in Newfoundland, which began operating them in the air gap starting in April.[109]

During that month the navies of the western Allies also doubled their efforts to defeat the U-boats in the air gap by creating escort support groups, two of which each included an escort carrier. These groups were designed operate in the air gap by coming to the aid of any convoy that was besieged by a wolf pack. By this time the Allies had also broken Germany's Triton naval code, and were able to read U-boat radio transmissions and plot their location. Although the numbers of U-boats in the North Atlantic did not permit the Allies to re-route the convoys away from the submarines, the new intelligence did allow them to identify the convoys that were under direct threat from wolf pack concentrations. With this information, the Allies were able to reinforce the convoys with the escort support groups and the available VLR aircraft.[110] It was these measures that led to the crucial convoy battles in the air gap in May 1943. During these engagements, combined Allied air and sea forces struck a devastating blow to the Germans, destroying forty-one submarines. There was no way that the U-boat fleet could continue to sustain such losses, so on 17 May Dônitz sent out the following message to his U-boat captains: "The situation in the North Atlantic now forces a temporary shift in operations to areas less endangered by aircraft."[111] As a result, all U-boats withdrew from mid-ocean operations against Allied convoys.

In the end, the air power contribution to the defeat of the U-boats by mid-May had been achieved by forty-one VLR Liberators operating in the air gap.[112] This was almost

see J.F.C. Fuller, *The Conduct of War, 1789-1961* (London: Eyre & Spottiswoode, 1961), 71-72.

[107] TNA, PRO, CAB 86/4, Extract from 11th Meeting of the Cabinet Anti-U-Boat Warfare Committee, 24 March 1943.

[108] TNA, PRO, Air 8/1399, Extract from 13th Meeting of the Cabinet Anti-U-Boat Warfare Committee, 31 March 1943.

[109] Five aircraft each were delivered in April, May and June. TNA, PRO, Air 8/1399, Portal to Breadner, 26 March 1943; Douglas, *Creation of a National Air Force,* 551.

[110] DHH 79/599, AHB, *RAF in the Maritime War,* IV, 27; Syrett & Douglas, "North Atlantic Triangle," 31.

[111] Dônitz, *Memoirs,* 338-341 ; Milner, "The Battle of the Atlantic," 61 ; DHH 79/599, AHB, *RAF in the Maritime War,* IV, 80; Richards and Saunders, *The Fight Avails,* 46.

[112] DHH 79/599, AHB, *RAF in the Maritime War,* IV, 27. This total included fifteen in 120 Squadron, thirteen in 86 Squadron, six in 59 Squadron, plus a further six in the RCAF's No. 10 Squadron.

exactly the number (forty) that Joubert had said that he needed to close the air gap at the first meeting of the Cabinet Anti-U-Boat Warfare Committee in early November 1942. It was not a large figure, but it was definitely much better than the eight or nine operational VLR Liberators with which 120 Squadron had to make do during most of 1942 and early 1943. As Captain D.V. Peyton-Ward, a RN officer on the staff of Coastal Command, noted, this was indeed "truly another case of the few being owed so much by the many."[113]

In September 1943 Dônitz tried once again to launch wolf pack attacks against convoys in the mid-Atlantic, arming his U-boats with new weapons, the homing torpedo and heavy anti-aircraft guns. Nevertheless, by this time the deliveries of VLR aircraft had been made good and these Liberators, combined with strong naval forces, unleashed a further defeat on the U-boats. Dônitz once again was forced to withdraw his U-boats from pack operations against convoys in the mid-Atlantic, only this time it was final.[114] The air gap was closed - for good.

The elimination of the mid-Atlantic air gap was crucial in the final defeat of the U-boats in May and September 1943. The striking issue is that the British had the resources to close the air gap in 1942, but they failed to do so. This was a clear failure of Britain's military and political leadership. We have seen that the main issue behind this failure was the wrangling over the allocation of heavy bomber aircraft, which was highlighted by a continual debate on what kind of strategy, an offensive one or a defensive one, should dictate the priority of these resources. For most of the period, it was the Admiralty and RAF Coastal Command who were disadvantaged by this debate, as their more influential colleagues in the Air Ministry, Bomber Command and the prime minister's office held tight to their offensive priorities.

The focus on the offensive strategy of a strategic bombing campaign also represented the failure of the British military and political leadership to assess their economic situation during the first half of the war. With France defeated and the British Army expelled from the European continent, the Germans launched a massive submarine assault on vulnerable British trade. Yet instead of undertaking a defensive focus by protecting trade, so as to ensure that they would not lose the war, the British instead implemented an offensive bombing campaign in a fruitless effort to *win* the war. In doing so, the British continued to neglect their defensive forces, and sadly it took until a near-disaster in terms of devastating shipping losses in the autumn of 1942 for the British leadership to re-evaluate the strategic situation and begin allocating proper resources to close the air gap.

Writing shortly after the war ended, Admiral Karl Dônitz noted that it was the "enemy air force" that was "the greatest problem for the U-boat command." Because of this, the former head of the *Kriegsmarine* wrote that "it was therefore surprising that it was only

[113] DHH 79/599, AHB, *RAF in the Maritime War,* IV, 27. This remark of course refers to Churchill's remark earlier in the war about the small number of pilots in RAF Fighter Command who were responsible for winning the Battle of Britain and thereby staving off a German invasion of the island nation.

[114] TNA, PRO, Admiralty File 199/1491, "Analysis of U-Boat Operations in the Vicinity of Convoys O.N.S. 18 and O.N. 202, 19th-24th September, 1943"; Milner, "The Battle of the Atlantic," 61 ; Dônitz, *Memoirs,* 415-416, 418-419.

later that the enemy recognized and used this weapon as being the most effective means against the U-boats."[115] Who, then, was to blame for this tardy recognition how important aircraft were in the Battle of the Atlantic? As we have seen, Coastal Command and the Admiralty are not completely innocent. Although they advocated the hardest to secure V L R Liberators to close the air gap, they also hampered these efforts through their support of the Bay of Biscay offensive and their push to have Bomber Command bomb the U-boat bases. In addition, noted Royal Navy historian Stephen Roskill has even emphasized the failure of A. V. Alexander, first lord of the Admiralty, and Admiral Dudley Pound, first sea lord, to influence Churchill enough and convince him of importance of the defensive strategy.[116]

Britain's leaders had indeed, in Farrell's words, failed to "assess precisely what the most urgent priorities were and how best they could be tackled."[117] This failure of leadership must fall largely on the prime minister himself. Churchill was indeed one of the greatest war leaders in history, and he rightly deserves much of the praise for Allied victory in the war, especially during the dark days of 1940-1941 when the British Commonwealth stood alone. However, when it came national strategic priorities, the focus on Bomber Command's offensive strategy, as Roskill has observed, was "perhaps the most far-reaching and strategic error which can, at any rate in part, be laid at Churchill's door....[I]t seems clear that, whereas on many different strategic issues he knew exactly what he wanted, he suffered from a distinct dichotomy on this one."[118] Indeed, Churchill's favouritism towards Bomber Command at the expense of the maritime war is especially striking given the fact that earlier in his political career (including the beginning of the Second World War) Churchill was the first lord of the Admiralty. Even more striking, though, was the prime minister's wartime stance on the trade defence issue in light of his post-war conviction that "the only thing that ever really frightened me during the war was the U-boat peril."[119]

Although victory against the U-boats finally came in May and September of 1943 with the closure of the air gap, it was at great cost of lives, resources and time. Indeed, had the British military and political leadership correctly evaluated the strategic situation earlier on in the war, it was very likely that most of these losses could have been avoided and that the Normandy invasion could have been expedited by several months. The effort to close the mid-Atlantic air gap is a classic example of strategic priorities, and it was one that the British learned the hard way.

[115] Donitz's reminisces, reproduced in G.H. Bennett and R. Bennett, *Hitler's Admirals* (Annapolis: Naval Institute Press, 2004), 146.
[116] Roskill, *Churchill and the Admirals,* 138-139.
[117] Farrell, *Basis and Making of British Grand Strategy,* 572.
[118] Roskill, *Churchill and the Admirals,* 229-230.
[119] Sir Winston S. Churchill, *The Second World War,* Volume II, (New York: Time, Inc., 1959), 598.