Sic Itur Ad Astra

Canadian Aerospace Power Studies

Volume 6
From Hot War to Cold War

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Volume 6
From Hot War to Cold War

Edited by Mike Bechthold and William March

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Preface

Canada was not even 50 years old when aviation became part of the military fabric of the country. While true that the nation's first attempt at an air service in August 1914—the Canadian Aviation Corps—was a less-than-stellar beginning, countless young men from the Dominion carved a niche for themselves as part of either the Royal Flying Corps or Royal Naval Air Service. By the end of the First World War, two Royal Air Force units became No. 1 and No. 2 squadrons of the newly formed Canadian Air Force. Fast-forward 100 years to November 2018, and 401 Squadron, 4 Wing Cold Lake, will become the first Royal Canadian Air Force (RCAF) squadron to be able to trace its lineage back a century. That's a lot of history.

The history of Canadian military aviation, stretching back to the first tentative flight of a Burgess Dunne aircraft, is an extremely large and complex subject. Nevertheless, it is important to understand how military aviation became part of the developmental fabric of this country and an important element of national power. Such comprehension is a necessary building block, as we seek to achieve a level of airpower mastery within individuals both in and out of uniform. Yet, given the size and scope of the topic, it is perhaps too big a task for either a single environment or institution.

With this in mind, I tasked the appropriate branch within the Canadian Forces Aerospace Warfare Centre (CFAWC), supported by the Directorate, RCAF History and Heritage, to actively establish links with external agencies and academic institutions with an interest in aviation history. Seeking to encourage the study of our chosen profession, additional benefits were accrued through the provision of papers and opinions that offered fresh insight from a non-military point of view. That alone is often worth the effort involved.

The papers contained in this volume of Sic Itur Ad Astra are the fruit of the collaboration between CFAWC and Wilfrid Laurier University. Examining diverse topics such as leadership, technology, warfighting and peacekeeping, they are an example of the benefits to be had by looking beyond the RCAF and the Canadian Armed Forces for intellectual capital. They are a welcome contribution to airpower studies.

I hope you enjoy the read.

K. P. Truss
Colonel
Commanding Officer
Canadian Forces Aerospace Warfare Centre

Introduction

By Mike Bechthold and William March

Welcome to Volume 6 of the *Sic Itur Ad Astra* series on Canadian Aerospace Power Studies. When the series was first proposed back in 2009, there was a dearth of historical material that focused on air power from a Canadian perspective. To encourage research, analysis and writing of historical material of a high academic standard, senior Air officers approved the establishment of a published series. Material for the various volumes was generated via an annual Air Force Historical Workshop that targeted a theme selected by the Canadian Forces Aerospace Warfare Centre (CFAWC) located at 8 Wing, Trenton, Ontario. Themes were generated from organizational priorities stipulated by the Commander, Air Command (since August 2011, the Commander, Royal Canadian Air Force [RCAF]). Papers were presented by a mixture of academics, lay-historians and serving personnel and provided a broad perspective on a particular subject. In general, the entire programme was well received.

From the outset, it was intended to use the series to establish links with other academic institutions and organizations that had an interest in airpower studies. Tentative steps were taken in this direction by inviting individual presenters from different universities and the occasional collocating of the workshop with scheduled meetings of groups such as the Canadian Aviation Historical Society. From time to time, discussions were held with the organizers of other historical events with respect to publishing airpower papers of interest to the RCAF, but this was done on an individual paper basis, as there never seemed to be sufficient material available to fill a complete volume.

This changed with the 24th Military History Colloquium held at Wilfrid Laurier University, 2–5 May 2013. Under the auspices of the Laurier Centre for Military Strategic and Disarmament Studies (LCMSDS) the university—located in Waterloo and Brantford, Ontario—holds an annual military historical conference, which is the only one of its kind in Canada. Attracting established and budding military historians from across the country, the event has in the past generated the occasional paper, or panel, dealing with military aviation. However, the 24th Colloquium featured an unusually high number of presentations that explored multiple facets of RCAF history.

Personnel from the Directorate, RCAF History and Heritage were in attendance and, given the number of presenters planning to speak on aviation history, recognized an opportunity. Approaching the key organizer of the event, Mike Bechthold (now Doctor Bechthold), permission was requested to approach the participants who were giving a talk on aviation topics to see if they would be willing to turn their presentations into papers for publication. A historian with a keen interest in military aviation, his doctoral thesis was on Canadian aviator Raymond Collishaw, Bechthold not only cleared the request with the LCMSDS but volunteered to act as the co-editor, undertaking the initial solicitation and vetting. And while we did not manage to obtain all of the papers we were after, those that you will find in this volume are a welcome addition to the history of Canadian military aviation.

In a broad sense, the chapters in the book can be read in three separate batches. The first, featuring papers by William John Pratt and Rhonda Jarrett, deal with No. 6 (RCAF) Group within the Royal Air Force's (RAF) Bomber Command. As the largest expeditionary element of the RCAF during the Second World War, No. 6 Group has been examined in many different ways. Pratt's paper, "Face to Face with Black Mike: Command, Control and Leadership in the Career of C. M. 'Black Mike' McEwen, 1916–1945," looks at one of the two officers who commanded the group in combat, Air Vice Marshal (AVM) C. M. McEwen[1] (the other being AVM G. E. Brookes). The author explores his subject's air force career, from air combat as a fighter pilot in the First World War through to his command of No. 6 Group, seeking to understand how McEwen's experiences shaped his approach to leadership.

Knowing more about McEwen enhances the reader's appreciation for Jarrett's paper "No. 6 RCAF Bomber Group: A Study of Leadership, Discipline and Canadian Values." Formed in the face of RAF opposition, this group became the largest formation of RCAF personnel overseas during the war. As such, it faced unique cultural, organizational and operational challenges that—when combined with the need to maintain morale and discipline in the face of high casualties—taxed the ability of its leaders

at all levels. Jarrett's paper provides a broad overview of these issues and the actions taken that resulted in the ultimate success of the group, both as an instrument of war and symbol of Canadian nationalism.

Examining broad elements of the Allied effort against German submarines during the Second World War comprises the second grouping of papers. In "Closing the Atlantic Black Pit: A Question of Air-Power Choices," Richard Goette describes what would become known as the Battle of the Atlantic from the perspective of RAF Coastal Command. In doing so, he highlights the air power choices that were made—some good and some bad—in order to help counter the U-boat threat. Especially interesting is the struggle by RAF Coastal Command to obtain the long-range aircraft, also sought after by Bomber Command, that were so vital for defeating the enemy submarines.

In contrast to the "street fighting" between commands and commanders, Geoffrey Hayes looks at the antisubmarine war from the perspective of an individual unit in his paper "Endurance: 120 Squadron, Royal Air Force, 1943." Focusing on the critical year in the battle against the U-boats, Hayes paints a picture of the trials and tribulations of a squadron—and its personnel—determined to "get the job done." Although the squadron at the centre of the narrative belongs to the RAF, many Canadians served alongside their British comrades in this unit, making it part of RCAF history.

Adding a Canadian dimension to the struggle is Roger Sarty's paper "The Royal Canadian Air Force's First Catalinas and Cansos." Although influenced by the strategic and operational requirements of the day, Sarty's paper looks at the problems surrounding the acquisition and employment of aviation technology while in the midst of a war. The Catalina, known in Canadian service as the Canso, was an American flying boat produced by Consolidated Aircraft. Its great range, endurance and load-carrying capacity made it an excellent antisubmarine aircraft. From a Canadian perspective, the Canso became not only an important part of the RCAF's contribution towards the defeat of the U-boats but also a Canadian aviation industry success story, as 620 of these aircraft were built in this country.

The last three papers address post-Second World War Canadian military aviation subjects. Canada's air power contribution to peacekeeping is the subject of W. A. March's "A Most Abrupt Departure: The Royal Canadian Air Force and the United Nations Emergency Force." The provision of forces in support of the United Nations' (UN's) attempt to separate European, Israeli and Egyptian combatants in 1956 would be Canada's first major foray as a peacekeeping nation. For the RCAF, it would be a major test of its air-transport capability, as it was tasked to assist in the deployment, sustainment and surveillance requirements of the UN troops. Finally, in 1967, the RCAF would become solely responsible for the hasty withdrawal of the Canadian contingent from the Middle East, demonstrating the inherent flexibility and responsiveness of Canadian air power.

The RCAF's ability to remove Canadian peacekeepers from harm's way in 1967 would have been greatly hampered had the air force not possessed a number of CC130 Hercules transport aircraft. Richard Mayne, in "Flying 'Truck Drivers' or 'Captains of the Clouds': Paul Hellyer and the RCAF's Acquisition of the CC130 Hercules," examines how the RCAF came to acquire these aircraft and the role that the Minister of National Defence, Paul Hellyer, played in their purchase. Mayne speaks to the challenges faced by RCAF senior commanders as they maintained a broad range of air power capabilities, replaced aging aircraft and dealt with unexpected political guidance. In doing so, the author highlights discrepancies often found between the historical documentation and personal narratives.

Hellyer has a role to play in the final paper as well. In "Creating an Air Arm for the Canadian Army: Lessons from the Past," author Randall Wakelam examines the difficulties surrounding the development of a helicopter capability to support Canada's land forces. In the midst of organizational and cultural changes brought about by the Hellyer-directed unification of Canada's three military services into the Canadian Armed Forces, the success of this endeavour is every bit as much a "win" for the Army as it is for the Air Force. In many ways, Wakelam's narrative underlines the importance of a joint approach to capability development.

Hopefully, the eight papers in this volume will add much substance to Canadian military historiography. At the very least, they serve to highlight the synergy that can be obtained by establishing solid working relationships between organizations such as CFAWC, RCAF History and Heritage and

Canadian academic institutions such as Wilfrid Laurier. Canadian military aviation history is simply too large and too complex a topic to be dealt with by one entity or one point of view. The goal is to continue this type of collaboration in the future.

Note

1. McEwen earned the nickname "Black Mike" during the First World War when his naturally dark complexion grew darker when exposed to the sun.

Mike Bechthold

Dr. Mike Bechthold is a historian of the First and Second World Wars and an air-power specialist. He holds a PhD in history from the University of New South Wales, Canberra, and a Master of Arts as well as an Honours Bachelor of Arts from Wilfrid Laurier University. Mike is the author or editor of nine books and has published numerous articles. His areas of specialization include military air power (especially tactical air operations in the First and Second World Wars), the Canadian army in Normandy and Northwest Europe as well as the Canadian Corps in the Great War. His most recent book is Flying to Victory: Raymond Collishaw and the Western Desert Campaign 1940–1941 *(University of Oklahoma Press, 2016). Mike can be reached at mbechthold@wlu.ca.*

William March

Major William March, a maritime air combat systems officer, has spent over 39 years in uniform. He is currently a member of the Air Reserve, serving as the RCAF Historian within the Directorate of RCAF History and Heritage.

Chapter 1

Face to Face with Black Mike: Command, Control and Leadership in the Career of C. M. "Black Mike" McEwen, 1916–1945

By William John Pratt

To trace the development of leadership and command through the career of Clifford Mackay "Black Mike" McEwen is to examine Canadian military aviation from infancy in the First World War to operational maturity in the Second. McEwen's military career, which began in an era when the Dominion of Canada had no air force of its own, flourished when military and civilian aviators were hardly distinguishable and culminated in a period of rapid technological and doctrinal change. McEwen's leadership of No. 6 Group Royal Canadian Air Force (RCAF) in Royal Air Force (RAF) Bomber Command was a product of his dynamic career experience. By using recent Canadian Forces' scholarship on leadership, command and control, Black Mike's development from fighter ace to Air Officer Commanding (AOC) No. 6 Group provides a unique study of a leader whose interpersonal competency was paramount. By sharing risks with his followers, McEwen's leadership style was heroic. It was primarily by direct influence that he sought to motivate airmen during his career. These characteristics were developed in part by having William Barker as a mentor in the First World War. During that conflict McEwen developed a great respect for training as a means to reduce the fog of war. It was his contribution to training in the 1930s where he would come closest to "leading the institution" or indirectly influencing the structures of the RCAF's "strategic and professional capabilities."[1] Ultimately, however, due to the limited opportunities available in the fledgling interwar RCAF and the highly centralized nature of Bomber Command, McEwen's greatest leadership influence was at the tactical or lower operational level.

The moment that McEwen became "airminded" is difficult to determine. Born in Griswold, Manitoba, on 2 July 1896, and raised in Radisson, Saskatchewan, he likely witnessed his first aeroplane at an industrial exhibition at Saskatoon or Moose Jaw.[2] By the time he was taking college courses at the University of Saskatchewan in Saskatoon in 1916, where he enlisted as a private in the 196th "Western Universities" Battalion of the Canadian Expeditionary Force, his attempts to join the Royal Flying Corps (RFC) had been frustrated.[3] As McEwen later recalled, "my repeated efforts to join the flying Services had proved unsuccessful [and] I realized that, if I was to see active service, it would have to be through the medium of the Army."[4] Things improved in England, however, as McEwen was selected for officer training, and by a stroke of luck, his transfer to the RFC came through before he was sent to France with the "Poor Bloody Infantry." In the fall of 1917, having qualified to fly the Sopwith Camel, he travelled to Belgium and was assigned to No. 28 Squadron. The squadron promptly left the Western Front and was deployed to Italy to buttress flagging Italian forces along the Piave River.

McEwen was in the military for a year and a half by the time he joined No. 28 Squadron when they were boxing up their Camels and proceeding by train to Milan. His first encounters with a dynamic mentor came in November 1917, when he began flying missions in "C" Flight under the command of William Barker. No. 28 Squadron was described as "a unit that prided itself on its aggressive spirit," and Barker, one of Canada's highest scoring aces and a Victoria Cross recipient, was the foremost champion of an aggressive "attack philosophy."[5] This doctrine was a key aspect of command for "C" Flight. Leadership theorists Ross Pigeau and Carol McCann identify will as fundamental to command. It is inherent in their definition of command as "the creative expression of human will necessary to accomplish the mission."[6] For Barker's "C" Flight, it was the will to attack which characterized the pilot's modus operandi.

If the will to attack was the all-important command principle instilled in "C" Flight, teamwork and planning were key aspects of control. As McEwen wrote of Barker:

> He rapidly developed into a great leader and tactician, as well as a brilliant individual exponent of the art of fighting. His motto was, above all, team work, and I have no hesitation

> in stating that he probably developed team work to a greater extent than was generally in vogue at the time. There was a time, place and reason for every action, and each pilot was thoroughly drilled in his part. The result was that a miss-play [sic] seldom occurred.[7]

Pigeau and McCann define control as "those structures and processes devised by command to enable it and to manage risk" and note that standard operating procedures are a key factor of "planning, directing and co-ordinating resources in the accomplishment of the mission."[8] The mission for No. 28 Squadron—primarily gaining command of the air and secondarily supporting the army by direct air-ground attacks—was well served by teamwork, standard operating procedures and planning.

When McEwen and No. 28 Squadron arrived in the theatre, the 12th Battle of Isonzo, on 24 October 1917, had just culminated in the "Caporetto debacle"—the capture of 275,000 Italian prisoners and the infliction of twice that number in casualties.[9] The need for Allied troops was critical. The 130,000 French and 110,000 British troops sent to Italy included two wings of air support operating under Brigadier-General T. I. Webb-Bowen's VII Brigade Headquarters in Mantua, south of the Piave River.[10] On 20 November, 28 Squadron flew north towards the front. McEwen recalled, "at Brescia we came in contact, for the first time, with the remnants of the routed CAPORETTO army. They were dejectedly plodding their way southward, by roads and through the fields."[11]

On 29 November 1917, McEwen flew his first war patrol, an escort from Grossa aerodrome for R.E. 8 reconnaissance planes.[12] Acting as "C" Flight commander, Barker recorded the first of many kills the squadron would tally over the next year in Italy. No. 28 Squadron's major role was to escort reconnaissance and bombing aircraft and patrol the front line. Standard operating procedures were adopted for attacking various types of targets, with each pilot instantly expected to know what was necessary. Be it suppressing anti-aircraft gunners, watching for incoming enemy aircraft or luring enemy fighters down from higher altitudes, procedures were in place to make the unknown manageable. As Pigeau and McCann put it:

> Structures reduce uncertainty by bounding the problem space and increasing order (or meaningfulness). Order then offers a rational basis for choosing and optimizing appropriate course of action. Control processes, therefore, are sets of regulated procedures that allow control structures to perform work.[13]

McEwen's experience with aerial bombing would start in Italy, largely in support of the R.E. 8s. He also flew bombing missions in the Camel, carrying 20 pound [9.1 kilogram] bombs. A rarer mission was the support of Italian Caproni bombers flying at 14,000 to 16,000 feet [4,267 to 4,877 metres]. McEwen recalled, "It was a beautiful sight on a cloudless day to circle above a formation of 18 or 20 of such aircraft; their wings, covered with transparent dope, glistening in the sun."[14] After the war, McEwen's assessment of the leadership in the Italian fighter arm suggested that "overbearing and high-handed" Italian officers along with "lack of training and curtailment of air spirit" were to blame for giving up air superiority to the Austrians early in the war.[15]

In two major operations, No. 28 Squadron was highly effective at the operational level of warfare. The first was the Battle of the Piave River, launched on 15 June 1918, when the Austrians attacked the Italians on the Piave, the French on Mount Grappa and the British on the Asiago plateau. Due to poor flying weather on the British front, British aircraft were shifted across the Piave, where Austrian bridges were sighted over the river near Montello. The bombing of those bridges was so successful, albeit greatly aided by heavy rains and flooding, that official Canadian historian Syd Wise wrote, "rarely did aircraft play so significant a part in a major military operation during the First World War."[16] McEwen recalled, "When the attacks commenced, the bridges and pontoons were usually crowded with men, and as soon as the chain was broken they were attacked by machine-gun fire. It took a very short time for a riddled pontoon or boat to sink, and for their crews to disappear in the fast running water of the river."[17] By 23 June, the Allies had pushed the Habsburg forces back across the river.

The second major operational victory for No. 28 Squadron came at the climax of the Italian front in the Battle of Vittorio Veneto, 24 October to 3 November 1918. The Italians met with resistance

when attacking across the entire front, and British divisions joined the assault across the Piave on 27 October. The initial collapse swiftly spread throughout neighbouring Austrian forces.[18] Royal Air Force[19] fighter pilots flew a number of low-level attacks on troops, and when the Austrians withdrew, they were relentlessly pursued by strafing fighters. Low-flying attacks were conducted against roads and railways. As Wise noted, "the devastation wrought by RAF strafing during Allenby's Palestine offensive is usually regarded as one of the great air achievements of the First World War, yet British air attacks in the final phase of the Italian campaign were equally devastating, though almost unknown."[20] The effect of No. 28 Squadron attacks on the retreating Austro-Hungarians did much to secure the strategic goal of destroying the army and ending the war in Italy.

McEwen adapted well to the aggressive tactics in Italy. In nearly a year of action, No. 28 Squadron was attributed 111 enemy aircraft destroyed.[21] McEwen was credited with downing 27 aircraft, qualifying him as an "ace" five times over.[22] He was awarded the Military Cross, the Distinguished Flying Cross with Bar and the Italian Bronze Medal for Valour. Aside from the will to attack as well as the establishment of roles and procedures, McEwen recalled that service training was an important part of No. 28 Squadron's activities in Italy. Efforts were made to bring green men up to speed, especially with practice flying at very low levels to use the terrain to avoid not only discovery by the enemy but also anti-aircraft fire. Training developed instinctive standard operating procedures and reduced the need for protective duties by veteran pilots. McEwen recalled that training had an impact on morale. "The interest developed between experienced and inexperienced pilots, gained through personal contact, had the effect of developing friendship and admiration between them. This, in turn, resulted in the development of team work, and Flight and Squadron esprit de corps."[23]

In assessing McEwen's experience on the Italian Front, it is easier to describe how certain aspects of the command and control environment affected him rather than to determine the influence of his own leadership. While McEwen may have inspired and influenced his fellow airmen, and certainly drew inspiration from Barker in cultivating an aggressive doctrine built on teamwork, his personal interactions with his fellow pilots remain unclear. It should be noted as well that if we take command in a more traditional sense, as only exercising down the hierarchy, as the "purposeful exercise of authority,"[24] then McEwen had little command presence in Italy. Pigeau and McCann suggest, however, that command can be exercised by individuals who are not formal commanders and that those isolated from the group can creatively express their will to accomplish the mission.[25] These theorists identify competency (physical, intellectual, emotional and interpersonal), authority (legal and personal) and responsibility (intrinsic and extrinsic) as key facets of command.[26] By assessing McEwen through the lens of this model, it is clear that he was a highly competent officer. He endured frigid conditions and daily sorties with little complaint and was an excellent pilot, with the requisite physical and intellectual abilities. While the historical record is murky on emotional and interpersonal aspects of McEwen's competency, he appears to have managed the range of emotions of a pilot at war (guilt, anxiety and fear) and contributed to a cohesive team on the interpersonal level. In terms of authority, McEwen had close to the lowest level of legal authority in his career, but the influence of his personal authority (a combination of ethics, values, courage and integrity) likely spread throughout his wing, and he surely contributed to the good unit morale observed throughout No. 28 Squadron. McEwen's extrinsic responsibility, his willingness to take responsibility for the legal authority he had to superiors and followers, was strong, with the caveat already mentioned that he had little legal authority at this stage. In terms of intrinsic responsibility, the "degree of self-generated obligation that one feels toward the military mission," McEwen was again very strong.[27] His resolve to maximize his own effect on the mission was very high.

McEwen joined the short-lived Canadian Air Force in England at the end of the war, but this was quickly disbanded. By the time he returned to Canada in September 1919, the Canadian Air Board had been established, and it would provide the institutional roots of what would become the Royal Canadian Air Force.[28] McEwen commanded a number of detachments in the forestry service up to 1924, when he began a five-year run of flying instruction duties at the main RCAF training stations.[29]

At Camp Borden, Ontario, in the late 1920s, McEwen taught numerous young officers to fly. A First World War squadron commander had noted McEwen "has done much to stimulate the enthusiasm essential to good work among the junior officers."[30] At times, his familiarity with the

Provisional Pilot Officers (P/P/O) he was training was excessive in the opinions of his superiors, one report noting that he was guilty of making "pals" of his pupils and threatened his dismissal from the service for arriving back at camp with them in the early hours of the morning after a party.[31] McEwen did not entirely enjoy the five years he spent as an active instructor. He would write in 1930:

> Flying Instruction I did not like and therefore found very hard on my nervous system. This is not an uncommon complaint as I have never met an officer who [was] keen on instructing and most officers in the RCAF have successfully sidestepped the issue. This is the same in the Royal Air Force, so much so that they offer the extra inducements of added seniority in rank and three months leave a year. Winter flying in open aircraft I found very hard on my health.[32]

Intriguingly, in 1929, McEwen would fail to qualify for the entrance exam into the Royal Air Force Staff College. The portion that he failed was "Strategy Land/Air," with the examiner's notes reading, "He showed no strategical [sic] grasp of any of the questions; his powers of expression were much below the average."[33]

In 1930, he passed the entrance exam and left for the RAF Staff College located in Cranwell, Lincolnshire. Graduation from the school has been described as a "sure ticket to Air Commodore rank or above."[34] With the benefit of hindsight, a staff-college paper he wrote on "Leadership and Morale" is an interesting precursor to later actions he took commanding No. 6 Group. Assignment instructions read, "That high morale is an essential factor in the fighting efficiency of any individual or body of men is generally recognized, and nowhere perhaps does the importance of high morale appear more clearly than in air fighting."[35] McEwen recognized that the air-force environment necessitated a fresh study on leadership and morale. His emphasis was on welding aircrew and ground crew into a cohesive whole "by producing strong flight esprit de corps and squadron patriotism."[36] The means to do this included competitions for trophies between suitable forces, frequent visits of higher commanders, naming squadrons and providing battle honours for them. Stressing the connections between officers and other ranks, McEwen wrote that "the morale of the rank and file is the morale of its leaders."[37]

During the 1930s, McEwen specialized in army co-operation, first as instructor and then from 1932 to 1935 as the commanding officer of the School of Army Co-operation. During 1935–1938, he became director of Staff Duties at RCAF headquarters, in change of organization, administration and general liaison with the public and the services of other countries. From 1938 to 1939, he was the commanding officer at the main training station at Trenton and oversaw the organization and construction of this station for wartime duty following the outbreak of the war. Larry Milberry has noted his service during the period made him "a pillar of the interwar RCAF."[38]

Recent Canadian Forces literature on leadership distinguishes between leading people—"developing individual, team, and unit capabilities and using those capabilities to execute tasks and missions"—and leading the institution—"developing and maintaining … strategic and professional capabilities and creating the conditions for operational success."[39] In the 1920s, McEwen was clearly frustrated by his role as flight instructor. While he performed an important role by transferring his technical competencies to young officers, he yearned to have greater influence. In the 1930s, McEwen would make his contribution to the RCAF by moving towards leading the institution by developing the army–co-operation role, performing administrative duties and bringing station Trenton up to wartime standards. At the beginning of the Second World War, McEwen commanded at Trenton and then moved to the British Commonwealth Air Training Plan (BCATP) No. 1 Training Command in Toronto before taking over (in April 1940) No. 3 Training Command in Montreal.[40] He subsequently leveraged his training expertise to implement a plan for the BCATP. McEwen's passion, however, was leading people in an operational role, and it was in that sphere of leadership that he would thrive during the Second World War.

It was during the Battle of the Atlantic that McEwen would receive his first operational command. On 15 August 1941, Group Captain C. M. McEwen took command of No. 1 Group headquarters in St. John's, Newfoundland, with responsibility for the aerial operations in support of the

Royal Canadian Navy's Newfoundland Escort Force.[41] McEwen received the acting rank of Air Commodore in December 1941 and operated a centralized control room in St. John's, similar to that of Eastern Air Command's in Halifax, but smaller.[42] During McEwen's tenure, pilots and planes were in high demand, and ground facilities were being rapidly developed.

Further investigation is needed to discover McEwen's personal influence at No. 1 Group, but one aspect of his leadership style here would be repeated during his tenure in Bomber Command: operational flying. From October 1941 to December 1942, McEwen flew 18 patrols in a variety of aircraft.[43] It appears that McEwen was thriving in his operational command; his wife wrote in January 1943 that during the Christmas holiday, McEwen "seemed more like the person [she] used to know."[44]

McEwen hoped for a posting to command a fighter-intruder wing of the Tactical Air Force, but for the rest of the war he would command bases and formations of Bomber Command.[45] On 5 April 1943, McEwen became commander of the training base at Topcliffe, England, where he was posted until June.[46] From there he moved to the newly reconstituted No. 62 Base Headquarters at Linton-on-Ouse, overseeing three stations. Here McEwen was known for strictness in discipline and dress as well as a rigorous training regime.[47] A number of squadrons on No. 62 Base stations during McEwen's tenure were converting from Wellington X and Halifax II bombers to Lancaster II and Halifax Vs.

In February 1944, McEwen replaced Air Vice-Marshal George E. Brookes in command of No. 6 Group. Brookes reported that he was happy to be relieved of his command as the stress of his responsibilities was affecting his well-being.[48] As noted in the official history of the RCAF, "Brookes was exhausted and the strain had begun to show."[49] It is important to consider the stress of military high command. Psychological stress in the military context is often considered in light of those exposed to the life-threatening conditions of the battlefield. The responsibility of command, however, has long been a heavy psychological burden on leaders far from harm's way. Carl von Clausewitz, writing of his experience in the Napoleonic wars and historical examination of several centuries of European warfare, wrote that "fear is concerned with physical [survival], and courage concerned with moral survival … danger threatens the commander not merely by threatening him personally, but by threatening all those entrusted to him."[50] McEwen's health also suffered during his tenure in command of No. 6 Group.[51]

Historian David Bashow characterized Brookes' term as AOC as "something less than stellar."[52] Training, tactical and morale problems, compounded by high casualties, meant "6 Group was a formation in shock and feeling sorry for itself."[53] In July 1943, a lack of training opportunities was identified by Bomber Command's operational research section. The report observed:

> The rise in the loss rate of 6 Group has been accompanied by a rise in the proportion of sorties abandoned. Both effects may be due to a lower standard of training. It may be that 6 Group has suffered from the lack of the training that early in its career was provided by operations against the French Coast.[54]

Weather and location were challenges that needed to be overcome. Difficulties stemmed from the group's position in the Vale of York, as the furthest bomber group away from its targets. With the low clouds, industrial smog and hills making landings and take-off difficult and bases clustered closely together, pilots needed to be masters of their craft.[55] Brookes himself, in a letter to Air Marshal L. S. Breadner, Air Officer Commander-in-Chief, RCAF Overseas, highlighted location, inexperienced and limited personnel, as well as the conversion to new bomber types, as the reasons behind losses. Brookes wrote that Canadianization, the policy of forming units out of strictly Canadian personnel, limited the pool of manpower available:

> A nuclei of the more experienced personnel for new squadrons forming had to be withdrawn from squadrons already formed, and consequently this resulted in a serious "watering down" of experience. This applied particularly to the senior positions in the operational squadrons which had to be filled by personnel comparatively inexperienced on operations. This "watering down" had the natural result of decreasing the level of efficiency of all the

> operational squadrons in the Group, making itself particularly evident in those aspects of operational flying upon which the vulnerability of aircraft and their crews are dependent, i.e. captaincy, pilotage, navigation, gunnery and a sound knowledge of tactics generally.[56]

Brookes noted that very few personnel were on their second tour, and the majority of losses were among those with less experience.[57]

This was the situation in No. 6 Group when McEwen took command. His tenure in 1942 as operational commander of No. 1 Group (organizing several bases from a single operational headquarters) and his command of bases and stations in the bomber war against Germany meant that he was well suited and prepared for the duties of AOC of No. 6 Group. The role of AOC was to incorporate the strategy of Bomber Command into a long-term plan for the group. Bomber Command was highly centralized and made all strategic decisions, leaving administration and operational readiness to each bomber group.[58] As Allan English and John Westrop write, "the AOC No. 6 Group played a very minor role in the planning and execution of the bomber campaign, and it could be argued that he was really only a high level tactical commander."[59] McEwen would coordinate the various departments of his headquarters staff in operations, training, engineering, navigation and others into a long-term plan which served this strategy. A stratified systems theory recognizes that for the more complex tasks at the top of the command chain, that responsibility moves beyond the face to face and towards supervision of system performance and capabilities.[60] It will be seen, however, that despite his high rank McEwen never abandoned leading people by direct influence in his role as operational leader.

A number of historians have identified the arrival of McEwen as the turning point for No. 6 Group, arguing his tenure improved survivability of bomber crews.[61] McEwen's primary influence on No. 6 Group was the implementation of a rigorous training regime, and he attributed this improved preparation with lowering losses in the group during his tenure.[62] Training hours clearly went up during McEwen's command, rising from a maximum of 4,052 monthly hours in August 1943 to 10,623 hours in September 1944.[63] To attribute loss rates to training alone, however, is to deny the complexity of the technological changes in the bomber war, the shift to more appropriate aircraft for the mission, the end of the Battle of Berlin and the temporary switch to safer targets in France.[64] To further qualify the suggestion that McEwen revolutionized the training regime at No. 6 Group, it must be noted that intensified training was implemented by Brookes. By January 1944, Brookes reported that the effects of this effort—augmented through the increased availability of new navigation equipment, radar warning devices and the implementation of new operational tactics—were already observed.[65]

With these important qualifications on the direct relation between McEwen, training and loss rates, it can be said that McEwen instilled new vigour in No. 6 Group Headquarters. His will to improve No. 6 Group was extremely strong. McEwen's tenure was characterized by a constant search for efficiency and improvement that he sought to inspire in the airmen of his formation. As he wrote in the monthly summary in May 1944, "no matter what your job is, if you feel certain that you have a sound idea for improvement, give expression to the thought and so press on with the job work."[66] Even with the general improvement in survivability, a continuous examination of the group's failings was made to improve bomb accuracy.

Bashow characterized McEwen as "an unrepentant advocate of arduous, realistic, and demanding training, as well as stern discipline."[67] The official historians note the impact of McEwen's will, stating he was "a demon for training and standards, whose heavier hand soon made an impact on the group."[68] Despite the increase in flying hours with the expanded list of targets due to the invasion of the continent, flying training hours were also increased.[69] In May 1944, unsatisfied with squadrons whose training hours had not increased, a minimum number of training hours per month was instituted to "bring the stragglers into line."[70] A report from 3 July 1944 noted improvements in numbers of sorties flown, a higher percentage of bombs on primary targets, lower loss rates and increased bomb loads dropped.[71] Some of this improvement was clearly from the expansion of the group and the completion of the conversion from two-engine bombers to four, yet the increase of bombs dropped on primary targets (from 84.7 per cent in 1943 to 92.7 per cent in January–June 1944) and the lowering of loss rates (from 4.7 per cent to 2.6 per cent) indicate increased crew capability and motivation.[72]

It was with a sense of great pride that McEwen could write to Air Marshal Breadner and report high radar serviceability and record-breaking primary percentages (bombs dropped on primary targets) during the summer of 1944.[73] He telegraphed home to Helen in Montreal, "Finished terrific month topping all previous command records which should stand all time very proud my boys."[74]

Despite his high rank, McEwen's command strength was still based on strong face-to-face interaction, direct influence and interpersonal competency. Milberry notes that in his command of No. 6 Group, "he mixed compassion and charisma in a degree probably unmatched by any officer of comparable rank in RCAF history."[75] Beginning with his role as an officer in the Great War, McEwen was described as a man who could inspire others, gain their confidence and connect with them. He seemed to invest more personal interest in missions, staying up into the early hours of the morning, waiting for the last of his bombers to return. This stood in sharp contrast to Brookes, who, wearied by the demands of his tour, sought a good night's sleep to be fresh for morning intelligence briefings. A correspondent wrote to McEwen in March 1944 that "Lads I have spoken to on their return have told me that you are well-nigh a tradition among them. You see them go and you see them return, and they speak in terms of keen admiration of your interest in them."[76] His office was reportedly always open to those in 6 Group, and he attended numerous post-mission debriefings to talk with the exhausted crews.[77]

Relating to his interpersonal competence, McEwen kept a notebook entitled "Operational Incidents and Stories. Briefing Requirements."[78] The book contains a number of stories and jokes, which likely served as an aide-memoire for debriefing sessions. One example tells of Wing Commander Bill Swetman, who took offence to those who returned from sorties due to equipment failure. In earlier days, Swetman complained, all the aircrews had for navigation was "Gee," the codename for a radio-based navigational system. The notes to the story read:

> Swetman w/c [Wing Commander] railing about the present day crews coming back on the slightest provocation – "In the old days we had nothing to go out on. It was a miracle if we ever got out on 'Gee.'" Tony Smith, trying to cool Bill off. "What did you have to come back on Bill?" Bill S – Nothing but "Pee."[79]

The collection of jokes and stories indicates that McEwen knew the value of an icebreaker and sought to make a personal, human connection with followers. A number of airmen would become McEwen's post-war friends.[80] His increase of honours and awards to No. 6 Group has been suggested as part of the reason for the rise in morale under his tenure.[81] From August 1944, a trophy was presented monthly to the operational squadron with the least number of accidents.[82] One of his airmen wrote him after the war in Europe was over, expressing his appreciation that McEwen nominated him for decorations:

> I would like to again express my appreciation and gratitude for the interest you have taken in my welfare and your personal efforts which resulted in the awards to me of an [Mentioned in Dispatches] and the [Commander of the British Empire]. As far as I know you are the only officer under whom I have served that has made any attempt to recognize my services in such a manner and I will never forget it. Incidentally, I may mention that your unselfish and unceasing endeavour to obtain recognition and promotion for personnel under your command has been the source of a great deal of the admiration and loyalty they bear for you in addition to the confidence they have in your leadership.[83]

McEwen continued his tendency towards heroic leadership by sharing dangers and flying operational missions with his men. Bomber Command strictly prohibited senior commanders from flying operations, but part of McEwen's legacy was to regularly ignore that restriction and tag along as aircrew on his bombers. As historian Edmund Cosgrove explained:

> Six Group also found that their new CO [commanding officer] was no swivel-chair commander. Although there was a superstition among air crew against brass riding in bombers during ops [operations], McEwen's presence in the bomber force was soon taken for granted, and he even became a good luck symbol. As the men saw it, when the "man with

> the moustache" was along, things were going to be fine. Men always respond to a leader who shows concern for their welfare. They felt drawn to this colourful airman who wanted to share the dangers with them, and who, when finally ordered to stay on the ground, could not sleep when his men were away on a raid.[84]

Bashow shared the sentiment that McEwen was "no armchair commander."[85] Drawing on notions of heroic leadership outlined in John Keegan's *Mask of Command*, English and Westrop note that the sharing of risks with subordinates "cultivates a kinship between leaders and their followers and gives leaders the moral legitimacy, beyond their legal authority, that they must have to be successful."[86] McEwen's flight logs for the war years include details on seven raids that the AOC "hitch-hiked" on, fulfilling an updated definition of heroic leadership involving "conspicuous sharing of risk with subordinates."[87] In these operations, he would note "night fighters buzzing around to beat the band," searchlights and flak as "very active," and a 15–16 September 1943 raid on Montluçon, France, where "covering cloud over target [was] not predicted so some confusion and oodles of aircraft milling about—some very close shaves."[88]

McEwen was not unique in flying operations instead of staying behind his desk. A culture of operational flying permeated Bomber Command. A number of station commanders, and at least two group commanders, flew on raids.[89] Some squadron commanders received the derogatory nickname "François" from airmen, for participating in relatively safe raids on France. Air-force leaders needed to demonstrate their technical ability as pilots to gain respect and be accepted as leaders.[90] Group Captain Larry Wray, commanding RCAF Station Skipton-on-Swale, flew as a co-pilot on a raid on Frankfurt/Main in March 1944 and was shot down and taken prisoner. This event had the potential to devastate morale in No. 6 Group, but McEwen's actions pre-empted such an occurrence. Air Commodore W. Cohram, Director of Chaplain Services (Protestant), commended McEwen for his actions:

> I have also been told that after Larry went missing you went down to his station and went out on a number of operational trips, thereby giving the squadron a tremendous impetus in morale and altogether doing an exceedingly stout job, and this is merely a personal note—which I trust you will accept in all kindness—to say how greatly I admire you for this further evidence of those outstanding qualities which you possess.[91]

Hugh Halliday has suggested that No. 6 Group commanding officers possessed "a natural desire to see action, coupled with a fear of being regarded by their men as 'chair-bound,'" and that the fact that McEwen "hitchhiked" on raids diminished the impact of Bomber Command orders against it.[92]

The strain of wartime command impacted McEwen's health, which declined sharply at the end of the war. On 5 May 1945, Helen wrote him that "the radio and papers here had us really mad over the end of the war … . Now Dearest do try and [adjust] yourself to changed times—naturally you will feel the strain more now than ever, that is very natural, it is after the weight is lifted that one appreciates what one has been carrying"[93] On Victory Europe (VE) Day, she wrote,

> It seems almost incredible—It is over—no more sending your boys to their death. My first thought was of you and your boys. How dreadful what evil can do, but how wonderful it is to think that no matter how great the odds, good with gods [sic] help, can win … .[94]

She reported that their youngest daughter, Joyce, expected him home that day: "naturally[,] the war is over!"[95] At the end of the European war, McEwen was designated as the commander of Tiger Force, the bomber group to be sent to the Pacific theatre. McEwen's health was deemed too poor to command the formation, but that point became moot when the group was not despatched. McEwen was disappointed that medical officers had deemed him unfit for the command. Helen attempted to soothe him, writing on 7 June 1945, "it is not surprising that you should feel the let down—just concentrate on the fact that the boys [are] going home and think of all the delighted families. After all you miss us and they miss them and you will be running into them all the time."[96] McEwen was not sleeping well and was experiencing nervous stress.[97] On 18 June 1945, McEwen left for Canada on the last bomber of the first homeward wave, and signalled all bases and squadrons that:

> I bid you farewell with a heavy heart but with a heart full of gratitude for the loyal support you have given me and full of pride for your magnificent work. No Group Commander could have had a stronger, better or more united family behind him. Goodbye, good luck and God bless you all.[98]

McEwen had always considered the personnel of No. 6 Group to be "my boys," and paternal expressions of his concern for aircrew are found throughout his wartime writings. In the final months of 1945, McEwen was retired from the RCAF due to medical reasons. A kind letter from an airman who served under him during the war read, "if you wonder at times how your Group always flew the first colours[,] try and be happy in the thought that it was the leadership and inspiration offered us by yourself … ."[99]

A recent treatise on leadership in the Canadian Forces defines effective leadership as, "Directing, motivating, and enabling others to accomplish the mission professionally and ethically, while developing or improving capabilities that contribute to mission success."[100] It is clear "Black Mike" McEwen fit this definition when he was at the peak of his career commanding No. 6 Group. McEwen's strengths were in face-to-face interaction, direct influence and interpersonal competency. While further research on his doctrinal and administrative contributions of the 1930s is needed, the evidence suggests his career was one of leading people and not strategically influencing the institution of the RCAF. His legal authority limited the extent to which he could effect and achieve the strategic goals of the nation which he served dutifully in the best years of his life. McEwen had a strong sense of intrinsic responsibility. He not only accepted the missions which he was assigned and put his utmost efforts into their successful completion but also had a great deal of compassion for the men whose lives were at stake, often sharing the dangers alongside them. He dedicated his life to aviation in Canada and deserves to be honoured and remembered as he was by many of the young airmen under his command.

Notes

1. Canada, Department of National Defence (DND), Canadian Forces Leadership Institute (CFLI), *Leadership in the Canadian Forces: Conceptual Foundations* (Ottawa: DND, 2005), 4, accessed February 20, 2015, http://publications.gc.ca/collections/collection_2013/dn-nd/D2-313-2-2005-eng.pdf.

2. In 1911, barnstormer Bob St. Henry flew in the 1911 Saskatoon Exhibition and at the Dominion Fair at Regina. Early attempts to build aeroplanes occurred in 1911 by George and Ace Pepper in Regina and in Moose Jaw in 1913 by the Mackenzie Brothers. Ray H. Crone, "Aviation Pioneers in Saskatchewan," *Saskatchewan History* 28, no. 1 (1975): 15–16, 22.

3. Edmund Cosgrove, *Canada's Fighting Pilots* (Toronto: Clarke, Irwin & Company Limited, 1965), 111; "CEF Certificate of Service," Canadian War Museum (CWM) Archives, File 58A1 93.1; and "History of Service in Civil and Military Aviation Clifford Mackay McEwen" CWM 58A1 94.5 Accession (Acc.) 199100192-226[?].

4. Squadron Leader C. M. McEwen, "Service Experiences," RAF Staff College, 8th Course, CWM 58A1 93.3, [1930].

5. Cosgrove, *Canada's Fighting Pilots*, 22.

6. Ross Pigeau and Carol McCann, "Re-conceptualizing Command and Control," *Canadian Military Journal* 3, no. 1 (Spring 2002): 56, accessed February 20, 2015, http://www.journal.forces.gc.ca/vo3/no1/index-eng.asp.

7. McEwen, "Service Experiences."

8. Pigeau and McCann, "Re-conceptualizing Command and Control," 55.

9. S. F. Wise, *Canadian Airmen and the First World War: The Official History of the Royal Canadian Air Force*, vol. 1 (Toronto: University of Toronto Press, 1980), 455.

10. Mark Thompson, *The White War: Life and Death on the Italian Front, 1915–1919* (London: Faber and Faber, 2008), 328; and Ibid., 460.

11. McEwen, "Service Experiences."

12. Cosgrove, *Canada's Fighting Pilots*, 111.

13. Pigeau and McCann, "Re-conceptualizing Command and Control," 55.

14. McEwen, "Service Experiences."

15. Ibid.

16. Wise, *Canadian Airmen and the First World War*, 470.

17. McEwen, "Service Experiences."

18. Thompson, *The White War*, 359.

19. The RFC and Royal Naval Air Service had amalgamated on 1 April 1918 to form the RAF.

20. Wise, *Canadian Airmen and the First World War*, 476.

21. Cosgrove, *Canada's Fighting Pilots*, 119.

22. Norman Franks, *Sopwith Camel Aces of World War 1* (Oxford, UK: Osprey Publishing, 2003), 78. Noel states McEwen downed 22 aircraft. Jeff Noel, "McEwen, Clifford Mackay (1896–1967)," *The Encyclopedia of Saskatchewan*, accessed February 20, 2015, http://esask.uregina.ca/entry/mcewen_clifford_mackay_1896-_1967.html. A newspaper account after the war credited him with 34 kills. "Books, Authors and Personalities of the Hour – Air Vice Marshal C. M. McEwen," unknown typescript, CWM 58A1 95.4, 1945, Acc. 1900192, 15 June 1945.

23. McEwen, "Service Experiences."

24. Canada, DND, CFLI, *Leadership in the Canadian Forces*, 8.

25. Pigeau and McCann, "Re-conceptualizing Command and Control," 56.

26. Ibid., 58.

27. Ibid., 60.

28. The Air Board was established in June 1919 and the Royal Canadian Air Force on 1 April 1924.

29. "History of Service in Civil and Military Aviation."

30. Cosgrove, *Canada's Fighting Pilots*, 121.

31. Larry Milberry, *Canada's Air Force: At War and Peace*, vol. 1 (Toronto: CANAV Books, 2000), 108.

32. C. M. McEwen, Andover, Hants., Eng. to General Panet, CWM 58A1 95.1, Acc. 19900192-189[?], 2 September 1930.

33. He passed Strategy Sea/Air, Organization and Tactics Sea/Air and Land/Air, organization and administration, history and geography. It appears in attempt to pass the Strategy Land/Air section, he simply made reference to the text book. A. P. M. Lauder for Air Commodore, Director of Organisation & Staff Duties, to Squadron Leader C. McEwen, CWM 58A1, 95.1 Acc. 19900192-189, 31 July 1929.

34. Milberry, *Canada's Air Force,* 107.

35. RAF Staff College 8th Course, Exercise No. 21, "Leadership and Morale," Andover, CWM 58A1 93.3, Acc. 19300916, 16 September 1930.

36. Ibid.

37. Ibid.

38. Milberry, *Canada's Air Force*, 108.

39. Canada, DND, CFLI, *Leadership in the Canadian Forces*, 5.

40. David Bashow, "Four Gallant Airmen: Clifford Mackay McEwen, Raymond Collishaw, Leonard Joseph Birchall, and Robert Wendell McNair," Bernd Horn, ed., *Intrepid Warriors: Perspectives on Canadian Military Leaders* (Kingston, ON: Canadian Defence Academy Press, 2007), 159; Noel, "McEwen, Clifford Mackay (1896–1967)"; and Milberry, *Canada's Air Force*, 108.

41. W. A. B. Douglas, *The Creation of a National Air Force: The Official History of the RCAF*, vol. 2 (Toronto: University of Toronto Press, 1986), 389.

42. Ibid., 490. It has been argued that Eastern Air Command did not adopt RAF Coastal Command's tactics and squandered resources through inefficiency and occupation with mundane details of finding men and equipment. Allan English and John Westrop, *Canadian Air Force Leadership and Command: The Human Dimension of Expeditionary Air Force Operations* (Ottawa: DND, 2007), 15, accessed February 20, 2015, http://airforceapp.forces.gc.ca/CFAWC/eLibrary/pubs/Leadership_and_Command-2007-01-19_e.asp.

43. C. M. McEwen, "Record of Operational Flying while in Command of No. 1 R.C.A.F Group St. John's Newfoundland including co-operation with U.S.A. Forces. Navy + Army," "Flying Book, 1930–45," CWM 58A1 94.1, Acc. 19900192-195.

44. Helen McEwen to C. M. McEwen, CWM 58A1 95.1, 25 January 1943. His health was not well in February; however, she hoped that he was going to get medical attention and not just ignore his problems. Helen McEwen to C. M. McEwen, 2 February 1943.

45. Cosgrove, *Canada's Fighting Pilots*, 123.

46. Brereton Greenhous et al., *The Crucible of War, 1939–1945: The Official History of the Royal Canadian Air Force*, vol. 3 (Toronto: University of Toronto Press, 1994), 780, 914–16.

47. Noel, "McEwen, Clifford Mackay (1896–1967)"; and Greenhous et al., *The Crucible of War*, 779. He commanded Linton, Tholthorpe and Eastmoor stations. "No. 62 R.C.A.F. Base (June 18th, 1943 until 1st March 1944 inclusive)," CWM 58A1 93.6, Acc. 1990192-214-216.

48. Brookes' diary suggests he went to sleep before bombers returned from their missions. CWM 58A1 58.

49. Greenhous et al., *The Crucible of War*, 779.

50. Carl Clausewitz, *On War*, ed. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 138.

51. McEwen appeared to have problems with nerves earlier in his career. In December 1929, when his wife Helen McEwen had to travel during winter while she was pregnant, he wrote, "The worry of the whole thing combined with the extraordinary hard year's work I had been through put me in hospital." C. M. McEwen, Andover, Hants., Eng. to General Panet, CWM 58A1 95.1, Acc. 19900192-189[?], 2 September 1930.

52. Bashow, "Four Gallant Airmen," 160.

53. Ibid.

54. Operational Research Section (Bomber Command), "A Note on 6 Group Losses …," McEwen Fonds, CWM 58A1 93.6, Acc. 1990192-214-216, 15 July 1943.

55. Cosgrove, *Canada's Fighting Pilots*, 124; and The Leeds-Bradford industrial area and the Middlesbrough industrial area Letter to AOC, "Difficulties encounter," CWM 58A1 95.1, Acc. 19900192-189, n.d.

56. G. E. Brookes to Air Marshal L. S. Breadner, Air Officer Commanding-in-Chief (AOC-in-C), RCAF Overseas, CWM 58A1 95.1, Acc. 19900192-189, 27 January 1944.

57. Much to Sir Arthur Harris' dismay, operational researchers confirmed that high No. 6 Group losses in the Battle for the Ruhr in May and June were due to lack of operational experience on bomber type. William Johnston, "Losses, Loss Rates and the Performance of No. 6 (RCAF) Group, Bomber Command, 1943–1945," *War & Society* 14, no. 2 (1996): 89.

58. English and Westrop, *Canadian Air Force Leadership and Command*, 20.

59. Ibid., 23.

60. Canada, DND, CFLI, *Leadership in the Canadian Forces*, 4–6.

61. Bill Johnston identifies three works that hail McEwen as a factor of change: Spencer Dunmore and William Carter, *Reap the Whirlwind* (Toronto: McClelland & Stewart, 1991); W. A. B. Douglas and Brereton Greenhous, *Out of the Shadows* (Toronto: Dundurn Press, 1995);

and David Bercuson, *Maple Leaf Against the Axis* (Toronto: Stoddart, 1995). Johnston instead suggests that the very high losses in the inexperienced crews in 434 Squadron, operating inadequate Halifax IIs and Vs inflated No. 6 Group loss rates. He stresses the need to focus on net losses, instead of losses per sortie in evaluating the impact of Canadianization. Johnston, "Losses, Loss Rates and the Performance of No. 6 (RCAF) Group," 90, 93, 97, 98.

62. Greenhous et al., *The Crucible of War*, 780.

63. CWM 58A1 93.5, Acc. 19900192-213. See also, Ibid., 826.

64. Greenhous et al., *The Crucible of War*, 527.

65. Brookes noted that efforts were made to improve conversion training, gunnery training, fighter affiliation training and bombing training. Additional bombing ranges, air-firing ranges and fighter affiliation facilities had recently been made available to the group. He noted that a smaller share of some radar navigation aids and radar warning devices had been made to No. 6 (and No. 4) Groups, but efforts were being made to increase these devices, especially H2S, Fishpond and Visual Monica. G. E. Brookes to Air Marshal L. S. Breadner, AOC-in-C, RCAF Overseas, CWM 58A1 95.1, Acc. 19900192-189, 27 January 1944.

66. "No. 6 RCAF Group Monthly Summary of Activities," No. 6 Group Headquarters War Diary, May 1944.

67. Bashow, "Four Gallant Airmen," 160.

68. Greenhous et al., *The Crucible of War*, 526.

69. Ibid., 825.

70. "No. 6 RCAF Group Monthly Summary of Operational and Training Activities" No. 6 Group Headquarters War Diary, May 1944.

71. "No. 6 R.C.A.F. Group Summary of Operations for A.O.C. RCAF Overseas Headquarters," CWM 58A1 95.3, July 1944–Jan 1945, Acc. 19900192-89, 3 July 1944.

72. Other explanations of improvement were: more experienced crews, close surveillance on abortive sorties and early returns, improved Pathfinder Force technique, improved navigational aids, improved training and shorter range targets. Ibid.

73. C. M. McEwen, Headquarters (HQ) No. 6 (RCAF) Group to AM [Air Marshal] Breadner, AOC-in-C, CWM 58A1 95.3, July 1944–Jan 1945, Acc. 19900192-89, 4 September 1944.

74. C. M. McEwen to Mrs. C. M. McEwen, Telegraph, CWM 58A1 95.3, July 1944–Jan 1945, Acc. 19900192-89, [?] 1944.

75. Milberry, *Canada's Air Force*, 108.

76. Ronnie [?], Ottawa, to C. M. McEwen, RCAF Overseas, CWM, Acc. 19900192-189, 16 March 1944.

77. Howard Ripstein of 426 Thunderbird squadron recalled McEwen would fly illegally in a sergeant's uniform. Bashow, "Four Gallant Airmen," 162.

78. "Operational Incidents and Stories. Briefing Requirements." CWM 58A1 93.4.

79. Ibid.

80. Some degree of popularity is evidenced by an "informal party" held in the officer's mess for McEwen shortly after his arrival. No. 6 Group Headquarters War Diary, n.d., Microfilm Reel C-12419, Library and Archives Canada, 8 March 1944. McEwen was the vice-president of both the Canadian Legion and the Dominion Council of the Last Post and was a member of dozens of veterans' organizations. He is listed as "engaged in secretarial duties" from 1946–55. "History of Service in Civil and Military Aviation Clifford Mackay McEwen," CWM 58A1 94.5, Acc. 199100192-226[?]; and Noel, "McEwen, Clifford Mackay (1896–1967)."

81. Bashow, "Four Gallant Airmen," 162–63.

82. It appears McEwen's personal connections with Sir Frederick Handley-Page allowed for a silver model aircraft donated for the trophy. C. M. McEwen, HQ No. 6 (RCAF) Group

to AM Breadner, AOC-in-C, CWM 58A1 95.3, July 1944–Jan 1945, Acc. 19900192-89.4, September 1944.

83. Ralph [?] to Air Vice-Marshal (AVM) McEwen, CWM 58A1 95.4, 1945, Acc. 19001925, July 1945.

84. Cosgrove, *Canada's Fighting Pilots*, 124.

85. Bashow, "Four Gallant Airmen," 160.

86. English and Westrop, *Canadian Air Force Leadership and Command*, 94.

87. Ibid.

88. C. M. McEwen, "Operations Europe Recorded," in "Flying Book, 1930–45," CWM 58A1 94.1, Acc. 19900192-195.

89. English and Westrop, *Canadian Air Force Leadership and Command*, 101; Raymond Stouffer, "Air Chief Marshal Frank Miller: A Civilian and Military Leader," in *Sic Itur Ad Astra: Canadian Aerospace Power Studies*, vol. 1, *Historical Aspects of Air Force Leadership*, ed. W. A. March (Ottawa: DND, 2009), 69, accessed February 20, 2015, http://airforceapp.forces.gc.ca/CFAWC/eLibrary/pubs/SicIturAdAstra-Vol1_e.asp.

90. A wartime study in 1942 on lessons in leadership suggested that squadron commanders needed to demonstrate their ability as pilots and share risks with their followers before gaining acceptance. English and Westrop, *Canadian Air Force Leadership and Command*, 95, 107.

91. W. Weart Cohram, Air Commodore, Director of Chaplain Services (P), Ottawa, to AVM C. M. McEwen, CWM, Acc. 19900192-189, 17 May 1944.

92. Hugh Halliday, "Whatever Happened To? A Survey of Selected Officers," in March, *Sic Itur Ad Astra*, 35.

93. Helen McEwen to C. M. McEwen, CWM 58A1 95.4, 1945, Acc. 1900192, 5 May 1945; Harold (Gus) Edwards was another victim of the punishing, high-stress life of RCAF senior commanders. Suzanne K. Edwards, "The Leadership of Air Marshal Harold (Gus) Edwards," in March, *Sic Itur Ad Astra*, 9.

94. Helen McEwen to C. M. McEwen, CWM 58A1 95.4, 1945, Acc. 1900192, 8 May 1945.

95. Ibid.

96. Ibid., 7 June 1945.

97. He was likely suffering from a gastric ulcer. Milberry notes that he was diabetic. Milberry, *Canada's Air Force*, 108. An interview with Helen McEwen in 1980 suggests he developed diabetes in England after 1943. Directorate of History and Heritage (DHH), "Mrs. McEwen's Interview," DHH 2004-43 McEwen, 1980, 23.

98. AVM C. M. McEwen to All Bases Stations and Squadrons No. 6 Group, CWM 58A1 95.4, 1945, Acc. 1900192, 18 June 1945.

99. F/O [Flying Officer] Ralph Multch[?] to McEwen, CWM 58A1 95.4, 1945, Acc. 1900192, 21 December 1945.

100. Canada, DND, CFLI, *Leadership in the Canadian Forces*, i.

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Will Pratt is a PhD candidate in history at the University of Calgary. He is studying Canadian Army morale in the Second World War under the supervision of Dr. David Bercuson. This foray into Air Force history was the result of research completed for Bercuson, who was interested in a reconnaissance of sources for a potential biography of C. M. "Black Mike" McEwen. All errors, omissions and delusions are the responsibility of the author. It is hoped that if more of McEwen's personal papers exist, they will be donated to the collection held at the Canadian War Museum.

Chapter 2

No. 6 RCAF Bomber Group: A Study of Leadership, Discipline and Canadian Values

By Rhonda Jarrett

Introduction

Canada's contribution to the Allied air effort in World War II (WWII) was significant. Between 1939 and 1945, over 250,000 Canadian airmen and airwomen served in the Royal Canadian Air Force (RCAF). Approximately 10,000 of these Canadians who served in Royal Air Force (RAF) or RCAF squadrons attached to Bomber Command never returned home.[1] This figure speaks to the hazardous nature of bomber operations flown in WWII as well as the scale of Canada's commitment to the strategic bombing offensive against the European Axis powers. As the second largest contributor to that campaign, Canada could boast the "only non-British group ever to serve in Bomber Command."[2] Established in January 1943, No. 6 RCAF Bomber Group would eventually be recognized for its "high calibre of leadership and … professionalism" and its performance "second to none."[3] However, the very high rate of casualties sustained by the Group—particularly during the first year of operations—has ensured it a controversial place in the nation's history. This paper will examine how Canadian ideas around national sovereignty, identity and democracy influenced not only the formation of 6 Group but also the RCAF policy on officer selection, discipline and leadership.

Canadianization and the creation of No. 6 Bomber Group

Between 1939 and 1945, the RCAF oversaw the largest aircrew-training organization in the British Empire. The British Commonwealth Air Training Plan (BCATP) graduated over 130,000 aircrew of virtually every Allied nationality and trade. Canada financed half the plan's $2 billion cost.[4] The greatest recipient of this scheme was Bomber Command, which received the overwhelming majority of pilots, navigators, wireless operators and flight engineers to pass through the programme. This was in keeping with Allied strategy. In late 1940 ("with no continental army left in the field to engage Hitler"), British Prime Minister Winston Churchill determined that there was "'only one sure path' to victory; … 'an absolutely devastating, exterminating attack by very heavy bombers … upon the Nazi homeland.'"[5] Two years later, the British Chief of Staff Committee accorded the bomber fleet "absolute priority of Anglo–American production."[6] The RCAF remained adamant that it should participate in the war effort overseas.

Throughout the negotiations that produced the BCATP agreement, one point was repeatedly made clear: Canada would not accept "a mere training role for the duration of the war."[7] RCAF authorities recommended that the country place its own fighting units in the field, and in January 1940, demands to establish an Overseas Headquarters in London were finally met. Canadian personnel dispersed throughout RAF units, however, were largely removed from national association and control. No attempt to rectify this problem was made until December 1940. The Ralston–Sinclair Agreement permitted Canada to establish its own units and formations overseas and to increase the number of Canadian aircrew being absorbed into RCAF squadrons. This policy initiative became known as Canadianization.

The chief architect of this policy was C. G. "Chubby" Power, who was appointed Minister of National Defence for Air in May 1940. He was especially concerned with the way Canadian air personnel were treated and employed overseas. There were, he observed, a growing number of Canadians being posted to RAF units who could, thus, "be sent anywhere in the world at the discretion of British authorities."[8] These "young RCAF men," Power wrote in a letter to the prime minister, "were [the] moral if not legal responsibilities of the Canadian government."[9] In the summer of 1941, Power met with the British Air Ministry in London. The negotiations significantly advanced the process of Canadianization. One item on the agenda, for example, concerned the commissioning of aircrew. Noting the higher ratio of RAF officers, Power proposed that a greater number (50 per cent) of RCAF pilots and observers be commissioned on passing out of the BCATP. He also expressed concern regarding the limited opportunity available to wireless operators and air gunners. While the Ralston–Sinclair Agreement permitted Canada to establish a larger number of flying squadrons overseas, Power suggested that these units be made more "Canadian" through the provision of RCAF ground crew. Finally, Power raised the idea of forming Canadian groups and home stations. These proposals reflected Canada's national aims overseas. It took a year, however, for formal agreement to be reached.

The Ottawa Air Training Conference was held in the spring of 1942, just as the original BCATP contract was set to expire. During these negotiations, it was determined that the joint programme would be extended and that a number of Canadian demands would finally be met. The new agreement, for example, stipulated that all pilots, observers, navigators and bomb aimers considered suitable by Canadian standards would be commissioned. Other concessions were also made, for instance that the: RCAF would be consulted in the selection of commanding officers (COs) for RCAF squadrons; RCAF should exercise general supervision over Canadian officers and men attached to RAF units; and number of RCAF squadrons overseas would increase. Perhaps the most significant development to come out of these negotiations, however, was Air Ministry approval for an RCAF bomber group, which was to be formed as soon as enough squadrons became available.

On 1 January 1943, almost a year after the conclusion of the Ottawa Training Conference, No. 6 RCAF Bomber Group was formed. With its headquarters at Allerton Hall in Yorkshire, 6 Group was the most northerly formation in Bomber Command. By 1945, it had grown to include 4 bomber stations (with their satellites or substations) and 11 squadrons. Similar to Canadian Army formations, 6 Group functioned under higher British operational command. In other words, it "had no concern with strategic policy; it [simply] hit the targets that were given to it"[10] by RAF Bomber Command Headquarters. While the RCAF was never consulted about the policy of "area bombing" (which identified German cities and industrial sites as primary targets), 6 Group was heavily involved in that offensive.

The formation of 6 Group RCAF was strongly opposed by many senior RAF officers. Canadianization was also obstructed at many levels within the RAF. Lower-ranking officers, for example, deemed the policy "disruptive to morale" and attempted to "blot out" the Canadian identity of RCAF (particularly non-commissioned officer [NCO]) aircrew.[11] Once they had left Canada, it was argued, they belonged to the RAF. Senior RAF officers, on the other hand, viewed the process as an "unwarranted political interference of a junior ally in operational matters" and "simply circumvented Canadianization" when they saw fit.[12] The most vocal opponent of the policy was Air Chief Marshal Sir Arthur Harris, the Air Officer Commander-in-Chief (AOC-in-C) of Bomber Command. A fervent British nationalist, Harris deeply resented the mass intake of Dominion aircrew. As the percentage of "colonials" or "coloured troops" increased, the face of Bomber Command was progressively (and regrettably) altered. The force, he argued, was not taking in "enough young men of the … middle and upper classes, the supposed natural leaders and 'backbone' of British society."[13]

At the beginning of 1943—with almost one third of his squadrons labelled Dominion or Allied—Harris feared he was losing operational grip of his force. The AOC-in-C had a point: Dominions demanded that they be consulted on personnel issues (such as aircrew disposal and tour length) and, at times, wholly disregarded Air Ministry policy. Harris was vehemently against the creation of nationally distinct units and formations under his command, which he believed would lead to the "wholesale alienisation of the Royal Air Force."[14] Harris preferred to have Dominion airmen be absorbed into RAF squadrons where they would be exposed to the influence of their British counterparts, who "in general [were] better educated and more amenable to discipline … ."[15] Harris was especially concerned with the creation of an all-Canadian formation—done simply to satisfy "a lot of political demands from Ottawa."[16] Without competent or experienced leaders to take the helm, 6 Group, the AOC-in-C believed, was bound to perform below standard. As Stacey points out, "Harris' fears were not entirely without foundation."[17] Historians have also challenged the wisdom of creating an RCAF formation in Bomber Command. The establishment of 6 Group, some observe, resulted in significantly "greater casualties among Canadian aircrew."[18]

Born out of political—rather than strategic or operational—considerations, 6 Group was a hastily assembled force that performed poorly in its first year of operation. By mid-1943, Dunmore and Carter observe, it "had acquired a sorry reputation in Bomber Command."[19] "Most airmen regarded it as a 'chop group,' its losses consistently higher than those of other groups."[20] The Battle of the Ruhr (5 March to 31 July 1943) was the first major bombing campaign involving 6 Group. During that offensive (considered an "impressive victory" by Harris[21]), Bomber Command completed 18,506 sorties and lost 872 aircraft, or 4.7 per cent of the force. The Canadian Group, in comparison, mounted 2,649 sorties and sustained 145 losses, or 5.4 per cent of the force. On average, "every

German raid cost the Group an average of four aircraft and crews."[22] Dunmore and Carter argue that the battle had, "on paper at least," destroyed 6 Group.[23]

Historians cite several factors that contributed to these dismal results, including the Group's location, equipment, inexperience and questionable leadership. Out of the formation's eight squadrons, five were situated in Yorkshire and three in nearby county Durham—the most northerly bases in Bomber Command. At the time 6 Group came into being, Bercuson observes, "the Vale of York was the only area in the UK [United Kingdom] where new bases could be created … that were not impossibly far from potential targets."[24] However, it was certainly not an ideal locale. The 6 Group stations were so far north, he explains, that its aircraft often flew in the range of enemy night fighters based in northern Germany or southern Denmark before they could join the "protective anonymity" of the main-force bomber stream.[25] The region's hills and early morning ground fog added to difficulties—obstructing take-offs and landings. Placing the group at further disadvantage was the type of aircraft they flew—twin-engine Wellingtons that were nearing obsolescence and older Halifax four-engine bombers prone to a number of mechanical errors (and considered among aircrew a "killer").

The most significant contributing factor, however, was the relative inexperience of RCAF squadrons and their leaders. As Dunmore and Carter point out, the new group was literally thrown together and "thrust into action [at a time] when the air war was reaching a pitch of ferocity that no one could have imagined a year before."[26] The frequent introduction of new technology and constant modification of existing equipment proved too much for recently trained ground crew and technical staff who had spent little time working together. Aircraft maintenance and serviceability suffered accordingly. Moreover, the creation of seven new Canadian squadrons in the latter half of 1942 demanded that large numbers of recent operational training unit (OTU) graduates be put into the formation. The heavy presence of amateur pilots partially explains 6 Group's high rate of contact with enemy night fighters and losses. Had Canadian airmen been incorporated into "mixed" squadrons, they could have learned the skills necessary for survival from more operationally experienced crews and commanders.

By 1944, however, the Canadian group had come of age. That summer, the RCAF formation consistently broke Bomber Command records. In June, for example, 93 per cent of the Group's aircraft had bombed their primary target. The following month, casualties totaled 22 aircraft, or an overall loss of 0.6 per cent—the lowest of any group during that four-week period. This is especially remarkable, precisely because the Canadians had completed no less than 3,704 sorties. Even when the group had been experiencing higher-than-average loss rates, its morale remained largely intact. Several factors ensured that this was the case, including RCAF policy on the selection and commissioning of officers.

Canadian values and officer selection in the RCAF

The push to increase the number of commissioned RCAF airmen overseas was central to the Canadianization process. During his negotiations with the Air Ministry in the summer of 1941, Power complained that RAF authorities were promoting too few Canadians to officer rank. While the 1942 Ottawa agreement included provisions meant to redress this problem, less than 30 per cent of RCAF airmen had been commissioned by early 1943. Given that commissions in the field were still regulated by the Air Ministry and that the RCAF automatically promoted 25 per cent of its pilots and observers on graduation from the BCATP, Allan English estimates that the RAF was commissioning fewer than 4 per cent of Canadians. The statistics revealed blatant favouritism: In the fall of 1942, 57 per cent of RAF pilots and observers were officers.[27] While British reluctance to commission RCAF airmen remained a sensitive issue throughout the war, Canada's position gradually improved. By August 1944, for example, 74.3 per cent of Canadian pilots, navigators and bomb-aimers overseas were commissioned.[28] This number was reached only because Canada circumvented RAF procedure and commissioned a larger number of RCAF airmen immediately after they graduated BCATP.

RAF disapproval for an increased ratio of Canadian officers was rooted in a number of factors. There was some hesitancy, for example, to introduce different selection criteria among Commonwealth aircrew who flew together. "Commanding Officers of some Royal Air Force units," the Air Ministry explained, were often loath "to recommend a Royal Canadian Air Force airman for a commission, though considered suitable [by Canadian standards], because he is junior to a Royal Air Force airman who is not considered suitable [by British standards], and therefore not recommended."[29] The faster

pace of promotion among Canadian aircrew sometimes eroded morale. Disagreement over the issue of commissioning, however, also reflected British doubts about the capacity of RCAF aircrew to lead. The CO of RAF Digby, for example, believed that the presence of British pilots in squadrons which have "a number of Canadians tends to sober them down a bit, and improve their discipline."[30] It was impossible, he argued, for RCAF officers "with only a few years of service" to have acquired the knowledge necessary "to run the administrative side of a station satisfactorily."[31] As English points out, this British assessment of Canadian airmen was not wholly unfair. In January 1942, for example, Air Marshal Harold "Gus" Edwards, the AOC-in-C RCAF Overseas, declared that the "discipline of our troops in England is tragic."[32] This was because RCAF aircrew, he argued, "had 'not been taught in Canada what it means to be an officer or an NCO.'"[33] While it is true that Canadian "newcomers were unfamiliar with service traditions"[34] or had not received any formal leadership training, the British attitude toward RCAF airmen was as much (or more) a reflection of "class-conscious" social norms and values as it was of Canadian performance and behaviour.

The RCAF policy on commissioning officers was influenced by Canada's democratic and egalitarian culture. Of particular concern to RCAF authorities, for example, was the treatment that non-commissioned aircrew were receiving overseas. British NCOs were handled harshly in comparison to their officers, who—in addition to having far greater opportunity to be decorated—enjoyed better pay, uniforms and quarters. Even so, they were far better off than Canadian NCOs who, as colonials, were victims of double jeopardy—often seen by the British to be entirely void of manners and to know nothing of the deferential attitude expected by their superiors. Again, Power's solution to this problem was to steadily increase the number of commissioned RCAF airmen. Canadian policy, however, also reflected certain operational realities. "To the traditional English mind," Greenhous observes, "leadership was more a function of style than competence"—individuals had to be of the "right type" (usually of the upper or middle classes) in order to receive commission.[35] Canadians, on the other hand, favoured "the more functional approach" of their American counterparts, "who related rank to the job done and commissioned all pilots, navigators, and bomb aimers."[36] If crewmembers shared the same risks, Power argued, they should also be entitled to equal pay and rank. The RCAF's attitude toward commissioning significantly bolstered esprit de corps and morale among aircrew.

While Canada was successful at increasing the ratio of commissioned airmen, attempts to promote high-ranking RCAF officers in the field were also met with British resistance. Harris, for example, doubted the competence of Dominion COs—mostly "hangovers from a prehistoric past," he observed, "who were totally inexperienced at best or incompetent at worst."[37] In a 1942 letter to the Air Ministry, Harris recounted how he heard that many Canadian airmen were loath to serve under officers whose careers were "limited to six months flying training and 25 years of political intrigue."[38] There was some truth to this claim. The reality was that the RCAF—like most Dominion air forces—had a very small group of pre-war regular officers to choose from. At the highest level, Dunmore and Carter observe, "6 Group never really solved its personnel problems."[39] Many of its senior officers had been in active service since the 1920s and had spent the interwar years carrying out instructional duties. They had risen through the ranks during their time with the BCATP. Largely ignorant of the conditions in the current conflict, these men were sent overseas and placed in charge of squadrons or bases. Again, this kind of questionable leadership partially explains the group's dismal performance during its first year of operation.

In January 1943, Air Vice-Marshal George Brookes was selected to command the new group. Years of instructional postings, Dunmore and Carter observe, had done little to prepare him for the command of an operational group thrust in the thick of battle. With no experience in modern combat, the air officer commanding was in many ways "the archetypical Canadian commander … : a man in a key job for which he had neither the experience nor the training."[40] The most capable aircrew of 6 Group had formerly served in RAF units commanded by officers whose service backgrounds and years of operational experience far outweighed that of Brookes (and other high-ranking RCAF officers). Inevitably, comparisons were made and morale suffered.[41] While the RCAF made serious attempts to address the senior leadership vacuum, British prejudice toward Dominion personnel at times hindered their initiatives. For example, RAF Air Vice-Marshal Harry Broadhurst—commander of the Desert Air Force—was convinced "that an RCAF officer will have little opportunity to command."[42] Canadians made "good flyers," he argued, "but they're not good leaders."[43] When RCAF officer H. A. Campbell was deployed to the Middle East "to gain operational experience with a British formation" in the summer of 1943,

"he was kept 'supernumerary for months with no duties or responsibilities.'"[44] He was eventually injured and repatriated to Canada. His story, Greenhous observes, was not unique. Although the RAF obstructed Canadian efforts to commission air personnel and promote senior officers in the field, improved selection methods at home ensured that 6 Group was not entirely void of quality leadership.

"On the eve of the Second World War there were only 290 officers and 2,700 other ranks"[45] in Canada's permanent Air Force. The RCAF was forced to launch a major recruiting drive. In the initial phases, English observes, applicants were plentiful and selection was a very basic process that consisted of two core components: a medical and an interview. Senior RCAF officers—usually World War I aviation veterans—presided over the latter and quickly determined whether the candidate possessed the prerequisite qualifications. While physical fitness and motivation were considered important criteria, intelligence was deemed the most "essential characteristic" and education the most reliable measure of that trait.[46] In many respects then, the RCAF selection system resembled that of the Canadian Army, where the responsibility of recommending candidates for commission fell to COs. "By virtue of their long experience and judgment," COs were considered uniquely suited for the task.[47] Only they, it was believed, could identify the most promising officer material. This technique, dubbed the "magic eye" by the British, gradually became the centre of heavy criticism. Most of the complaints raised were directed at Air Force procedure as well. There was concern, for example, that traditional selection methods somehow went against the country's democratic principles and values. The magic-eye approach was too subjective and allowed for personal and political bias to enter into the decision-making process. Many contemporaries, moreover, viewed education as a symbol of wealth and privilege. For these reasons, Canada's Army and Air Force selection systems gradually evolved.

By the early 1940s, the RCAF had introduced a rigorous process of intelligence and aptitude testing. Candidates underwent a series of written and practical examinations, designed to measure both accurately and objectively an individual's suitability for aircrew. These included everything from "ability to learn" tests to psychological interviews as well as physical evaluations to both written and verbal intelligence exams. Many of these new "scientific" methods of personnel selection yielded considerable success. Beginning in 1943, for example, all airmen considered pilot material were given the Visual Link Trainer (VLT) test. A device that simulated a flight in an aircraft, the VLT provided the most efficient and accurate means to assess candidates' aptitude for combat aviation. Statistical methods were used to gauge the validity of respective tests and to determine which ones were most effective at predicting success in training. By 1943, the BCATP boasted an 82 per cent success rate.[48] Still, several of the methods employed revealed serious practical and conceptual shortcomings, particularly those that were used to measure so-called "flying temperament."

The various intelligence and personality tests pioneered under the new system were also supposed to identify those "mentally fit" for combat. Candidates who possessed "the right stuff" were believed to exhibit a number of traits that would enable them to withstand the stresses of aerial warfare. As Hayes points out, however, very few, if any, were tangible qualities that could be accurately measured. "Robustness," "adventurousness," "daring" and "intelligence," for example, were complex and vaguely defined concepts. Moreover, like their Great War predecessors, air force psychiatrists in the Second World War correlated psychological injury sustained in combat to genetic or "inherited predisposition."[49] Reduction in the occurrence of "flying stress," they argued, was primarily dependent on the use of reliable scientific selection methods that also took into account candidates' "genes and family background."[50] Despite these intensive screening efforts, wastage attributable to mental strain reached serious proportions among RCAF aircrew, particularly those in Bomber Command. The personal and cultural biases that served to undermine the RCAF selection system also led to flawed methods for treating psychological injury. Those who were deemed "lacking in moral fibre" (LMF) were confronted with harsh and usually unjust disciplinary measures.

"Lack of moral fibre": Discipline and leadership in the RCAF

Over the course of the war, psychiatrists and neuro-psychiatrists came to dominate the field of military aviation psychology. Schooled in "hereditarian" theory and practitioners of Freudian method, these human behaviourists instituted flawed clinical approaches in the treatment of mental disorders or "flying stress." Psychological breakdowns, they believed, were the product of innate characteristics. Some people, owing to their genes and family background, were predisposed to collapse. Thus, the

notion that military training could eliminate tendencies toward neurosis was rejected, as were the "simple remedies" medical authorities had discovered to be effective in World War I, such as proper rest followed by the patient's reintegration into his unit. The idea that "flying stress" was somehow correlated to "weak character" or genetic predisposition led to insensitive treatment. Psychological casualties often received harsh disciplinary punishment rather than sympathetic medical care.[51]

The RAF's senior neuropsychiatrist understood that "'flying stress' was inextricably linked with LMF."[52] While the latter was essentially treated as a form of insubordination, agreement over the precise meaning of the term was never formally reached. Confronted with mounting psychological casualties in 1940 and 1941, the Air Ministry issued a more detailed procedure for handling so-called "Waverer" (or W) cases. The "LMF Memorandum," as it came to be known, specifically targeted "members of air crews who forfeit[ed] the confidence of their Commanding Officers … ."[53] This was due "either to their conduct [a failure to face danger in the air] or to their [own] admission that they [felt] unable to face up to their duties."[54] Those who had lost the confidence of their CO without evidence of a medical disability—or "without having been subjected to any exceptional flying stress"—were deemed "lacking in moral fibre."[55] The label LMF was thus given to airmen who "openly admitted they did not intend to fly" as well as to crew who habitually returned without bombing the target—the so-called "fringe merchants" and "boomerangs."[56] The problem, English observes, was that medical officers (MOs) and psychiatrists in charge of handling potential LMF cases often struggled to distinguish "between lack of confidence and "neurosis."[57] The subjectivity involved in diagnoses meant that there was a great deal of discrepancy across Bomber Command units in terms of how the LMF designation was interpreted and applied. There was also considerable debate on the best means to handle LMF cases: "Was it a temporary phenomenon that could be quickly cured by rest or a crime to be punished?"[58] British and Canadian air-force authorities did not share a similar answer to this question.

The RAF, English observes, favoured a harsh approach to psychological casualties, while taking "a particularly stern view of LMF cases."[59] For example, Bomber Command's principal medical officer, Air Commodore F. N. B. Smartt, emphasized "the importance of temperamental unsuitability in causing psychological disorders in members of air crew."[60] Those more likely to break down under stress and display neurotic symptoms, he argued, were unfit for combat aviation and should, thus, be eliminated from their units immediately. Another MO advocated that aircrew lacking in morale fibre were a "bad influence." Senior RAF officers concurred. LMF, it was believed, "could go through a squadron like wildfire if it was unchecked."[61] Several veterans of Bomber Command reported that many of their fellow airmen approved of the LMF label as a disciplinary measure. The thought of being classified a "waverer"—and the consequences that it brought—inspired fear and chained some flyers to their stations. Officers, for example, were forced to give up their commissions, while NCOs lost their stripes for at least 12 weeks—time that was often spent doing the most menial jobs, such as cleaning latrines. Beginning in 1944, moreover, any LMF case discharged from the Air Force could be sent to labour in the coalmines or be drafted into the Army. While defenders of these administrative procedures argued that these options provided a less-harsh alternative to a court martial (which would have entailed complicated legal proceedings and a trial on base, having serious effects on the morale of others), Canadian politicians and RCAF authorities were deeply critical of the British Air Ministry's handling of LMF cases.

Several issues led Canada to develop its own policy for dealing with aircrew suspended from flying. There were fundamental differences, for example, in the way that RAF and RCAF psychiatrists treated LMF. Canadian medical authorities favoured a "more lenient" approach, arguing that "airmen who manifested signs of 'fatigue, stress, or psychological illness' usually did so for physical reasons rather than as a result of their own 'willful neglect or irresponsibility.'"[62] They thus drew a line between flying stress and LMF where RAF MOs did not. However, since the latter controlled the provision of medical care for Canadian aircrew overseas, psychiatrists in Canada expressed persistent dissatisfaction. Their complaints added to those of other RCAF and government officials, who were particularly sensitive to the opinion and sentiment of the general public. Canadians at home felt that RCAF airmen in Britain were being subjected to harsh and unfair procedures. They would not stand, English observes, "to have the reputations of their sons impugned by the … [actions] of a foreign force," and demanded that Ottawa somehow intervene.[63]

The Dominions were especially concerned with the handling of NCOs who had been removed from flying duties. Non-commissioned personnel were often treated harshly in comparison to their officers,

particularly in "W" cases. They also faced a greater likelihood of being labelled waverers. For example, when taking into account the total number of LMF allegations formally reviewed by the Air Ministry, only 52 per cent of cases involving officers were deemed legitimate, as opposed to 70 per cent of incidents involving NCOs.[64] While reluctance to take action against commissioned aircrew stemmed in part out of the desire to avoid courts martial—which were usually required to deprive officers of their rank—it also reflected the class-conscious organizational culture of the RAF. This also explains the tendency to treat officers and NCOs differently. The former, if suspected of LMF, were often simply posted to new assignments. Their experience was very different from NCO waverers, who could face a variety of disciplinary measures, including some that hardly conformed to official policy. Many, for instance, were sent to open-arrest detention barracks—known as "Aircrew Refresher Centres"—where an arduous regime of physical-fitness training was enforced. Others were subjected to public humiliation—their rank insignia and flying badge stripped on station parade. Again, one solution to this problem of harsh or unequal treatment was to increase the number of commissioned RCAF aircrew overseas. In 1944, however, Canada made significant political progress in the LMF debate. Under Power's direction, the RCAF crafted a new waverer procedure—one that was firmly rooted in legal principles. Adopting the condition of "clear and willful evasion of operational responsibility as the basis for judging the behaviour of aircrew," the RCAF's LMF regulations emphasized due process and the protection of individual rights.[65] The creation of separate policies and administrative procedures that underscored democratic values represented "a victory for [Canada's] national pride and political sovereignty."[66]

Efforts to ensure that all RCAF aircrew were treated fairly and equally significantly enhanced unit cohesion and esprit de corps both within 6 Group and other Canadian squadrons outside that formation. WWII psychologists recognized the important role that such factors played in reducing "battle exhaustion" among airmen. They also stressed the correlation between flying stress and poor leadership. One Bomber Command MO observed that squadron morale was directly proportional to the quality of its senior officers.[67] Another pointed out that LMF often "occurred in epidemics," which were usually brought about by "bad squadron or flight commanders."[68] The most effective leaders were aware of this fact and took steps to prevent psychological injury among their subordinates. At times, Bashow explains, this meant taking "a liberal interpretation" of the RAF's "open-ended" operational-tour-length policy or simply recognizing when an aircrew member had done enough.[69] Problems emerged, for example, when squadron commanders allowed their most experienced aviators to suffer "burn-out" or become stale. Competent COs, moreover, worked closely with MOs on station, ensuring that they were fully integrated as members of the unit. While operational conditions, such as bad weather and improved enemy defences, contributed to crews' stress, adept squadron leaders understood that some circumstances could actually be controlled. It was better to attempt a foray in poor weather, they observed, than to cancel an operation last minute, which usually had far more disastrous effects on morale. Finally, Bomber Command's most able and respected leaders knew that aircrew "could not be driven to their tasks," as there were too many ways for them to evade their duties, especially on night operations.[70] But what exactly did inspired leadership look like?

Air-force commanders who earned the best reputations seemed to share a number of personality characteristics and behaviours. Successful leaders, for example, were those who demonstrated professional competence or "flying expertise" immediately after they had assumed their post.[71] In addition to proving their proficiency, good COs shared the risks of their squadrons "by 'going on difficult raids,' especially 'when losses were heavy or morale low.'"[72] Once in the air, they displayed "drive," "initiative" and "steadiness under pressure."[73] The most impressive COs, moreover, showed genuine interest in the welfare of squadron members. Not only did they have a "personal knowledge of all [their air and ground] crews," but they were also "accessible to them when required."[74] After heavy casualties or a series of bad runs, these COs strengthened their image as "concerned, effective leaders" by organizing "intensive training" and being proactive.[75] They were thus "hard but fair 'in all matters' of flying and duty."[76] In these ways, Bomber Command's greatest leaders were able to inspire their men "to press home the attack in the face of overwhelming odds against survival."[77] While both Britain and the Dominions enjoyed leadership of this calibre, an important question remains: Was there a particular style of leadership practised by RCAF officers that distinguished them from their RAF counterparts?

It would seem that this was indeed the case. Officers belonging to the RAF and RCAF behaved in ways that reflected the different organizational cultures of both services. During the interwar years,

English explains, commissioned officers in the RAF were encouraged "'to inculcate a public school feeling' in their units" (largely to compensate for a sense of inferiority to the other two services, particularly the Army).[78] RAF intolerance for NCO aircrew precluded the same level of esprit de corps and unit cohesion that was experienced in all RCAF squadrons and units. One psychiatric study on RAF aircrew was telling, having discovered that "sergeants appeared to break down more completely than officers."[79] It went on to suggest that this was likely due to the latter's higher morale. Nevertheless, British officers were highly critical of their Canadian counterparts, particularly their indifference to rank. This was interpreted as a sign of poor discipline. In 1943, the Inspector General of the RAF observed that RCAF "aircrew [are] becoming more and more divorced from their legitimate leaders, and their officers are forgetting, if they ever learnt them, their responsibilities to their men."[80] Another RAF commander—after visiting an RCAF base—wondered how it was possible to run "an air force full of men who talked in the same, easy way to station commanders and taxi drivers alike?"[81] Canadian and other Commonwealth officers, however, believed that it was the very close relationship they nurtured with their crews—along with their "casual, almost contemptuous regard for rank and tradition"[82]—that allowed them to create and lead stronger teams in the air.

Conclusion

This paper has examined how Canadian ideas around national sovereignty, identity and democracy influenced the formation of 6 Group as well as RCAF policy on officer selection, discipline and morale. The very high rate of casualties sustained by 6 Group—particularly during the first year of operations—has ensured it a controversial place in Canada's history. Several factors contributed to the group's dismal performance in 1943, including its location, equipment and the inexperience of its crew and COs. Improved Air Force selection methods, however, ensured that 6 Group was never entirely void of quality crew or leadership. Even when the Canadian group had been experiencing higher-than-average loss rates, its morale remained largely intact. Several factors, it seems, were at play, including the RCAF policy on commissioning and other initiatives designed to ensure that Canadian airmen—particularly NCOs—received equal treatment overseas. Together, these efforts increased unit cohesion, esprit de corps and morale within 6 Group as well as other RCAF squadrons that were detached from that formation. Second World War psychologists recognized the important role that such factors played in preventing "battle exhaustion" among airmen. They also understood the correlation between "flying stress" and poor leadership. Fortunately, Canada possessed a number of highly skilled and competent commanders. Largely indifferent to rank and tradition, RCAF officers practised a particular style of leadership that fostered a reduction in psychological casualties.

Notes

1. "About Bomber Command," Veterans Affairs Canada, accessed July 28, 2015, http://www.veterans.gc.ca/eng/remembrance/history/second-world-war/canadians-bomber-command/backgrounder.

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Chapter 3

Closing the Atlantic Black Pit: A Question of Air-Power Choices

By Richard Goette

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Introduction

Aircraft were vital weapons in the war against German U-boats during the Battle of the Atlantic. Stealth was the primary defence of U-boats, and their captains were wary of surfacing in the presence of an enemy aircraft, fearing that they would notify nearby hostile naval vessels or be attacked by air-launched weapons. Unfortunately for the Allies, there was a giant hole in the air cover over the main trade routes between Britain and North America that stretched 300 miles [483 kilometres (km)] from east to west and 600 miles [966 km] north to south. It was in this area in 1942 and early 1943 that Germany focused its U-boat fleet against Allied convoys. With no air threat in this gap, U-boats were free to move on the surface at night and press home attacks on poorly protected convoys. The results were devastating, as over six million tons [5,443,108 tonnes] of shipping was sunk in this 1942–1943 period, a great deal of which was at the hands of U-boats operating in the air desert known as the "Black Pit."[2]

Closing the air gap was of great concern to the Allies during the Battle of the Atlantic. To achieve this, it was necessary to have adequate numbers of aircraft with the required range and endurance to ensure that convoys received complete air coverage throughout their voyages. Although the British recognized this problem by late 1941,[3] the air gap was not closed until the spring of 1943. The reasons for this delay are complex and have led naval historian Marc Milner to observe that "the failure of the Allies to close the air gap before 1943 remains one of the great unsolved historical problems of the war."[4] This paper will focus on British struggles to close the air gap, and the debate over the allocation of air resources, in an effort to address this historical void.[5]

The main burden of closing the air gap fell to Royal Air Force (RAF) Coastal Command. To reach convoys at such great distances, Coastal Command required aircraft with extensive range. The problem was twofold: these machines were in short supply and they were required by RAF Bomber Command for its strategic bombing campaign against Germany. This put the two RAF commands at loggerheads over the priority of long-range-aircraft resource allocation.[6]

Essentially, the main dispute between the two parties centred on what Duncan Redford has identified as differing and irreconcilable strategic focuses in corporate culture. Coastal Command, supported by the Admiralty, desired to utilize bomber aircraft primarily in *defensive* roles to protect shipping from U-boat attack. Bomber Command, supported by the Air Staff, was unwilling to allow any of its forces to be diverted from the strategic bombing *offensive* against Germany. The Admiralty wanted the strategic bombing campaign to continue but with vital RAF air-support resources made available to the Navy and Army. The Air Staff felt that using RAF aircraft in tactical roles to support sea and land campaigns came at the expense of the strategic-bombing campaign. This conflicted with RAF beliefs in the indivisibility and flexibility of air power and threatened the service's institutional independence.[7] The dispute was christened the "Battle of the Air" by First Sea Lord Admiral Sir Dudley Pound.[8] It was a resource-allocation conflict that pitted Coastal Command and the Admiralty against the Air Ministry, Bomber Command and Prime Minister Sir Winston Churchill over the apportionment of long-range four-engine bomber aircraft in the RAF.[9]

Until late 1942, Bomber Command's offensive mindset dominated British strategy. Historian Brian Farrell has termed this the Air Staff's "private war over Germany," which saw Bomber Command receive the lion's share of the long-range four-engine bombers for its mission.[10] It took an alarming increase in shipping losses, which imperilled Britain's import situation, and the

commencement of Operation BOLERO, the build-up of Allied forces in Britain for D-Day, for British authorities to prioritize aircraft allocation to Coastal Command. Nonetheless, it took until the end of April 1943 for sufficient aircraft to become operational with Coastal Command; in the interim, March saw the heaviest Allied shipping losses of the war.[11] The tonnage sunk in the air gap during the winter and early spring of 1943 amounted to one of the most serious crises for the Western Allies during the war—one which they narrowly survived. It was an avoidable crisis that should have been prevented through a more balanced and realistic deployment of RAF air-power resources.

Personalities and air-power options

Coastal Command began the war with limited capabilities to defend shipping from submarine attack. A lack of suitable platforms, antisubmarine training and doctrine development in addition to the dominant strategic-bombing strategy in the RAF during the interwar period meant that Coastal Command continually struggled in its efforts to carry out its maritime air-power role. In June 1941, Air Chief Marshal Sir Phillip Joubert de la Ferté became Air Officer Commanding-in-Chief (AOC-in-C) Coastal Command,[12] and he immediately sought to improve the aircraft shortfall. This brought him into conflict with his Bomber Command and Air Ministry colleagues who were intent on maintaining strategic bombing as the RAF's top priority.[13] To add to his difficulties, Joubert also had to contend with Churchill, who was Bomber Command's most important supporter.

In his memoirs, Joubert lamented his frustration with Churchill's propensity to give his "favourite child," Bomber Command, the priority in aircraft allocation:

> The First Sea Lord [Admiral of the Fleet Sir Dudley Pound], supported by his staff, with an occasional friendly squawk from C-in-C [Commander-in-Chief] Coastal [i.e., himself], 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] … 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.[14]

The problem for Churchill in making British air-power choices was his need to balance defensive concerns with a means to strike at Germany directly. With France defeated, the Western Allies evacuated from the Continent and the Red Army facing the weight of the Wehrmacht by mid-1941, Churchill was compelled to do something to relieve pressure on his Soviet ally. Since Britain was not strong enough to mount a cross-Channel invasion, Churchill chose strategic bombing, for political and military reasons, as the only feasible way to directly strike at the enemy. As a result, he became Bomber Command's greatest advocate and was very reluctant to weaken Britain's only direct means to take the offensive to the Germans. This "tilt to the air," as Farrell has termed it, had a significant negative effect on Coastal Command's efforts to protect convoys, and throughout 1942, it lost to Bomber Command in the allocation of long-range aircraft resources.[15]

Air Marshal Sir Arthur "Bomber" Harris, the AOC-in-C Bomber Command by April 1942, was the most vocal advocate of this offensive strategy and the greatest critic of Coastal Command's defensive focus. Harris developed an early dislike of maritime aviation in the late 1920s when he was assigned to command a flying boat squadron. Harris felt he was "wasting time" and that the flying boats under his command were "almost entirely useless."[16] This experience coloured Harris' view of Coastal Command, and he detested the diversion of aircraft from the bombing campaign for defensive purposes. The following extract from a memorandum was typical of Harris' 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 [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.[17]

Harris considered the defence-oriented Coastal Command as "merely an obstacle to victory,"[18] and his opinions held sway with Churchill. In Michael Howard's words, Harris' personal access to the Prime Minister "gave him a remarkable degree of independence, not only from the Chiefs of Staff Committee, but from the Air Staff itself."[19]

Lord Cherwell (Professor Frederick A. Lindemann), Churchill's scientific advisor and long-time friend, was also an outspoken advocate of the strategic-bombing campaign. He shared Harris' distaste of diverting aircraft for maritime operations. The opinions of Harris and Cherwell held significant weight with the Prime Minister and the Air Staff and led the RAF leadership to assert that "defensive bombing" such as Coastal Command attacks on U-boats could "never win the war."[20] It was in this atmosphere that Coastal Command and the Admiralty struggled to secure aircraft with adequate range to eliminate the Black Pit in 1942. Coastal Command's official motto, "Constant Endeavour," referred to its mission defending against maritime threats to the United Kingdom (UK), but it could equally apply to its ongoing political battles.

U-boat tactics and maritime air power

With U-boats entering the Atlantic in increasing numbers in 1942, Allied shipping began to suffer heavy losses. The head of the German U-boat Arm, Grand-Admiral Karl Dönitz, hoped to win a tonnage war against the Allies by sinking merchant vessels at a rate faster than the Allies could build them. Successful wolf-pack tactics depended on the free movement of U-boats on the surface, so the presence of aircraft was a major hindrance. Aircraft forced U-boats to submerge, where they could not run on their diesel engines. Instead, they had to operate on their electric engines which made them several knots slower. With limited underwater speed, the U-boats could not keep up with a convoy. The following account of a failed wolf-pack attack from Dönitz's *War Diary* is illustrative:

> 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.[21]

By focusing on air sweeps around and in the track ahead of the convoy, aircraft proved to be a crucial weapon in hampering the U-boats' ability to launch mass surface attacks.[22]

By the end of 1941, improved aerial patrols over convoys near to the coast forced the U-boats further afield to maintain their freedom of operation. Dönitz took advantage of the lack of air coverage in the mid-Atlantic by deploying the bulk of his submarine fleet into the Black Pit where they were out of aircraft range.[23] Dönitz noted in 1942: "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."[24]

Dönitz directed the U-boat campaign primarily against shipping headed to Britain to impact British war industry and threaten Operation BOLERO. 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 domestic morale problems. Just as sensitive was the morale of the already-overburdened merchant marine. If shipping losses in the Black Pit were not curtailed, the Allies would have faced the complete collapse of the morale of the crews of the ships that supplied British industries.[25] More aircraft were needed to close the air gap. Dönitz understood this, and he noted in September 1942 that he was "gravely concerned" that the Allies would soon supply additional aircraft to limit the free movement of his U-boats on the surface in this area.[26] Aircraft carriers were not available for convoy operations until April 1943,[27] leaving the responsibility for closing the air gap to RAF Coastal Command.

The problem was not simply in the *number* of aircraft needed to close the air gap but also the *type*. Coastal Command required *very*-long-range (VLR), ground-based airplanes of the four-engined "heavies" type like the British Short Stirling and Avro Lancaster and, especially, the American Consolidated B-24 Liberator. The dilemma was that these aircraft were also desired by Bomber Command for its strategic-bombing campaign against distant targets in Occupied Europe.[28]

On 2 June 1941, Coastal Command took delivery of a squadron of Liberator Mark I aircraft. Amalgamated into 120 Squadron RAF, these aircraft were modified to extend their range to VLR standards so they could watch convoys in the middle of the Black Pit. These modifications consisted of removing equipment not strictly necessary for maritime patrol work and adding additional fuel tanks. Armed with eight depth charges, these aircraft could provide protection from 700 to 1,000 miles [1,127 to 1,609 km] out from base and still spend at least one-third of their time in the vicinity of a convoy.[29]

Owing to the number of modifications that were required 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 quickly demonstrated their effectiveness, making their first attack on a U-boat in October.[30] Nonetheless, by February 1942, 120 Squadron was wasting away due to a lack of replacements. Only one additional Liberator aircraft was put into operation with the squadron by this time, bringing the total to 10. Since there was no promise of replacements, it was only a matter of time before wear and tear attrited the remaining Liberators.[31] Replacing the Liberators with other aircraft in Coastal Command's arsenal was impracticable, as none had the necessary operational range: Catalina (600 miles [966 km]), Sunderland (440 miles [708 km]), Wellington (340 miles [547 km]), Whitley (340 miles [547 km]), and Hudson (250 miles [402 km]).[32] Liberators were vital to Coastal Command's success in protecting convoys in the Black Pit; Joubert and his backers in the Admiralty set about securing as many as possible.

In addition to the opposition within Britain to securing more Liberators, Coastal Command and the Admiralty had to contend with intricacies of coalition warfare. Historian John Campbell noted that the United States Army Air Forces (USAAF), like Bomber Command, adhered to the doctrine of strategic bombing and believed in daylight precision bombing and the efficacy of the "knock-out blow." As a result, the USAAF "had a huge doctrinal and industrial investment in both the B-17 and B-24, the mainstays of their Victory Program," and were opposed to the idea of the RAF utilizing American heavy bombers in any role other than strategic bombing.[33] In March 1942, Air Chief Marshal Sir Charles Portal, Chief of the Air Staff, warned Churchill of "serious trouble with the Americans about our using their best Heavy bombers for reconnaissance over the sea."[34] If the RAF decided to allocate future deliveries of Liberators to Coastal Command, Portal noted, "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."[35] 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 to secure more Liberators to close the air gap.

The "Battle of the Air" heats up

> *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.*[36]
>
> – Admiral W. J. Whitworth, Second Sea Lord

In February 1942, the Admiralty, concerned with the poor state of Coastal Command, formally requested that the War Cabinet Committee make good on shortfalls in deliveries of long-range aircraft before allocating resources to the bomber offensive. Specifically, A. V. Alexander, the First Lord of the Admiralty, wanted the Air Ministry to transfer nine squadrons of Liberators and Flying Fortresses from Bomber Command to Coastal Command. The shipping situation at the time was considered so bad that Coastal Command must be strengthened—at the expense of Bomber Command if necessary.[37] The Air Staff refused, arguing that "the bomber force is always available to be concentrated on the most effective and decisive objects in fulfillment 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."[38] Although American long-range aircraft were not due to be delivered to Coastal Command until June, Joubert would simply have to make do with what he had until then.

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 direct appeals to Secretary of State for Air, Sir Archibald Sinclair, during March.[39] The Air Staff continually rebuffed these, and the reasoning behind the refusals was all too familiar. In the words of the Secretary of State for Air, 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.[40] [emphasis added]

As Portal explained to Churchill, to divert "heavies" to Coastal Command would "most seriously affect our hitting power" since such aircraft were the only ones capable of carrying large loads of bombs and striking at distant targets such as Berlin, Tripoli and the Romanian oil fields at Ploesti.[41]

Joubert and the Admiralty continued to press, and on 1 April, the War Cabinet Defence Committee reached a compromise: 8 of the 22 Liberators earmarked for the RAF would go to Coastal Command. This was a minor victory for Joubert and the Admiralty. Sufficient aircraft were not provided to form the nucleus of a new VLR squadron, but the worn out aircraft in No. 120 Squadron could be replaced.[42] Coastal Command was still short of the VLR aircraft it needed to eliminate the Black Pit.

By the spring of 1942, the Navy's pressure on Joubert for more VLR aircraft put him in a precarious position, as he was "kicked by the Admiralty for not asking enough and blamed by the Air Ministry for asking impossibilities."[43] In an effort to take some of the pressure off Joubert, First Lord of the Admiralty Alexander asked Churchill (a former First Lord himself) for Bomber Command to loan two squadrons of Lancasters, Liberators, Stirlings or Warwicks for use in operations to close the air gap. Emphasizing that U-boat captains would not be expecting air coverage in this area and would thus remain on the surface exposed to air attack, Alexander stressed that such an allocation of aircraft could strike a heavy blow to U-boats.[44] Since such a transfer would affect Bomber Command directly, Churchill consulted Harris, who argued that he needed these aircraft and their experienced crews for the strategic bombing campaign.[45] Armed with Harris' opinion, Churchill refused Alexander's request, explaining that "I cannot further deplete Bomber Command."[46] Once again, Coastal Command would simply have to make do until deliveries of new aircraft arrived in eight months.

In June, Coastal Command and the Admiralty tried again, but this time it was Lord Cherwell who stood in their way. Desiring to avoid any depletion of Bomber Command's resources, Cherwell accused Coastal Command of inefficient management and maintenance. He suggested to Churchill that the solution to Coastal Command's problems was not greater numbers of certain types of aircraft but an increase in the number of sorties of aircraft that it already possessed. Portal concurred, and this official opinion from the Chief of the Air Staff convinced Churchill. Therefore, when Admiral Pound forwarded a proposal at the 16 June Chiefs of Staff Committee to increase Coastal Command's VLR forces, he was again thwarted.[47]

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.[48] In response, Coastal Command began a "Planned Flying and Maintenance" programme designed to achieve greater efficiencies and increased sorties.[49] Although the programme helped Coastal Command get 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 Liberators to Coastal Command began to increase. In July, it received 5; 12 in August; and 15 more in September. The problem was that they were

Liberator Mark IIIA aircraft, the standard type then in production in the United States, but which lacked the range of the modified VLR Liberator Mark I aircraft in 120 Squadron. Although Coastal Command could have modified these aircraft to VLR standard (2,400 mile [3,862 km] range), they instead modified them to general-reconnaissance standards (1,700 mile [2,736 km] range) and deployed them in the Bay of Biscay Offensive.[50]

Beginning in early 1942, the Bay of Biscay Offensive was the Coastal Command air campaign to strike the enemy U-boat fleet where they were thought to be most concentrated. There was an area of water about 300 by 120 miles [483 by 193 km] in the Bay of Biscay through which U-boats based in France had to pass while transiting to and from their patrol areas. Coastal Command and the Admiralty were "absolutely certain" this was where U-boats would be "found and killed."[51] Coastal Command's efforts in this endeavour were predicated on the RAF's focus on the offensive spirit. In endorsing the Bay Offensive, Joubert, the head of Coastal Command, stressed that "offensive action against submarines is much more valuable than the passive defence which is afforded by the close escort of convoys."[52] Believing U-boat crew morale would collapse under the strain of unremitting air attacks, Joubert dedicated significant Coastal Command resources in the Bay of Biscay in 1942.

During the first half of 1942, these operations did not hamper Coastal Command's convoy protection efforts because the aircraft deployed in the Bay Offensive were largely of medium-range and not suitable for mid-ocean escort missions. The Coastal Command decision, endorsed by the Admiralty, in the summer of 1942 to utilize some of its newly acquired Liberators in the Bay Offensive was a crucial mistake, as these aircraft were more urgently needed to help close the air gap. Historians W. A. B. Douglas and David Syrett have noted that the Admiralty and Coastal Command were "mesmerized by the possibility of destroying or at least seriously weakening the U-boat fleet" and "were in fact weakening the air forces they needed to achieve their real aim, the safe passage of convoys."[53] It was, thus, not only the offensive mindset of Bomber Command and the Air Ministry supported by Churchill that deprived Coastal Command of the VLR aircraft that it needed to close the air gap; the Admiralty and Coastal Command's faith in the effectiveness of the Bay Offensive also played an important part.

120 Squadron RAF

The efforts of 120 Squadron in the Black Pit during the summer of 1942 fully demonstrated the value of VLR Liberators in the Battle of the Atlantic.[54] By the second week of August, the squadron had sighted seven U-boats and made three attacks. Although they were not lethal,[55] the attacks were effective in that they forced the U-boats to submerge and 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; no ships were sunk while the aircraft was present.[56] So effective was this particular operation that Dönitz was "gravely concerned" that the Allies would soon close the air gap by implementing complete air coverage for convoys along the entire North Atlantic Run. This would severely limit the mobility of U-boats and render wolf-pack tactics ineffective.[57] Fortunately for Dönitz and his fleet, it would be another seven months before the Allies realized 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 were no fewer than 20 U-boats operating simultaneously in the North Atlantic. By October, U-boat numbers had increased to allow Dönitz to permanently operate two large wolf packs in the Black Pit, one on its eastern edge and the other on the western.[58] Shipping losses rose steadily, and the Admiralty and Coastal Command once again clamoured for more VLR aircraft to be allocated for convoy defence. Nevertheless, in what John Buckley has called a "vainglorious attempt to prove their pre-war strategies correct," the supporters of the strategic-bombing campaign refused to budge.[59] Harris feared further transfers of Bomber Command aircraft "to bolster further the already over-swollen establishments of the purely defensive Coastal Command" and put increasing pressure on the Prime Minister to strengthen the RAF's offensive bomber fleet.[60] 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*.[61] [emphasis added]

For the time being, the Black Pit problem would continue to take a back seat to the strategic bombing campaign.

Re-assessing air-power choices

Shipping losses in October 1942 caused Churchill to re-assess his air-power priorities. U-boats, largely operating in the Black Pit, had sunk 94 ships totalling an incredible 619,417 tons [561,926 tonnes]. Realizing that continued monthly losses at this rate would seriously endanger British imports and the BOLERO buildup, Churchill convened the Cabinet Anti-U-boat Warfare Committee in early November. Chaired by the Prime Minister, the new committee consisted of those "who were responsible for the conduct of the war at sea."[62] This group included Joubert, Pound, Portal, Alexander, Secretary of State for Air Archibald Sinclair, 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 was to discover "how to bring about first quick relief then achieve a solution" to the U-boat threat.[63] Most importantly, because the Anti-U-boat Warfare Committee was a Cabinet-level body, its decisions were final and binding.[64]

> At the committee's first meeting on 4 November, members immediately tackled the Black Pit problem. 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 of 2,500 miles [4,023 km] would be needed to cover this area.[65]

Joubert suggested that he could close the air gap with 40 VLR Liberators. This number, he noted, was a very small percentage of the total Allied four-engined bomber force, and as Milner has pointed out, it was "the same number of Liberators lost from the first Ploesti [bombing] raid alone."[66]

At the time of the inaugural Anti-U-boat Warfare Committee meeting, a most disastrous battle was raging around convoy SC 107 in the Black Pit. The engagement was a crucial example of the need to close the air gap and the effectiveness of VLR aircraft in the defence of convoys. Consisting of 44 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 15 ships comprising a total of 87,818 tons [79,667 tonnes].[67] It was only on 5 November that 120 Squadron was able to provide coverage for the convoy 650 miles [1,046 km] southeast of Iceland. The VLR Liberators spotted four U-boats and attacked two, causing Dönitz to break off the wolf-pack siege.[68]

Engagements like this convinced the Cabinet Anti-U-boat Warfare Committee to secure more VLR Liberators to close the air gap. Unfortunately, prospects for Liberator deliveries from the United States to Coastal Command were not promising: only four aircraft were expected in November; seven in December; and eight in January. It was with these small numbers—less than half of the total Joubert was calling for—that Coastal Command was to attempt to both equip new squadrons and replace wastage in both the existing VLR and Bay Offensive Liberator squadrons.[69]

Since the priority was now to close the air gap, the Anti-U-boat Warfare Committee decided at its second meeting on 12 November to remove the 33 Liberators from the Bay Offensive, convert them to VLR standards and allocate them to 120 Squadron and a new VLR unit, 86 Squadron.[70] At their third meeting on 18 November, the committee finally sanctioned a change in strategy: the defence of trade was rated above the bomber offensive and the Bay Offensive in the list of priorities.[71]

This decision to give greater focus on the defensive 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 greatly overestimated the Nazis' economic vulnerability.[72] Germany, on the other hand, after being forced to abandon their planned invasion of Britain in 1940, concentrated on a U-boat assault on shipping to collapse the British economy. As Correlli Barnett 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."[73] The British were losing this race by the autumn of 1942.

From 1939 to mid-1943, Dönitz's U-boats were the most effective at waging economic warfare.[74] Coastal Command could not allocate the necessary VLR aircraft to counter the U-boat assault because the Air Ministry failed to realize that "the very strategic bombing campaign upon which airmen staked their reputations, and the outcome of the Allied war effort, was dependant upon securing the Atlantic … ."[75] Simply put, Bomber Command relied on the convoys to provide them with the capability to carry out their offensive. Unless Coastal Command received the VLR aircraft it needed to protect convoys in the air gap, there was a very real possibility that U-boat attacks would sink enough ships, especially oil tankers, to ground Bomber Command aircraft for lack of aviation fuel. The result would have been a severe curtailment of the strategic-bombing campaign against Germany, and more importantly, there would be little chance of the Allies launching a ground offensive onto mainland Europe from Britain. The German U-boat offensive would effectively cut Britain off from its supplies.[76] It is 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 air-power resources for the protection of trade.

More challenges with getting Liberators to close the air gap

Although the acquisition of VLR aircraft became the RAF's first priority, it still did not help the immediate situation in the Black Pit. To verbally commit VLR Liberators to 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 the Scottish Aviation Company at Prestwick to modify the 33 Coastal Command Liberators engaged in the Bay Offensive to VLR standards.[77] The programme for the delivery of the modified Liberators was: one in November; nine in December; seven in January; seven in February; seven in March; and two in April.[78] This projection was overly optimistic.

The modification of Liberators did not go as quickly as projected. Conversion to VLR standards required the following: fitting two 335 gallon [1,268 litre] tanks in the bomb bay; removing 2,000 pounds [907 kilograms] of equipment (upper turret, tunnel gun, mid-side gun and ammunition); and fitting a long-range 10 centimetre radar. The new VLR Liberators slowly entered operations.[79] That was not comforting news for those who continued to sail in convoys through the Black Pit. With 119 ships sunk for 729,160 tons [661,483 tonnes], November's shipping losses were even higher than the previous month's. A continuation of these losses seriously threatened Britain's war industries and the morale of the merchant marine. As a basis of comparison, 87 U-boats were destroyed in 1942 while 240 new vessels were commissioned.[80]

Allied leaders met at Casablanca in January 1943 and faced the possibility that failure to secure the main trade routes would seriously endanger any attempt to launch a second front on mainland Europe. 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."[81] The word "remain" in this statement was a curious one, given the neglect for Coastal Command's VLR capabilities throughout 1942. Moreover, as RAF official 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 … ."[82] Combined Staff planners concluded 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 increased the monthly allocation to 15 for January, 20 for February and 25 for March.[83] The Combined Chiefs also 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 United States (US) would take two months and that those in Britain would take one more month, the Combined Chiefs predicted that 40 VLR Liberators should be available to Coastal Command by April.[84] Once again, such predictions were overly optimistic.

When Air Chief Marshal Sir John Slessor replaced Joubert as AOC-in-C on 5 February 1943, Coastal Command still had only one VLR squadron (a daily average of about 14 aircraft) available for convoy support in the Black Pit.[85] Delays at Prestwick meant that only 2 of the promised 33 modified Liberators had been put into operation. These two aircraft had taken 53 and 25 days, respectively, to modify to VLR standards. One reason for the delay was poor workmanship on the tail turrets at the Liberator factory in Fort Worth, Texas.[86] Another was the fact that Scottish Aviation had "a very full programme" of work. In summarizing the situation, an RAF official noted:

> In view of conflicting 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.[87]

Coastal Command would once again have to make do with what it had.

By the beginning of March 1943, Dönitz, had over 160 U-boats available for operations in the Atlantic and had inflicted the heaviest losses to date on Allied shipping.[88] In the first 10 days of the month, the Allies lost 41 ships, with an additional 56 ships in the next 10 days, combining for more than half a million tons [453,592 tonnes] of shipping. These figures led the Admiralty to seriously question the entire convoy system and put an even greater strain on Britain's import programmes. As Milner notes, the British, unable to withstand such losses, "threatened to withdraw all their commitments to BOLERO in order to concentrate on their own imports." Only President Franklin Roosevelt's personal intervention to redirect American shipping to Britain prevented such an occurrence.[89]

While the convoy battles were raging, senior naval and air force officers from Britain, Canada and the US met in Washington at the Atlantic Convoy Conference in March to discuss the current shipping problem. One of several recommendations was to allocate more VLR to air forces on *both sides* of the Atlantic.[90] This conclusion did not, however, help the immediate VLR situation in the Black Pit. Despite the Cabinet Anti-U-boat Warfare Committee's 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.[91] This number was not enough to close the air gap. So devastating were the shipping losses that British official naval historian Stephen Roskill commented:

> 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.[92]

Two squadrons was a small number of aircraft during the Second World War. What made it even more remarkable was the fact that the Liberator was the most produced American military aircraft in history with 19,203 built.[93] It was incredible that the tiny number of Liberators required by Coastal Command could not be delivered when they were most needed.

Nonetheless, some good did come out of the situation of early spring 1943. The Allies were forced to make some long-needed changes to their effort to protect convoys. Even after the Atlantic Convoy Conference, the USAAF remained unconvinced that convoy protection was the best way to use its treasured "heavies."[94] When the sinking totals for March caught the attention of the White House, however, President Roosevelt feared a delay or collapse of Operation BOLERO and acted quickly. He immediately began to make inquiries about the number of VLR aircraft employed on convoy protection operations. When the President discovered how low the numbers of aircraft operating in the air gap (including zero from the Western Atlantic) and learned of USAAF reluctance to surrender its Liberators, Roosevelt threatened to intervene directly if these aircraft were not allocated for convoy defence.[95]

Professor P. M. S. Blackett, the brilliant head of Coastal Command's Operational Research Section, completed a number of studies that helped sway VLR detractors. These were based on intricate yet logical mathematical and scientific studies which clearly demonstrated that VLR aircraft operating near a convoy saved large numbers of ships.[96] Blackett's convoy defence studies also appealed to the advocates of the offensive focus of sinking U-boats by proving that the 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 Black Pit 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 naval and air escorts could have the greatest success at sinking enemy submarines. In other words, the convoys acted as "bait" to draw the U-boats in where antisubmarine forces could pounce.[97]

Blackett's reports were decisive in convincing the Chief of the Air Staff to allocate the necessary Liberator aircraft to Coastal Command. Portal now believed in "the correctness of the policy of attacking U-boats around threatened convoys rather than in other areas" and decided to convert all 90 Liberators due to be delivered to the RAF for VLR duties.[98] The studies also impacted the Combined Chiefs of Staff who, on 29 March, gave first priority to the modernization of Liberators to VLR standards and ordered that "the greatest practicable number of existing VLR ASV [aircraft to surface vessel] equipped aircraft … now assigned to other duties, be diverted to anti-submarine operations in the Atlantic."[99] Deliveries of Liberators to Britain sped up. This not only proved beneficial to Coastal Command's efforts in the mid-Atlantic but also permitted the RAF to allocate 15 of the newly modified VLR aircraft to the Royal Canadian Air Force (RCAF) in Newfoundland, which began operating them in the Black Pit in April.[100]

The climax of the Battle of the Atlantic

During April 1943, the Allies doubled their efforts to defeat the U-boats in the air gap by creating naval escort support groups, three of which included an escort aircraft carrier. These groups were designed to come 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 that allowed them to read U-boat radio transmissions and plot their location. Although the number of U-boats in the North Atlantic did not permit the Allies to reroute 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.[101] It was these measures that led to the crucial convoy battles in the Black Pit in May 1943. During these engagements, combined Allied air and sea forces struck a devastating blow to the Germans by destroying 41 U-boats. Unable to sustain such losses, on 17 May, Dönitz 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."[102] The U-boats withdrew from mid-ocean operations against Allied convoys.

During the critical convoy battles of May 1943, a total of 41 VLR Liberators operated in the Black Pit.[103] This was almost exactly the number (40) that Joubert had said that he needed to close the air gap 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 Royal Navy officer on the staff of Coastal Command, noted, this was indeed "truly another case of the few being owed so much by the many."[104]

In September 1943, Dönitz tried once again to launch wolf-pack attacks against convoys in the mid-Atlantic by arming his U-boats with new weapons such as 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. Dönitz was again forced to withdraw his U-boats from pack operations against convoys in the mid-Atlantic, only this time it was final.[105] The air gap was closed for good—there was no longer a Black Pit.

Conclusion

The elimination of the mid-Atlantic Black Pit was essential in the final defeat of the U-boats in May and September 1943. It is striking that the British had the resources to close the air gap in 1942 but failed to do so due to poor air-power choices. This was a clear failure of Britain's military and political

leadership, who wrangled over the allocation of heavy bomber aircraft and debated whether an offensive or defensive strategy should dictate the priority of these resources. The Admiralty and RAF Coastal Command were most disadvantaged by this debate during the first half of the war, as their more influential colleagues in the Air Ministry, Bomber Command and the Prime Minister's Office retained the priority for strategic bombing. The sad truth is that the Admiralty and Coastal Command were not asking for a complete reorientation of the long-range bomber aircraft resources away from Bomber Command's offensive operations—just the reallocation of a small portion for maritime defence. It was remarkable that the strategic-bombing advocates stayed true to their offensive priorities and were unwilling to compromise on the allocation of Liberator aircraft until it was almost too late.

The overt 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 British forces expelled from the Continent, the Germans launched a massive submarine assault against vulnerable British trade. Yet instead of undertaking a defensive posture to protect trade and ensure they would not *lose* the war, the British gambled on an offensive bombing campaign that, although important for British morale and coalition politics to be seen to be striking back at the enemy,[106] could not *win* the war independently. By maintaining this offensive focus, the British continued to neglect their defensive forces, and it took a near-disaster in the autumn of 1942 for British leadership to re-evaluate and properly allocate their air-power resources to close the air gap.

Victory over the U-boats finally came in May and September 1943 with the closure of the air gap, but it came at a great cost in lives, resources and time. Writing shortly after the war ended, Admiral Karl Dönitz identified the "enemy air force" as the "greatest problem" for the U-boats, and he marvelled at the fact that it took so long for the Allies to recognize this fact and deploy aircraft as the most "effective means against the U-boats."[107] The effort to eliminate the mid-Atlantic Black Pit is a classic example of strategic priorities and air-power choices, and it was one the British learned the hard way.

Notes

1. Revised version of Richard Goette, "Britain and the Delay in Closing the Mid-Atlantic Air Gap," *The Northern Mariner* 15, no. 4 (October 2005).

2. See, for example, J. Gordon Mumford, *The Air Gap … and Beyond* (Burnstown, ON: General Store Publishing House, 2000).

3. 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 (NAUK), London, Admiralty File (ADM) 205/23.

4. Marc Milner, "The Battle of the Atlantic," in *Decisive Campaigns of the Second World War*, ed. John Gooch (London: Frank Cass Publishing, 1990), 59. The best works that discuss the air-gap issue are a book by John Buckley and an article by David Syrett and W. A. B. Douglas. John Buckley, *The RAF and Trade Defence, 1919–1945: Constant Endeavour* (Keele: Ryburn Publishing, Keele University Press, 1995), Chapter 5 (especially 132–37); and 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, W. A. B. Douglas Fonds, Directorate of History and Heritage (DHH), Box 69, file 10 9-6-87, 11–12. The original version of this article in German is David Syrett and W. A. B. Douglas, "Die Wende in der Schlacht im Atlantik: Die Schließung des 'Grönland-Luftlochs,' 1942–1943," *Marine-Rundschau*, January/February 1986, 83, Jargang, Heft 1, 2-11 und März/April 1986, 83. Jahrgang, Heft 2, 70–73.

5. The air-gap situation was also problematic for RCAF and USAAF 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*, vol. 2 (Toronto: University of Toronto Press and the Department of National Defence, 1986), Chapters 14 and 15.

6. John Terraine, *Business in Great Waters: The U-Boat Wars, 1916–1945* (London: Leo Cooper Ltd., 1989), 366; and Michael Howard, *Grand Strategy*, vol. 4, *August 1942–September 1943* (London: Her Majesty's Stationery Office [HMSO], 1972), 24.

7. "The fear of being broken up and parceled out between the Army and Navy," Redford notes further, "together with the need for institutional security, was a powerful spur for the

RAF to hold on to the promises of victory through strategic bombing." Duncan Redford, "Inter- and Intra-Service Rivalries in the Battle of the Atlantic," *Journal of Strategic Studies* 32, no. 6 (December 2009): 901, 919–21 (quotation on 920). See also, Buckley, *The RAF and Trade Defence*, 115, 118; Christopher M. Bell, *Churchill and Sea Power* (Oxford: University of Oxford Press, 2013), 259; and S. W. Roskill, *Churchill and the Admirals* (London: Collins, 1977), 133. Bomber Command's strategic-bombing strategy and doctrine centred on the idea of a "knock-out" blow that had been widely canvassed in the RAF during the interwar era. Simply put, it entailed a large bombing campaign that would destroy the enemy's industry, denying them 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. Philip S. Meilinger, "Trenchard and 'Morale Bombing': The Evolution of Royal Air Force Doctrine Before World War II," *Journal of Military History* 60 (April 1996): 243–70; Allan D. English, "The RAF Staff College and the Evolution of British Strategic Bombing Policy, 1922–1929," *Journal of Strategic Studies* 16, no. 3 (September 1993): 408–31; and Scot Robertson, *The Development of RAF Strategic Bombing Doctrine, 1919–1939* (Westport, CT: Praeger, 1995).

8. 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.

9. See, for example, Chief of the Air Staff (CAS), Air Chief Marshal Sir Charles Portal, to AOC-in-C, Coastal Command, Air Marshal Sir Phillip Joubert de la Ferté, 11 June 1942, DHH 87/89, Portal Papers (extracts).

10. Brian P. Farrell, *The Basis and Making of British Grand Strategy, 1940–1943: Was There a Plan?* (Queenston: The Edwin Mellen Press, 1998), 117.

11. Buckley, *The RAF and Trade Defence*, 115–16; and Syrett and Douglas, "North Atlantic Triangle," 8.

12. This was his second time as AOC-in-C of Coastal Command; Joubert had held this position in 1936–37.

13. Terraine, *Business in Great Waters*, 365, 367; and Buckley, *The RAF and Trade Defence*, 125–26.

14. Air Chief Marshal Sir P. B. Joubert de la Ferté, *Birds and Fishes: The Story of Coastal Command* (London: Huchinson, 1960), 150.

15. Farrell, *Basis and Making of British Grand Strategy*, Chapter 4 and 367–68; 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*, 24–25; Redford, "Inter- and Intra-Service Rivalries," 914–15, 925; and Bell, *Churchill and Sea Power*, 255, 260, 265.

16. Marshal of the R.A.F. Sir Arthur Harris, *Bomber Offensive* (New York: The Macmillan Company, 1947), 25.

17. Harris Memorandum, 28 June 1942, quoted in Bell, *Churchill and Sea Power*, 263.

18. Harris, *Bomber Offensive*, 57–58; and John Terraine, *The Right of Line: The Royal Air Force in the European War, 1939–1945* (Toronto: Hodder and Stoughton, 1985), 426.

19. Howard, *Grand Strategy*, 20.

20. Charles Webster and Noble Franklin, *The Strategic Air Offensive Against Germany, 1939–1945,* vol. 1 (London: HMSO, 1961), 330. On Cherwell's influence on Churchill regarding strategic bombing see Bell, *Churchill and Sea Power*, 261.

21. *Befehlshaber der Unterseeboote War Diary* [herafter *BdU War Diary*], translation, 3 September 1942, DHH 79/446.

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

23. Grand Admiral Karl Dönitz, *Memoirs: Ten Years and Twenty Days*, trans. R. H. Stevens (New York: Da Capo Press, 1997), 234.

24. Ibid., 242.

25. Douglas, *Creation of a National Air Force*, 539; and Marc Milner, *North Atlantic Run: The Royal Canadian Navy and the Battle for the Convoys* (Toronto: University of Toronto Press, 1986), 186.

26. *BdU War Diary*, 3 September 1942.

27. Meeting of the British War Cabinet, 29 October 1942, NAUK, Cabinet (CAB) 65/28. See also, Syrett and Douglas, "North Atlantic Triangle," 4–5; and *The Development of British Naval Aviation 1919–1945*, vol. 2 (UK: Admiralty Historical Section, 1954), 105, 113–28.

28. Buckley, *The RAF and Trade Defence*, 133; and Farrell, *Basis and Making of British Grand Strategy*, 376.

29. Wing Commander C. G. Jefford, *RAF Squadrons: A Comprehensive Record of the Movement and Equipment of all RAF Squadrons and their Antecedents since 1912* (Shrewsbury, UK: Airlife Publishing Ltd., 1988), 58; Denis Richards, *The Royal Air Force*, vol. 1, *The Fight at Odds* (London: HMSO, 1974), 348; Captain D. V. Peyton-Ward, *The RAF in the Maritime War*, vol. 2 (RAF Air Historical Branch (AHB) Narrative, 1947), 304, NAUK, AIR 41/47 (copy available at DHH, file 79/599); and Brereton Greenhous et al., *The Crucible of War, 1939–1945: The Official History of the Royal Canadian Air Force*, vol. 3 (Toronto: University of Toronto Press in cooperation with the Department of National Defence and the Canadian Government Publishing Centre, Supply and Services Canada, 1994), 379–80. One VLR Liberator sortie could last up to 14 hours.

30. 120 Squadron Operations Record Book, NAUK, AIR 27/911; and 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.

31. 24th and 30th Meetings of the Battle of the Atlantic Committee, 11 November 1941 and 10 February 1942, respectively, NAUK, ADM 205/23; and Captain D. V. Peyton-Ward, *The RAF in the Maritime War*, vol. 3 (RAF AHB), 10, NAUK, AIR 41/47.

32. Greenhous et al., *Crucible of War*, 380–81; Peyton-Ward, *RAF in the Maritime War,* vol. 3; and Milner, "The Battle of the Atlantic," 59.

33. John. P. Campbell, "Baptism of Fire: The RAF and the 'Flying Fortress,' 1941," *Airpower History* 45, no. 2 (Summer 1998): 48. 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 *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger (Maxwell, Alabama: Air University Press, 2001), 183–239.

34. Portal to Churchill, 29 March 1942, NAUK, Prime Minister's Office (PREM) 3/97/1.

35. Portal to Pound, 5 May 1941, NAUK, ADM 205/8. A huge debate raged in the US 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 received a great portion of B-24 Liberator production (400 by one count), Admiral E. J. King, the Commander-in-Chief of the United States Navy, preferred deploying them in the Pacific. RAF Delegation (RAFDEL) Washington to Air Ministry, 24 March 1943, NAUK, AIR 8/1399; 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; and Roskill, *Churchill and the Admirals*, 135.

36. Quoted in Roskill, *Churchill and the Admirals*, 139.

37. 30th meeting of the Battle of the Atlantic Committee, 10 February 1942, NAUK, ADM 205/23; 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, NAUK, PREM 3/97/1; and Peyton-Ward, *RAF in the Maritime War*, vol. 3, 10.

38. Quoted in Buckley, *The RAF and Trade Defence*, 132.

39. Pound Memorandum, "Air Requirements for the Successful Prosecution of the War at Sea," 5 March 1942, NAUK, AIR 19/243.

40. Memoranda by the Secretary of State for Air, "Requirements in Long-Range General Reconnaissance Aircraft," 8 March 1942, NAUK, PREM 3/97/1.

41. Portal to Churchill, 29 March 1942 and War Cabinet Chiefs of Staff Committee Meeting, 27 March 1942, NAUK, PREM 3/97/1.

42. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 11.

43. Captain S. W. Roskill, *The War at Sea, 1939–1945*, vol. 2 (London: HMSO, 1954), 82.

44. Alexander to Churchill, 1 May and 10 May 1942, NAUK, PREM 3/97/1.

45. Harris to Churchill, 10 May 1942, NAUK, PREM 3/97/1.

46. Minute by Churchill on The First Lord of the Admiralty's memo, 10 May 1942, NAUK, PREM 3/97/1.

47. Cherwell to Churchill, 4 June 1942, NAUK, AIR 19/243; Portal to Churchill, 16 June and 5 July 1942, NAUK, PREM 3/97/1; "The Bombing of Germany," Meeting of the Chiefs of Staff 16 June 1942, NAUK, CAB 79/21; and Buckley, *The RAF and Trade Defence*, 134, 182–83.

48. Churchill to Alexander and Sinclair, 14 July 1942, NAUK, PREM 3/97/1; and Peyton-Ward, *RAF in the Maritime War*, vol. 3, 17–18.

49. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 17; and Hilary St. George Saunders, *The Royal Air Force*, vol. 3, *The Fight Is Won* (London: HMSO, 1954), 62.

50. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 519–20; and Syrett and Douglas, "North Atlantic Triangle," 9.

51. Slessor, *The Central Blue*, 512. See also Terraine, *Business in Great Waters*, 581–83.

52. Redford, "Inter- and Intra-Service Rivalries," 922; and Joubert to Chief of the Air Staff, Air Chief Marshal Sir Charles Portal, 20 September 1941, Portal Papers, DHH 87/89. As we shall see, this belief proved to be quite incorrect.

53. Syrett and Douglas, "North Atlantic Triangle," 12. On the limited effect of the Biscay Offensive see also Bell, *Churchill and Sea Power*, 282.

54. 120 Squadron's Liberators consisted of the following: six Mark I (2,400-mile [3,862-km] range) and four Mark II (two with 1,800-mile [2,897-km] range and two with 1,680-mile [2,704-km] range). By July 1942, they were operating out of Reykjavik, Iceland, in an attempt to provide better protection for convoys in the air gap. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 477; and Jefford, *RAF Squadrons*, 58.

55. 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 [7.6 metres] setting" came into service with Coastal Command. Price, *Aircraft Versus Submarine*, 95.

56. *Development of British Naval Aviation*, 110.

57. *BdU War Diary*, 3 September 1942; and Dönitz, *Memoirs*, 234–35.

58. Dönitz, *Memoirs*, 249, 272. Dönitz 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."

59. Buckley, *The RAF and Trade Defence*, 135

60. Ibid.; and Roskill, *Churchill and the Admirals*, 136.

61. Memorandum by the Minister of Defence (Churchill), 24 October 1942, NAUK, CAB 66/30.

62. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 35; Howard, *Grand Strategy*, 23; and Bell, *Churchill and Sea Power*, 270.

63. Farrell, *Basis and Making of British Grand Strategy*, 425.

64. Peyton-Ward, *RAF in the Maritime War*, vol. 3, 35 and 475; and Slessor, *The Central Blue*, 483–84.

65. Quoted in Buckley, *The RAF and Trade Defence*, 136.

66. Buckley, *The RAF and Trade Defence*, 136–37; and Milner, "The Battle of the Atlantic," 59.

67. Milner, *North Atlantic Run*, 180.

68. Syrett and 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* (Bourne End, UK: Aston Publications Limited, 1990), 127. For a complete account of the battle for SC 107, see W. A. B. Douglas and Jürgen Rohwer, "'The Most Thankless Task' Revisited: Convoys, Escorts, and Radio Intelligence in the Western Atlantic, 1941–43," in *The RCN in Retrospect, 1910–1968*, ed. James A. Boutilier (Vancouver: University of British Columbia Press, 1982), 207–21.

69. DONO [Department of Naval Operations] to DGO [Director General Operations], 31 October 1942, NAUK, AIR 20/4562; and Peyton-Ward, *RAF in the Maritime War,* vol. 3, 520.

70. Memo by the Secretary of State for Air, "Modification of Aircraft to Provide an Operational Range of 2,500 Miles [4,023 km]," 12 November 1942, NAUK, CAB 86/3; Memo, "Aircraft for the

Bay and for Convoy Escort in Mid-Atlantic," n.d. [early November 1942], NAUK, ADM 205/23; Greenhous et al., *Crucible of War*, 391; and Syrett and Douglas, "North Atlantic Triangle," 13.

71. Admiral Pound's comments were telling: "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." Pound Memo, "U-boat Warfare Meeting, 18th November, 1942," 19 November 1942, NAUK, ADM 204/14.

72. Farrell, *Basis and Making of British Grand Strategy*, 156; and Redford, "Inter- and Intra-Service Rivalries," 914–15.

73. Barnett, *Engage the Enemy More Closely*, 463. See also Farrell, *Basis and Making of British Grand Strategy*, 388–90; and Bell, *Churchill and Sea Power*, 265–66.

74. 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 per cent. Buckley, *The RAF and Trade Defence*, 135.

75. 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.

76. By mid-December 1942, there were only 300,000 tons [272,155 tonnes] of commercial bunker fuel left in Britain, and consumption was at about 130,000 tons [117,934 tonnes] a month. Price, *Aircraft Versus Submarine*, 112; Farrell, *Basis and Making of British Grand Strategy*, 487; and Buckley, *The RAF and Trade Defence*, 135. Redford, in particular, criticizes the Admiralty's failure to couch the defensive effort of the Battle of the Atlantic as a more "'offensive' campaign that would provide the springboard for all other offensives against occupied Europe." Redford, "Inter- and Intra-Service Rivalries," 922.

77. Headquarters (HQ) Coastal Command to Air Ministry, Kingsway, 27 November 1942, NAUK, AIR 20/3094; and Syrett and Douglas, "North Atlantic Triangle," 13.

78. Air Ministry to HQ Coastal Command, 30 November 1942, NAUK, AIR 20/3094.

79. Ibid.; D.O.R. [Director Operational Research] Memo, "Modification Work Carried out on Liberator Aircraft on Arrival in the United Kingdom," 9 March 1943, NAUK, AIR 8/1400; and Greenhous et al., *Crucible of War*, 391.

80. Dönitz, *Memoirs*, 295; and Peyton-Ward, *RAF in the Maritime War*, vol. 3, 30.

81. Terraine, *Business in Great Waters*, 515.

82. Denis Richards and Hilary St. George Saunders, *The Royal Air Force*, vol. 2, *The Fight Avails* (London: HMSO, 1954), 113.

83. Slessor, *The Central Blue*, 523; and Captain D. V. Peyton-Ward, *The RAF in the Maritime War*, vol. 4, (RAF AHB), 21–22, NAUK, AIR 41/47. These numbers were to increase to 35 in April, 40 in May and 45 per month thereafter. Notably, this 80 aircraft figure was twice the number Joubert had previously suggested he needed to close the air gap.

84. Peyton-Ward, *RAF in the Maritime War*, vol. 4, 21–22.

85. Ibid., 21; Slessor, *The Central Blue*, 465–66; and *Development of British Naval Aviation*, 114.

86. ADO(A) to DDOHC, 27 January 1943, NAUK, AIR 2/5298; and DGofS [Director General of Staff] to VCAS [Vice-Chief of the Air Staff], 7 February 1943, NAUK, AIR 20/3094. An RAF official noted that "we are having to carry out checks which amount virtually to the removal and reinstallation of each turret."

87. DGofS to VCAS, 7 February 1943, NAUK, AIR 20/3094.

88. Convoys ONS 166 and SC 122 lost 21 ships each during this month. Slessor, *The Central Blue*, 498; and Dönitz, *Memoirs*, 315, 341. Dönitz 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.

89. Milner, "The Battle of the Atlantic," 61–62; and Peyton-Ward, *RAF in the Maritime War*, vol. 4, 23–24.

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

91. Extracts of the 10th and 11th meetings of the Anti-U-boat Warfare Committee, 10 and 17 March 1943, NAUK, AIR 8/1398; and Peyton-Ward, *RAF in the Maritime War*, vol. 4, 22 and 27.

92. Roskill, *The War at Sea*, 371.

93. Terraine, *Business in Great Waters*, 539.

94. Air Ministry to Britman, RAFDEL Washington, 19 March and RAFDEL Washington to Air Ministry, 20 March 1943, NAUK, AIR 8/1398.

95. Roosevelt to Churchill, 20 March and Air Ministry to RAFDEL 30 March 1943, NAUK, AIR 8/1399; Buckley, *The RAF and Trade Defence*, 153–54; Farrell, *Basis and Making of British Grand Strategy*, 568; and Terraine, *Business in Great Waters*, 540.

96. Blackett Memo, "Value of Escort Vessels and Aircraft in Anti-Submarine Warfare," 11 January 1943, NAUK, CAB 86/3; and P. M. S. Blackett, *Studies of War* (New York: Hill and Wang, 1962), 188–95.

97. Blackett Memo, "Progress of Analysis of the Value of Escort Vessels and Aircraft in the Anti U-boat Campaign," 5 February 1943, NAUK, PREM 3/414/3; Roskill, *Churchill and the Admirals*, 231; and 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, see J. F. C. Fuller, *The Conduct of War, 1789–1961* (London: Eyre & Spottiswoode, 1961), 71–72.

98. Extract from 11th meeting of the Cabinet Anti-U-boat Warfare Committee, 24 March 1943, NAUK, CAB 86/4.

99. Extract from 13th meeting of the Cabinet Anti-U-boat Warfare Committee, 31 March 1943, NAUK, AIR 8/1399.

100. Five aircraft each were delivered in April, May and June. Portal to Breadner, 26 March 1943, NAUK, AIR 8/1399; and Douglas, *Creation of a National Air Force*, 551.

101. Peyton-Ward, *RAF in the Maritime War*, vol. 4, 27; and Syrett and Douglas, "North Atlantic Triangle," 31.

102. Dönitz, *Memoirs*, 338–41; Milner, "The Battle of the Atlantic," 61; Peyton-Ward, *RAF in the Maritime War*, vol. 4, 80; and Richards and Saunders, *The Royal Air Force*, vol. 2, 46.

103. Peyton-Ward, *RAF in the Maritime War*, vol. 4, 27. This total included 15 in 120 Squadron, 13 in 86 Squadron, 6 in 59 Squadron, plus a further 6 in the RCAF's No. 10 Squadron.

104. Ibid. This remark of course refers to Churchill's famous speech earlier in the war about the small number of pilots in RAF Fighter Command who were responsible for winning the Battle of Britain and staving off a German invasion.

105. "Analysis of U-boat Operations in the Vicinity of Convoys O.N.S. 18 and O.N. 202, 19th–24th September, 1943," NAUK, ADM 199/1491; Milner, "The Battle of the Atlantic," 61; and Dönitz, *Memoirs*, 415–16, 418–19.

106. Redford, "Inter- and Intra-Service Rivalries," 915, 925; and Bell, *Churchill and Sea Power*, 265.

107. Dönitz's reminiscences, reproduced in G. H. Bennett and R. Bennett, *Hitler's Admirals* (Annapolis: Naval Institute Press, 2004), 146.

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Chapter 4

Endurance: 120 Squadron, Royal Air Force, 1943

By Geoffrey Hayes

"In all the long history of sea warfare," S. W. Roskill wrote in 1956 of the Battle of the Atlantic, "there has been no parallel … whose field was thousands of square miles of ocean, and to which no limits in time or space could be set. In its intensity, and in the certainty that its outcome would decide the issue of the war, the battle may be compared to the Battle of Britain of 1940."[1] Above all, Roskill saw this engagement as "a battle between *men*, aided certainly by all the instruments and devices which science could provide, but still one that would be decided by the skill and endurance of men, and by the intensity of the moral purpose which inspired them."[2] [emphasis added]

The operations record books (ORBs) of 120 Squadron, Royal Air Force (RAF) remind us of Captain Roskill's words. There we find the names of the pilots, co-pilots, flight engineers, navigators and wireless operators / air gunners (WOs/AGs) who joined the squadron from the United Kingdom (UK) and across the British Commonwealth. This squadron played a remarkable role at the height of the great U-boat battles in 1943, when their crews commanded the only VLR (very long range) aircraft capable of reaching the mid-Atlantic air gap.

Yet no one has written a comprehensive history of 120 Squadron.[3] This brief overview of operations in 1943 reminds us of the many challenges these men overcame to help defeat the German U-boat fleet in the North Atlantic. It shows the impact of strategy, weather, changing tactics and technologies as well as the remarkable intensity of the battles. Above all, it shows the origins of 120 Squadron's motto: Endurance.

When Coastal Command was formed in 1936 as a reconnaissance force to help the Royal Navy locate the German fleet, available technology limited its capabilities. In 1939, Anson aircraft were supplied to general-reconnaissance squadrons and could fly no more than 644 kilometres (km) or 400 miles.[4] When France fell in June 1940, the ports in the Bay of Biscay provided the German U-boat fleet with a large area to prey on Allied shipping. By the time Winston Churchill proclaimed the beginning of the Battle of the Atlantic in March 1941, air power had started to suppress U-boat attacks and ensure the "safe and timely arrival" of the convoys that shaped Britain's lifeline.[5] Squadrons based in the UK had pushed the U-boats further into the Atlantic and beyond the range of most aircraft.

That was what made the B-24 Liberator so important. Its range (over 3,862 km or 2,400 miles in the VLR version), together with its size and manoeuvrability, made it a much admired antisubmarine weapon. The first prototype flew in December 1939. British crews preferred the Liberator over the cramped Blenheim, but it had its drawbacks. A narrow catwalk between the weapons racks above the bomb doors separated the flight deck from where the WOs/AGs worked in the rear of the aircraft. The crew crossed the catwalk with only a rope handrail for the passage; as one squadron veteran casually observed, "if the bomb-doors were opened … there was quite a draught with nothing between you and eternity if you lost your footing on the catwalk."[6]

The problem of allotting these aircraft to Coastal Command is well documented by others as well as by Richard Goette in this volume. In June 1941, three Liberator Mark I aircraft arrived at the RAF Coastal Command station at Nutts Corner, near Aldergrove, Northern Ireland, marking the start of wartime operations for the reconstituted 120 Squadron.[7] After a summer of training on a sparse airfield west of Belfast, the squadron went operational in September 1941. Its first flight over Ireland's Donegal Bay went badly off course.[8] Everything, from navigation to convoy protection to antisubmarine tactics, had to be learned from hard experience. Operational research (OR) teams attached to Coastal Command worked to figure out why, until June 1941, just one per cent of air attacks on U-boats had resulted in a sinking. The OR reports were wide-ranging and controversial. They concluded that the undersurfaces of maritime aircraft painted light blue or white lessened by 20 per cent the chance that a U-boat crew could spot an incoming aircraft. The OR boffins also concluded that depth charges were superior to an antisubmarine bomb, but only if fitted with the correct explosive (Torpex) and fuse. Even so, a depth charge had a lethal radius of just 13 metres or 42 feet. Timing and precision were crucial. A stick of depth charges had to be dropped within 30 seconds of a U-boat submerging to have a chance at a kill.[9]

The battle for convoy HG 76[10] in December 1941 confirmed the Liberator's potential to drive off and attack U-boats some 1,127 km (700 miles) out to sea. On this occasion, the Germans lost five U-boats and four aircraft against Allied losses of two merchant ships, a destroyer and the escort carrier His Majesty's Ship (HMS) AUDACITY.[11] Terry Bulloch, a native of Lisburn, Northern Ireland, had scored the squadron's first U-boat kill in October, and his crew's work above HG 76 put him on track to become the most decorated pilot in RAF Coastal Command.[12]

The shifting tactical battle became secondary when the American entry into the war swung the strategic advantage to the U-boats early in 1942. With no blackouts along the American eastern seaboard, nor any systematic American convoy system, merchant ships sailing from American and Caribbean ports became easy targets. A convoy system introduced in May combined with better air cover worked to slow the carnage in the western Atlantic. This prompted German Admiral Karl Dönitz, the Commander-in-Chief Submarines (Befehlshaber der Unterseeboote or BdU) to again dispatch his wolf packs deep into the North Atlantic. German naval codes remained unavailable to the Allies through much of 1942, so shipping losses in the mid-Atlantic again began to climb, reaching a wartime high of 136 ships in June.[13] Continued losses through the fall forced Churchill and his advisors to accept that the war to protect Atlantic shipping had to take at least temporary precedence over the air war against Germany.[14]

In the fall of 1942, the squadron (then part of 15 Group, Coastal Command) was divided between its home base at Ballykelly, Northern Ireland, and Reykjavik, Iceland, so that its aircraft could push further into the North Atlantic. Its members came from Northern Ireland, England, Scotland, Australia, New Zealand and Canada. They trained under Squadron Leader "Bull" Bulloch, whose first U-boat kill in October had earned him a Bar to his Distinguished Flying Cross (DFC). On 8 December, Bulloch's crew destroyed another U-Boat and attacked six others that were threatening convoy HX 217. Flying Officer Desmond Isted's crew also attacked six U-boats that day. Both Coastal Command and the Admiralty passed on their congratulations.[15]

The adversaries refocused their attention on the North Atlantic in 1943. Meeting in Casablanca in January, Churchill and Franklin Roosevelt made a commitment to win the Battle of the Atlantic. Later that month, Adolf Hitler appointed Dönitz to head the German navy. Dönitz immediately dispatched his largest U-boat concentrations against the Allied convoys.[16] So began a year-long struggle that pitted the weight of the German U-boat fleet against the merchant ships, their naval escorts and the small number of aircraft that could reach the mid-Atlantic air gap.

For the Allies, 1943 started badly. On 9 January, a fire broke out aboard Liberator B/120 as it lifted off from Reykjavik. Nine of the fifteen crewmen aboard died.[17] The bad weather that grounded aircraft through much of the month also kept the U-boat crews from finding the convoys; just three merchant ships were lost in the North Atlantic that month.[18]

Continued bad weather into February proved unlucky for two convoys that departed New York for Liverpool. HX 224 lost three ships to U-boat Group Haudegen just off the Grand Banks.[19] A survivor of one of the sunken ships revealed that another convoy was close behind. SC 118 had departed New York on 25 January with 63 ships, sailing in 14 columns at no more than 7.5 knots [13.9 kilometres per hour]. By 4 February, the convoy was beyond air cover from the eastern Atlantic and under escort from British and American destroyers, British and Free French corvettes and an American Coast Guard cutter. The escort group, B.2, had an early success on that day, sinking a U-boat that was shadowing the convoy. But the Germans claimed the *West Portal* on 5 February, a straggler that had fallen out of column.[20] With no radio-direction-finding equipment, the escort leadership and some of its ships had trouble locating the U-boats.[21]

On 6 February, four Liberators from 120 Squadron—two from Reykjavik and two from Aldergrove, Northern Ireland[22]—flew over 1,127 km [700 miles] to meet SC 118. That all four Liberators found the convoy that day was a remarkable bit of navigation in such a wide ocean. The crews worked closely with the naval escorts, sighting eight U-boats and making five attacks. Flight Sergeant John H. Frewen and his crew of six aboard W/120 were the busiest. They reached the convoy at 1000 hours after four hours in the air. Just before noon, Frewen's crew followed a bearing about 31 miles [50 km] southwest of the convoy's centre and caught a U-boat on the surface. They dropped six depth charges and then

surprised a second U-boat, straddling its hull with his remaining two depth charges. Frewen's crew had only cannon fire to attack a third U-boat four hours later. Reaching the aircraft's "prudent limit of endurance," the crew departed the convoy after seven hours.[23]

But SC 118 remained unlucky in the face of Force 4/5 winds, heavy seas and attacks from another six U-boats. Early on the morning of 7 February, U-402 commanded by Kapitänleutnant Siegfried von Forstner penetrated the escort screen. In three hours, his crew torpedoed the British freighter *Afrika*, the Norwegian tanker *Daghild*, the Greek freighter *Kalliopi*, the American tanker *Robert E. Hopkins*, the American cargo liner *Henry R. Mallory* and the rescue ship *Toward*. A collision sent another ship to the bottom. When Flying Officer John Moffatt and his crew flew out from Ballykelly on the afternoon of 7 February, an oil patch five miles [8 km] long was a sobering memorial to the previous night's losses.[24]

The beleaguered ships of SC 118 reached the eastern edge of normal air cover by 8 February, but more bad weather prevented five American Catalina flying boats from finding the convoy. From Iceland and Northern Ireland came two Liberator IIIs from 120 Squadron. FK/220 lifted off from Reykjavik at 1043 hours, with New Zealander Bryan Turnbull and his young Canadian co-pilot Allan Hayes at the helm. Close to the flight deck were flight engineer Gerry Storey and navigator Don Harborne. Both were British, as were WOs/AGs Ron Copperthwaite and G. "Mac" McDonald. WO/AG Noel Tingey was a New Zealander. Long hours in the air formed strong bonds, even if the prize of a U-boat sighting was then quite rare. At 1412 hours, however, they were lucky, breaking cloud directly above a U-boat. Turnbull dove in and released a single depth charge. Hayes' logbook recorded a common problem—that the other depth charges were "hung up" in the bomb bay. Turnbull's crew then spent five more hours searching for the U-boat to the rear of the convoy.[25] Turnbull's crew was likely disappointed after 13 hours in the air. They saw no evidence of a confirmed kill ("No results seen"), but they had forced the U-boat to switch to its electric motors and short-range batteries and to break contact. German records later showed that their attack had damaged U-135 and forced it into port for repairs later that month.[26] Aircraft had played a key role, but it was a costly battle. SC 118 lost 13 ships against three U-boats sunk and another two damaged.[27]

The motto of 120 Squadron, "Endurance," never better described its service than in March 1943. In that month, four eastbound convoys (SC 121, HX 228, SC 122 and HX 229) faced sustained attacks in mid-ocean. The latter two convoys lost 21 ships.[28] When measured by ships, tonnage sunk as well as lives lost, March stretched to the limits the merchant ships, their naval escorts and the still small number of VLR aircraft available to Coastal Command. In that month, 120 Squadron only had 16 operational Liberator Mk IIIs, just three more than in February. More Liberators came into service that month when 86 Squadron moved north to Aldergrove, Northern Ireland. All were needed.

On 8 March, four 120 Squadron aircraft flew out to meet SC 121, a convoy that had left New York on 23 February with 57 ships bound for Liverpool.[29] They were accompanied by Escort Group A.3, a collection of American, Canadian and British warships. Heavy weather scattered the convoy south of Greenland, but it managed to sail through the U-boat patrol lines of Groups Burggraf and Wildfang. But new lines formed. On the stormy night of 6–7 March, U-boats sunk two freighters. Six U-boats stayed in contact with the convoy.[30]

A break in the weather brought four aircraft out from Iceland on 8 March, but just one found the convoy. Flying Officer D. C. Fleming-Williams and his crew in R/120 first spotted a sinking merchant vessel and dropped emergency packs to men in two boats.[31] Three more squadron aircraft departed Aldergrove on 9 and 10 March, but only Captain H. J. Wilson's N/120 found the beleaguered convoy. His crew observed just 40 merchant vessels and 3 escorts; the rest were either sunk or had fallen out of formation. When U-boats broke contact on 11 March, SC 121 had lost 13 vessels with 270 crew dead. Not one U-boat was sunk.[32]

Convoy HX 228 fared better as it entered the air gap. Two U-boats (U-444 and U-757) had claimed two ships during the night of 10–11 March, but clear skies the following morning helped Desmond Isted's crew of H/120 meet the convoy. They spotted four U-boats, forcing them to dive. It was a grim battle. On the morning of 11 March, the flagship HMS HARVESTER rescued survivors

from the stricken *William C. Gorgas.* Hours later, the HARVESTER rammed U-444 at full speed after her depth charges brought the German submarine to the surface, leaving both vessels badly damaged. The HARVESTER was sunk when struck by two torpedoes fired by U-432, which in turn was rammed and sunk by the French corvette ACONIT. HX 228 lost six merchant ships in its crossing.[33]

Two more eastbound convoys were not as fortunate. The 60 ships of SC 122 left New York on 5 March. They were followed three days later by 40 ships in convoy HX 229. The second, faster convoy had already made up a day when it met its naval escorts off St. John's. The convoys were just a day apart when they entered the air gap 450 miles [724 km] east of Newfoundland. Strong westerly winds helped SC 122 slip past a patrol line of 12 U-boats, but on the night of 16–17 March, the U-boats found their mark. In heavy seas, and with only a small escort group to defend and rescue survivors, HX 229 lost seven ships; SC 122 lost six.[34]

Heavy winds had closed the runways in Reykjavik, but early on the morning of 17 March, aircraft from 86 and 120 Squadrons in Aldergrove were ordered out in relays to reach the convoys. Flight Sergeant Stoves and his crew in G/120 flew into strong head winds, but after nine hours, they sighted a U-boat 10 miles [16.1 km] from SC 122. It crash-dived as Stoves straddled its hull with four depth charges. He reported that, "A patch of oil appeared in the water behind the D.C. [depth-charge] pool."[35] An hour later, Stoves' crew spotted another periscope and went in to attack, but their remaining depth charges hung up in the bomb bays. As they left for home, Stove's crew saw some merchant sailors in lifeboats and a raft. They were lucky; a corvette of the escort group was standing by.[36]

Flying Officer Samuel Esler and his crew in J/120 met HX 229 nine hours after lifting off from Aldergrove. They were over 1,000 miles [1,609.3 km] from base, but they screened the convoy for nearly four hours, spotting six U-boats and launching three attacks. Esler finally touched down at Benbecula, Scotland, after 18 hours in the air.[37]

The situation around the two convoys remained serious on 18 March 1943, for storms had slowed or damaged the few vessels that were struggling to reinforce the escorts. On that day, 120 Squadron launched nine aircraft; eight of them maintained almost continuous patrols over the two besieged convoys in mid-ocean. Flying Officer John McEwen's O/120 was the first of six crews to reach SC 122 just before mid-day. Flying Officer R. W. F. Wightman's crew in P/120 joined them soon after and patrolled astern of the convoy until 1522 hours. A third shift over SC 122 found U-boats closing in. Moffatt and his crew aboard E/120 "circled and swept into attack"[38] but their four depth charges were released too high to find their mark in the rough seas. Flying Officer Goodfellow had the same problem when N/120 emerged from cloud and "went straight in"[39] on a submerging U-boat half a mile [0.8 km] to port. Later that afternoon, Pilot Officer A. W. Fraser in B/120 and Flying Officer Turner in X/120 sighted five U-boats and made three attacks. The last aircraft to reach the convoys was M/120 flown by Acting Squadron Leader Desmond Isted and his crew. They attacked a U-boat at 2105 hours, but their depth charges overshot the conning tower swirl.[40] Dönitz's headquarters showed its frustration that day when it noted of the battle for SC 122: "Many boats were detected by destroyers and depth-charged. The very strong air escort made it very difficult for the boats to get ahead. Although several boats got close up to the convoy during the night, no satisfactory results were achieved, probably."[41] Five days later, the *London Gazette* announced that Desmond Isted was to receive the Bar to his DFC for his "keenness, skill and organising ability."[42]

The beleaguered crews of HX 229 were not as lucky. They saw only one aircraft on 18 March 1943. The convoy had already faced six attacks and lost 10 ships, a quarter of its original complement. That night, U-221 penetrated the escort columns and claimed the American freighter *Walter Q. Gresham* with its crew of 27. Seven minutes later, German torpedoes found the British *Canadian Star* and doomed its 29 crew.[43]

Improved weather on 19 March brought more warships to relieve the weary escorts of HX 229. 120 Squadron dispatched four aircraft to provide coverage for as much of the day as possible. Three of them found the convoy. Esler's crew was the last to reach SC 122. In the moonlight they attacked two U-boats before departing at 0302 hours of 20 March.[44] The war log of BdU from 19 March 1943 showed a real frustration with the "very strong air escort." Dönitz ordered his packs to break contact at first light on 20 March.[45]

A hard mix of sustained bad weather, weakened escort groups, strong U-boat concentrations and too few long-range aircraft cost the convoys HX 229 and SC 122 a total of 21 ships against just one U-boat lost. The Admiralty noted later that spring that "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."[46]

Why were there not more VLR aircraft over the North Atlantic in March 1943? At Casablanca, the Combined Chiefs of Staff had agreed that 80 VLR aircraft could close the mid-ocean air gap, yet in February there were still only 18 such aircraft on the eastern side of the Atlantic (almost all in 120 Squadron) and none on the western side. British, American and Canadian officials meeting in Washington in March wondered why this was so. So did President Roosevelt. His inquiries in mid-March found that the United States Navy (USN) was receiving most of the available Liberator aircraft and dispatching them to the Pacific. By one account, the Navy Department "underwent a change of heart"[47] at the end of March and began to allot more Liberators for Atlantic service.[48]

This was welcome news to Richard Maitland Longmore, who took over 120 Squadron on 1 April 1943. Longmore's father was Air Chief Marshal Sir Arthur Longmore, who had first led Coastal Command back in 1936. The squadron was concentrated fully in Reykjavik by the middle of the month, and Longmore introduced a tighter training regime that likely came from the desk of Air Chief Marshal John Slessor who took command of Coastal Command in February 1943.

More changes to the escort groups and the convoys themselves were also taking place. In 1943, Peter Gretton was a young naval commander in charge of Escort Group B.7—four corvettes and two frigates—that since January had led five convoys between Derry and Newfoundland. Each ship was equipped with centimetric radar that, in Gretton's phrase, strung "a radar 'fence' around the convoy."[49] Gretton felt that his British and Australian captains and crews were well-trained and experienced but nervous as they awaited their first U-boat battle.[50]

On the night of 30 March, Gretton's escort group joined HX 231 in heavy fog off the Grand Banks. The fast convoy of 62 ships organized into 13 columns had left New York City on 25 March and was bound for Liverpool.[51] It was one of the largest convoys to that time, the product of persistent operational researchers who convinced the Admiralty that larger convoys were statistically safer.[52] While the convoy and escort group sailed north to reach the range of Iceland–based aircraft as quickly as possible, Dönitz's headquarters ordered 15 (later 21) U-boats to form Group Lowenherz and establish a 280-mile [450.6-km] line southwest of Iceland. The escort group drove off the first attacks during the evening of 4 April, but Gretton on his command frigate HMS TAY spent a long night under the northern lights following U-boat contacts and directing his escort vessels to hunt them down. The results were good, and just two ships were attacked. All 65 crew of the *Shillong* were lost with their ship. The torpedoed *Waroonga* stayed with the convoy before it was abandoned on the morning of 5 April: 113 were saved, but 19 drowned when one of the ship's six life boats capsized.[53]

Nine aircraft from three squadrons were scheduled to meet the convoy on 5 April, leaving Gretton disappointed (and slightly critical) that just three aircraft reached him that day. None appeared in the morning, and by noon, the escort tanker *British Ardour* in the sixth column was torpedoed and on fire. Flying Officer Goodfellow and his crew aboard O/120 met the convoy after eight hours out of Reykjavik. They patrolled over the convoy and then helped sink the tanker with depth charges. Flying Officer Gordon Hatherley's crew in N/120 was also busy. His crew attacked a U-boat out of the sun with six depth charges before it met HX 231. Gretton later noted how encouraged he was for the air cover: "The effect of having two aircraft covering the convoy was almost magical."[54]

The squadron also deployed another tactic that day when Flying Officer Smith and his crew aboard H/120 took off from Gander, Newfoundland, to meet HX 231. The first Liberators were about to be delivered to 10 Squadron, Royal Canadian Air Force (RCAF), in Newfoundland on 23 April, but were not operational until the second week of May. 120 Squadron still had no more than 10 operational aircraft, but the crews decided to fly through the air gap to lengthen the time over the convoys. Smith's crew failed to find the convoy, but it attacked one U-boat before it landed in Reykjavik.

In the view of Martin Middlebrook, Smith's "shuttle" marked the first flight across the Atlantic air gap by an operational aircraft.[55]

As the air cover departed on the evening of 5 April, escort commander Gretton tried to fool the U-boats by signaling to imaginary aircraft and escort vessels. Such tactics may have worked, for the escorts fought off at least 10 attacks with depth charges and gunfire without further losses through the night.[56] Four additional destroyers reached the convoy on 6 April. So did three Liberators from 120 Squadron. The first two took off early and had some trouble finding the convoy, but Gretton only had words of praise for Turnbull's crew: "Then X of 120 Squadron arrived after a perfect homing drill, having spent only three and a half hours in transit. Good communication on convoy wave R/T [radio/telephone] was established with all three aircraft, and it was now possible to saturate the area within 20 or 30 miles [32.2 or 48.3 km] of the convoy with air cover. The results were impressive."[57] Still, HX 231 lost six ships on its crossing.[58]

By late April, 120 Squadron was in top form. Between 21 and 23 April, it dispatched seven aircraft to support HX 234, another New York to Liverpool convoy of 43 ships. All seven met the convoy, another feat of navigation that then appeared routine. Four flew through the air gap to land at Goose Bay, Labrador. On the morning of 22 April 1943, Turnbull, Hayes and their regular crew aboard T/120 met HX 234 and stayed with the convoy for over seven hours. The crew returned to Reykjavik, but as noted in the ORB: "only 4 hours from Gander almost diverted."[59]

That HX 234 lost just one ship and another was damaged[60] was a real tribute to the skills and cooperation of the naval escorts and the air crews. Five of the seven 120 Squadron aircraft over HX 234 made 16 U-boat sightings and launched 11 attacks against Group Meise.[61] On the evening of 23 April, Moffat's crew aboard V/120 sighted three U-boats and straddled the hull of a 700-ton [635-tonne] vessel with four depth charges. The Germans responded with a new tactic, for the U-boat remained surfaced as its crew returned fire from a deck-mounted anti-aircraft gun. Moffatt circled and from 50 feet [15.2 metres] dropped two more depth charges "which exploded very close"[62] and lifted the U-boat's stern. The vessel then sunk. Moffatt informed the Senior Naval Officer (SNO) of the "50/60 survivors"[63] in the water, but other U-boats were nearby so the escorts did not stop. U-189 was three weeks into its first patrol when it was sunk on 23 April 1943 east of Cape Farewell, the southern tip of Greenland. All 54 of its crew were lost.[64]

The same month that he made the cover of *Time* magazine, Admiral Karl Dönitz withdrew his wolf packs from the North Atlantic. He lost 18 U-boats that month in a dramatic change of fortune. Better weather helped push more VLR aircraft out from both sides of the Atlantic, while American and British carriers deployed short-range aircraft deeper into the air gap. New radar sets in Coastal Command aircraft over the Bay of Biscay helped crews locate U-boats from longer distances without detection. April was also "a bumper month" for the Wellington squadrons equipped with high-powered lights that caught surfaced U-boats at night.[65] The Germans had no better luck further south where the Americans launched a campaign against the U-boats south of the Azores. Both campaigns took a heavy toll on the German fleet.[66]

Dönitz tried again in September when he ordered Group Leuthen to form in the North Atlantic. He was convinced that improved deck-mounted anti-aircraft guns ("Hagenuk," a device to counter Allied 10-centimetre radar, and GNAT, the German Naval Acoustic Torpedo) would help his U-boats, in Milner's phrase, "shoot their way through the naval and air escorts" and sink more merchant vessels.[67]

The first test came against two westbound convoys, ONS 18 and ON 202, when a total of 65 ships left Liverpool in mid-September. The two convoys were protected by 15 escort vessels and a merchant aircraft carrier, Motor Vessel *Empire MacAlpine,* whose three Swordfish aircraft launched from a retrofitted flight deck. Allied intelligence dispatched a Canadian escort group, EG.9, of five more vessels to strengthen the screen as the convoys came together on 20 September.[68] Early that morning, a GNAT torpedo blew the stern off the British frigate HMS LAGAN, and two merchant ships went to the bottom.[69] Four more U-boats made contact after the aircraft departed, firing acoustic torpedoes that first crippled, then sank the Canadian destroyer His Majesty's Canadian Ship ST. CROIX and the British corvette HMS POLYANTHUS.[70]

The Allies responded with a flood of aircraft. By 1 September 1943, five Coastal Command squadrons from Newfoundland, Iceland, Northern Ireland and the UK had 78 VLR Liberators available for convoy escort duty. They also boasted better communications and better weapons. Back in May, 120 Squadron crews had first tested the Mark 24 acoustic torpedo and the 272-kilogram (600-pound) antisubmarine bomb that could be released outside the range of the flak put up from the U-boat decks.

The five 120 Squadron aircraft over the convoys on 20 September reported eight U-boat sightings and seven attacks. At least one U-boat (U-338) was sunk that day, with the loss of all hands.[71] The final tally was six escorts and three merchant ships lost against two U-boats sunk. The results pushed the British and Canadians to develop more countermeasures to the German acoustic torpedo.[72]

On the morning of 4 October 1943, two squadron aircraft lifted off from Reykjavik to escort two westbound convoys southwest of Iceland. At 1130 hours, Longmore's crew aboard V/120 sent a corrupted message that they were facing flak from a U-boat. McEwen's crew of X/120 Squadron had spotted V/120 on the horizon that morning but found nothing when ordered to Longmore's last reported position. They later sighted a surfaced U-boat and attacked into flak with both machine guns and three depth charges. They reported, "U-Boat was enveloped in smoke, and when this cleared, bows were seen to rise slowly above waves, and U-Boat sank."[73] The "20/25"[74] survivors and wreckage were a sure sign that U-389 had been destroyed. Flight Engineer Bob Fallon recalls dropping emergency food containers and dinghies near the wreck, but none of the crew was rescued.[75]

It was a bittersweet day. Iceland–based aircraft from three different squadrons, (120 RAF, 269 RAF and 128 USN) sank three U-boats and damaged two others.[76] But the day had also cost the lives of Wing Commander Richard Longmore and his crew.[77] His co-pilots were Robert Wood Tait from Edinburgh and Francis Maxwell Webber from Castor, Alberta. Navigator John Nigel Grey Bruce and Flight Engineer Arthur Edward Parsons were English born, while the three WOs/AGs—Albert Leslie Furr, Ernest Arthur Mincham and William Stott—were Australians. Their names are found on the Runnymede Memorial, near Windsor, England.

Several Coastal Command squadrons responded with a succession of U-boat kills through the month. Turnbull and his crew met SC 143 on 8 October aboard G/120 and twice attacked a U-boat that afternoon. Turnbull later admitted being troubled by the prospect that the vessel he had attacked may have taken Longmore and his crew prisoner.[78] Flying Officer Denis Webber and his crew of T/120 witnessed Turnbull's attacks and then evaded heavy flak to attack another U-boat five times. The battle lasted for one hour and 40 minutes before the besieged vessel exploded.[79]

The battle for convoy ON 206—62 merchant ships that left Liverpool on 11 October 1943 bound for New York City—proved especially costly to Group Schlieffen.[80] Several Coastal Command squadrons cooperated on two kills on 16 October. The crew of U-844 returned fire on two Liberators that morning, forcing an 86 Squadron aircraft to jettison its weapon and ditch into heavy seas. Two of the crew died when the aircraft broke up. The other aircraft from 59 Squadron was also hit, but Pilot Officer W. J. Thomas and his crew managed to drop all eight depth charges. Oberleutnant zur See Günther Möller and his 52 crew aboard U-844 were lost.[81] Three more aircraft from 120 and 59 Squadrons worked to destroy U-470 that afternoon.[82]

The destruction of Group Schlieffen continued early the next morning, as three squadron aircraft from Reykjavik made five sightings, five attacks and one kill. Gordon Hatherly's crew of O/120 contacted another westbound convoy, ONS 120, in mid-morning and attacked two U-boats with every weapon they had. As Hatherly circled above a U-boat, which "was seen badly down by the stern,"[83] its besieged crew continued to return fire. Such boldness proved costly. A 422 Squadron RCAF aircraft out of Northern Ireland was piloted by Flight Lieutenant Paul Sargent of Toronto. On his second attack, the flak killed his navigator, engineer and gunnery officer. The aircraft broke up when it ditched, and Sargent went down with the wreckage, but the SNO reported at 1535 hours that seven of the eleven crew were rescued.[84]

Meanwhile Turnbull's crew on H/120 had spent this day above nearby ON 206. Navigator Don Harborne was just setting course for home when Noel Tingey's radar set picked up a U-boat.

"Imagine our delight," Tingey later recalled, "when it turned out to be a surfaced U-Boat, no doubt charging its batteries."[85] They narrowly missed another Liberator from 59 Squadron on their first attack. Turnbull then sent his flight engineer, Gerry Storey, to check that the "Mickey Mouse" (bomb release switchboard) was set properly before he dove in. The depth charges straddled the U-boat, which began to lose speed, its stern down in the water. More flak came up in a second attack two minutes later, but Turnbull's crew again straddled the stricken vessel with more depth charges. Mac McDonald watched from the rear turret as the U-boat broke in half and sunk. McDonald photographed about 30 survivors in the water, but none of the crew of U-540 survived. For his previous attacks and this "kill," New Zealander Bryan Turnbull was awarded the DFC.[86]

The battles for ONS 20 and ON 206 were the final stage of a wider disaster for the Germans' renewed U-boat campaign. In June, July and August of 1943, 85 convoys had crossed the North Atlantic without a single ship lost. Eight U-boats were lost through that time, and 25 more went down in the Atlantic in September and October. Group Schlieffen lost six U-boats, four to aircraft and two to the escort ships, against just one merchant ship lost. When British squadrons arrived in the Azores in October, the air gap was closed, forcing Dönitz again to withdraw his beleaguered vessels from the North Atlantic.[87]

The *Coastal Command Review*'s bold summary in December 1943 reflected the tendency of later histories to see this battle in grand strategic terms, its progress measured in ships that sailed as well as U-boats built and lost:

> [The year] will have many claims on history: high among them will be that it saw the defeat of the U-Boat menace in the Atlantic, which, at the beginning of the year, bade fair to strangle our strategy in Europe and held out to the Axis their last remaining hope of avoiding decisive defeat. In January 1943 the Combined Chiefs of Staff at Casablanca laid down that in the coming year the defeat of the U-Boat should be the first charge on our combined resources. In January 1944 that defeat can be said to be an accomplished fact … . The building and maintenance of an enormous U-Boat fleet has absorbed a substantial proportion of the industrial effort and the best man-power of Germany. But, today, the United Nations between them dispose of more shipping (and better shipping) than they did when the U-Boat offensive opened in September 1939; a vast volume of shipping sails the Atlantic, in convoy and independently, with insignificant loss; and there can be no doubt that the morale and fighting spirit of the U-Boat crews still at sea have suffered a disastrous decline. In short, the U-Boat menace has been defeated.[88]

True enough. But we should never lose sight of the ships' crews (both the merchants and their escorts), who plied the North Atlantic against the wolf packs who threatened but ultimately failed to destroy them. Nor should we forget the small group of men who flew out to meet the convoys in that pivotal year of 1943.

Endurance indeed.

Notes

1. Captain S. W. Roskill, *The War at Sea, 1939–1945*, ed. J. R. M. Butler, vol. 2, *The Period of Balance* (London: Her Majesty's Stationery Office, 1956), 355.

2. Ibid.

3. A fascinating personal history of the squadron is by Peter G. White and Steven P. Rennison, *No. 120 Squadron Royal Air Force, 1918–1998* (n.p., 1998). I am indebted to Mr. Peter Clare of Windsor, UK, for providing me with a copy of this work. My thanks also to Mr. Norman Franks as well as Dr. Richard Goette for generously sharing with me materials and knowledge.

4. Marc Milner, *The Battle of the Atlantic* (St. Catharines: Vanwell Publishing, 2003), Avro Anson photograph, no. 3.

5. John Buckley, *The RAF and Trade Defence, 1919–1945: Constant Endeavour* (Keele, Staffordshire: Keele University Press, 1995), 120.

6. Martin Middlebrook, *Convoy* (New York: William Morrow, 1977), 51; and Flight Lieutenant David Evans, cited in White and Rennison, *No. 120 Squadron*, 7.

7. Buckley, *RAF and Trade Defence*, 123, 124, 127, 128; and White and Rennison, *No. 120 Squadron*, 4.

8. White and Rennison, *No. 120 Squadron*, A5-3, 11.

9. Buckley, *RAF and Trade Defence*, 174–76; and C. H. Waddington, *OR in World War 2: Operational Research Against the U Boat*, Histories of Science Series (London: Paul Elek [Scientific Books] Ltd., 1973), 164–67, 174–77.

10. The first two letters designated the port of departure for the convoy or whether it was fast/slow. In this paper, HG – Gibraltar, HX – New York, SC – slow convoy, ON – outbound from England to North America, ONS – as per the previous, but slow.

11. Milner, *Battle of the Atlantic*, 98–99.

12. White and Rennison, *No. 120 Squadron*, 13.

13. Milner, *Battle of the Atlantic*, 107.

14. Buckley, *RAF and Trade Defence*, 137.

15. White and Rennison, *No. 120 Squadron*, 28–30; and Middlebrook notes that the other squadrons in Coastal Command thought that 120 Squadron was "conceited." See Middlebrook, *Convoy*, 50.

16. Jurgen Rohwer, *The Critical Convoy Battles of March 1943* (Annapolis, MD: Naval Institute Press, 1977), 47.

17. White and Rennison, *No. 120 Squadron*, A5-3.

18. National Archives [NA], UK, AIR 15/470, "Anti-Submarine Operations February, 1943," *Coastal Command Review* (n.p., February 1943), 2.

19. Milner, *Battle of the Atlantic*, 138.

20. NA, UK, AIR 15/470, "S.C. 118," *Coastal Command Review* (n.p., February 1943), 8.

21. Milner, *Battle of the Atlantic*, 139.

22. Both 120 and 220 Squadrons moved from Ballykelly to Aldergrove, Northern Ireland, in February 1943.

23. "S.C. 118," *Coastal Command Review*, 8. See also NA, UK, AIR 27/911/36, ORB 120 Squadron, February 1943.

24. ORB 120 Squadron, February 1943; and "Convoy Battles: SC-118," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://www.uboat.net/ops/convoys/convoys.php?convoy=SC-118.

25. Flight Log, Allan Edward Hayes, in possession of the author. ORB 120 Squadron, February 1943.

26. White and Rennison, *No. 120 Squadron*, 31; "Convoy Battles: SC-118," and ORB 120 Squadron, 8 February 1943.

27. Roskill, *War at Sea*, 356.

28. D. V. Peyton-Ward, *The RAF in Maritime War*, vol. 1943 (Air Force Historical Branch Narrative), 46.

29. Arnold Hague, *The Allied Convoy System, 1939–1945: Its Organization, Defence and Operation* (Annapolis, MD: Naval Institute Press, 2000), 135.

30. Rohwer, *Critical Convoy Battles of March 1943*, 55–60.

31. Ibid., 60; and ORB 120 Squadron, 3 March 1943.

32. Hague, *Allied Convoy System*, 137–38. Hague lists 7 ships lost to SC 121, and Roskill notes that 13 ships were lost. Roskill, *War at Sea*, 365. See also Milner, *Battle of the Atlantic*, 148.

33. ORB 120 Squadron, March 1943; Milner, *Battle of the Atlantic*, 146; Roskill, *War at Sea*, 365; Hague, *Allied Convoy System*, 132; and "Convoy Battles: HX-228," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://www.uboat.net/ops/convoys/convoys.php?convoy=HX-228.

34. Rohwer, *Critical Convoy Battles of March 1943*, 189–90. Hague's figures show that six of SC 122's losses occurred on 17 March. Hague, *Allied Convoy System*, 138.

35. ORB 120 Squadron, 17 March 1943.

36. Ibid.

37. Ibid.; Rohwer, *Critical Convoy Battles of March 1943*, 144–45; and *Coastal Command Review* (March 1943), 13.

38. ORB 120 Squadron, 18 March 1943.

39. Ibid.

40. Ibid.

41. "F.d.U. [Führer der Unterseeboote] / B.d.U.'s War Log 16–31 March 1943," 179, accessed August 11, 2015, http://www.uboatarchive.net/BDU/BDUKTB30320.htm.

42. "Acting Squadron Leader Desmond James Isted," *Second Supplement to The London Gazette*, 23 March 1943, 1361, accessed August 11, 2015, https://www.thegazette.co.uk/London/issue/35949/page/1361.

43. Rohwer, *Critical Convoy Battles of March 1943*, 161; and Hague, *Allied Convoy System*, 132.

44. ORB 120 Squadron, 19 March 1943. Pilot Officer Samuel Eric Esler, a Volunteer Reservist, earned the DFC. "Distinguished Flying Cross – Pilot Officer Samuel Eric Esler," *Third Supplement to The London Gazette*, 4 December 1942, 5267, accessed August 11, 2015, https://www.thegazette.co.uk/London/issue/35809/supplement/5267.

45. ORB 120 Squadron, 19 March 1943; and "F.d.U./ B.d.U.'s War Log 16–31 March 1943," 183.

46. Quoted in Roskill, *War at Sea*, 371.

47. Ibid., 364.

48. Ibid., 362–64, 401. See also Middlebrook, *Convoy*, 311–12.

49. Peter Gretton, *Crisis Convoy: The Story of HX231* (Annapolis, MD: Naval Institute Press, 1974), 27.

50. Ibid., 27, 45.

51. Ibid., 25.

52. P. M. S. Blackett, "Operational Research, Recollections of Problems Studied, 1940–45," in *Brassey's Annual: The Armed Forces Yearbook, 1953*, 100.

53. Gretton, *Crisis Convoy*, 48, 51, 123.

54. ORB 120 Squadron, April 1943. Gretton's account of 5 April is inconsistent in several respects with the squadron's operational record. No references are found in the squadron ORB to P/120. Gretton's reference to a Flying Officer Matherley is undoubtedly Flying Officer Gordon Hatherley, and his timings for the arrival of Goodfellow's N/120 are incorrect. Gretton, *Crisis Convoy*, 70–71, 74. Quote on page 74.

55. Middlebrook, *Convoy*, 313. The squadron attempted seven "shuttle" flights through the air gap that month. Turnbull and Allan aboard T/FK223 had their turn on 22 April.

56. Gretton, *Crisis Convoy*, 74, 90.

57. Ibid., 99.

58. Milner, *Battle of the Atlantic*, 149. See also "Convoy Battles: HX-231," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://uboat.net/ops/convoys/convoys.php?convoy=HX-231.

59. ORB 120 Squadron, April 1943.

60. Hague, *Allied Convoy System*, 123. Other sources note two ships sunk and one damaged: See "Convoy Battles: HX-234," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://uboat.net/ops/convoys/convoys.php?convoy=HX-234.

61. Peyton-Ward, *RAF in Maritime War*, 54–55.

62. ORB 120 Squadron, April 1943.

63. Ibid.

64. "List of all U-boats: U-189," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://www.uboat.net/boats/u189.htm.

65. Roskill, *War at Sea*, 364, 369; NA, UK AIR 15/471, "Summary of the Year's Work–1943," *Coastal Command Review* (n.p., December 1943), 2; and Gretton, *Crisis Convoy*, 155.

66. Milner, *Battle of the Atlantic*, 160–72.

67. Ibid., 171–72.

68. Ibid., 172, 174.

69. Ibid., 172; and Peyton-Ward, *RAF in Maritime War*, 177.

70. Milner, *Battle of the Atlantic*, 172, 174; and Peyton-Ward, *RAF in Maritime War*, 177.

71. Peyton-Ward, *RAF in Maritime War*, 54, 61–64, 66. There is some dispute as to whether Flying Officer Moffat's crew aboard F/120 actually killed U-333 on 20 September. See "List of all U-boats: U-338," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://www.uboat.net/boats/u338.htm.

72. Milner, *Battle of the Atlantic*, 176–77.

73. ORB 120 Squadron, October 1943.

74. Ibid.

75. Ibid.; and Norman L. R. Franks, *Search, Find and Kill*, rev. ed. (London: Grub Street, 1995), 201.

76. One squadron veteran later noted "a purge" in the squadron "when it was discovered that WC [Wing Commander] Longmore's crew were tour expired." Franks, *Search, Find and Kill*, 199–202.

77. The death of Richard Longmore warrants just two brief paragraphs in the memoirs of his father, Sir Arthur Longmore, *From Sea to Sky, 1910–1945* (London: Geoffrey Bles, 1946), 302–3.

78. Franks, *Search, Find and Kill*, 202.

79. ORB 120 Squadron, 8 October 1943. There were 30 dead and 18 survivors from U-643. "List of all U-boats: U-643," Guðmundur Helgason, uboat.net, accessed August 11, 2015, http://www.uboat.net/boats/u643.htm.

80. Hague, *Allied Convoy System*, 159.

81. Franks, *Search, Find and Kill*, 203.

82. ORB 120 Squadron, October 1943; Franks, *Search, Find and Kill*, 27–29; and Peyton-Ward, *RAF in Maritime War*, 87. See also Roy Conyers Nesbit, *Ultra Versus U-Boats: Enigma Decrypts in the National Archives* (Barnsley, UK: Pen & Sword Military Books, 2008), 174.

83. ORB 120 Squadron, October 1943.

84. Ibid.; and Franks, *Search, Find and Kill*, 26, 30. The entry in Franks' account is incorrectly dated 16 October 1943.

85. Franks, *Search, Find and Kill*, 202–3.

86. ORB 120 Squadron, October 1943; Nesbit, *Ultra Versus U-Boats*, 176; and "Distinguished Flying Cross – Acting Warrant Officer Bryan Walker Turnbull," *Fourth Supplement to The London Gazette*, 18 January 1944, 358, accessed August 11, 2015, https://www.thegazette.co.uk/London/issue/36335/supplement/358.

87. Peyton-Ward, *RAF in Maritime War*, 187–88.

88. "Summary of the Year's Work – 1943," *Coastal Command Review*, 1.

Geoffrey Hayes

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Chapter 5

The Royal Canadian Air Force's First Catalinas and Cansos

By Roger Sarty

Author's note: Many thanks to Alec Douglas, Steve Harris and Dave Kealy for sharing their knowledge and research notes.

The Consolidated Catalina/Canso has yet to be properly remembered for its large and distinguished role in the Canadian home air force of the Second World War. K. M. Molson and R. A. Taylor's *Canadian Aircraft Since 1909*[1] has an important and path-breaking essay on the Canadian-built Catalinas and Cansos that began to roll off the assembly line in late 1942. But the story of the first, American-built, aircraft of these types to serve in Canada is still obscure, even though they played an enormous part in the Royal Canadian Air Force's (RCAF's) antisubmarine operations of 1942 and early 1943, the most critical period in the war against the German U-boats.

The Consolidated Aircraft Corporation's Model 28 flying boat first entered service with the United States Navy (USN) in 1936, under the designation PBY. Ungainly, slow, difficult and uncomfortable to fly, the PBY was, nevertheless, a superlative maritime-patrol bomber, able to operate at a range of 644 kilometres (km) or 400 miles—and when equipped with additional fuel tanks 966 km [600 miles]—from base. Capable of an endurance of up to 24 hours, the aircraft could, moreover, linger at long range to cover friendly shipping and search out enemy vessels. The flying boat's success attracted international attention,[2] and the Air Staff in Ottawa soon recognized its suitability for the RCAF's Eastern and Western Air Commands. When Air Commodore E. W. Stedman led the 11th-hour Canadian aircraft purchasing mission to Washington at the end of August 1939, he had instructions to procure 15 PBYs. In the event, Stedman did not pursue negotiations with Consolidated, as they could not deliver for 6 to 12 months.[3] The British Air Ministry, however, placed an order for the aircraft, which, when modified to Royal Air Force (RAF) specification, was designated "Catalina."

During the winter of 1939–40, the Canadian Air Staff selected the PBY as a successor to the Supermarine Stranraer. The latter, a biplane flying boat that equipped one east-coast squadron and part of another on the west coast, had a maximum operational range of approximately 402 km [250 miles], with nine hours' endurance. Meanwhile, in November 1939, the prototype of a PBY amphibian made its first flight. The amphibian was more suitable for Canadian operations than the flying boat, particularly on the east coast, where ice closed all but the southernmost seaplane stations for nearly half the year. By the spring of 1940, the RCAF had laid down a requirement for 54 of the amphibians to equip three squadrons of nine aircraft each and to provide a reserve for wastage replacements.[4]

The German offensive in the west during May and June of 1940 greatly accelerated the RCAF's leisurely procurement process. In July, the Air Staff increased the projected number of PBY squadrons to six and authorized the recently organized Department of Munitions and Supply to begin negotiations with Consolidated for 105 amphibians. Munitions and Supply had, in fact, pressed the Department of National Defence to make a decision because additional orders by the USN were threatening to tie up existing production capacity. Air Commodore Stedman, Air Member for Aeronautical Engineering and Supply, had hoped that the aircraft could be assembled in Canadian factories, preferably on the west coast, where they would be in relatively close proximity to the Consolidated factory in San Diego and where there was less danger of enemy attack than in the east. In the interests of early delivery, however, the Air Staff agreed that the first 50 machines should be completed in San Diego. Munitions and Supply further urged that because the amphibian was not yet in production and would not be available until six or seven months later than the flying boats, all 50 aircraft should be of the latter type. The Air Staff changed the requirement to 36 boats and 14 amphibians.[5]

The letter of authorization for Consolidated to begin work on the Canadian order was signed on 12 August 1940. Under its terms, the RCAF PBYs were to be similar to the aircraft then being built for the RAF. Designated Catalina I, the RAF's aircraft were USN PBYs modified to

British specifications. The PBYs differed from earlier production models primarily in the fitting of more powerful engines (1200 instead of 900 horsepower) and of streamlined blisters over the mid-section gun positions. In addition to the 50 completed flying boats and amphibians, Consolidated was to supply parts for the assembly of an additional 55 amphibians in Canada for the RCAF. Filling in the details of these broad terms, however, took another four months' work, primarily because the Department of Munitions and Supply had to deal with Consolidated through the British Purchasing Mission in the United States (US), which had failed to bring the RCAF directly in touch with the aircraft corporation on critical matters such as the number and type of spare parts to be supplied. The contract, CAN 78, was finally signed in Ottawa on 5 December 1940.

Production was well underway when, in January 1941, Flight Lieutenant L. R. Kottmeier, the RCAF's resident inspector at Consolidated, reported that assembly of the first aircraft hulls allocated to the Canadian order was about to begin and that designs were well advanced for the winterization equipment laid down in the RCAF specifications. Around this time, the Air Staff had decided that the Canadian aircraft should have USN bomb racks to carry the American bombs that the RCAF was procuring. This was the most important difference between the British and the Canadian variants of the PBY-5.[6] The British bomb racks were installed on the external undersurface of the mid-wing section, while the USN racks, although also carrying the armament externally, were fitted within the wing structure. Thus, the Canadian aircraft had a mid-wing section that was identical to that of the PBY-5.

In order to produce the 55 amphibians, Boeing Aircraft of Canada Limited had started construction of a new factory in Vancouver during the fall of 1940. Under contract (CAN 78), the company was to manufacture the tail section, outer wing panels and wing tip floats, with Consolidated providing the remaining parts. Slow deliveries from the US and from Canadian raw-material suppliers began to delay progress almost immediately, as did a fire at Boeing that destroyed many of the aircraft blueprints.

A second PBY amphibian contract was also under negotiation. The expansion of the Home War Establishment projected by the Air Staff during the latter part of 1940 required a total of 144 PBYs to equip as many as eight squadrons.[7] In November, therefore, the Air Staff authorized the procurement of 39 amphibians in addition to the 105 already under order. Because USN orders precluded timely delivery of completed aircraft from Consolidated, Canadian production was expanded. In April 1941, Canadian Vickers Limited of Montreal received a letter of authorization to begin work on the 39 amphibians. Vickers, which had produced the Supermarine Stranraer, was to be supplied with the float, outer wing and tail components manufactured by Boeing and detail parts from Consolidated; the intention was that Vickers would eventually fabricate a large proportion of the latter.

Although production was still in its earliest stages, the Canadian PBY had already undergone a change of designation. Air Force Routine Order No. 908 of 22 November 1940 had named the Canadian PBY "Convoy" because of its trade-defence role. Pointing out that the name could cause confusion in air and navy operational signal traffic, in January 1941, Air Commodore A. A. L. Cuffe, Air Member for Air Staff, recommended that the British practice of using a coastal place name beginning with the same letter as that of the manufacturer should be adopted. His suggestions included Canso, Chimo and Chebucto from the east coast and Comox, Chinook and Courtenay from the west. One member of the aeronautical engineering staff, Wing Commander A. O. Adams, suggested "Canso" for the flying boat and "Comox" for the amphibian. Further discussion, however, concluded that because the Canadian machines were modelled after the RAF Catalina they should have the same name. Air Force Routine Order 179 of 21 February 1941 accordingly designated the flying boat "Catalina" and the amphibians "Catalina A."

The urgent need, however, was for PBYs of any type. Deliveries from Consolidated would not begin until September 1941, and the Canadian plants could not produce until 1942. Attacks on Allied shipping in the North Atlantic by German surface warships and, with more devastating results, by U-boats were, meanwhile, moving westward as defences off the United Kingdom (UK) grew stronger. The RCAF only had one squadron—No. 10, flying Douglas Digbys from Gander, Newfoundland—capable of providing long-range cover over the ocean convoy routes. With bomb-bay fuel tanks, the Digbys could make patrols out to 805 km [500 miles] but, at that distance, were able to linger only

briefly before returning to base. Beginning in late August 1940, the RCAF had repeatedly urged both the American and British authorities to release PBYs from their contracts.

U-boat successes in the western approaches to the UK and a shortage of long-range patrol aircraft made the British Air Ministry understandably reluctant to help; the USN had already delayed its schedule of deliveries in favour of the RAF and was unwilling to do more. But the tide turned on 20 May 1941, when a U-boat pack sank five ships and damaged a sixth in a convoy less than 1,127 km [700 miles] from Newfoundland. Within days, the Air Ministry diverted nine Catalina Is that were waiting to be ferried to the UK, subject to return or replacement as soon as the RCAF began to receive PBYs off its own order.[8]

The aircraft arrived at Dartmouth, Nova Scotia, from Bermuda and Elizabeth City, North Carolina, on 7 and 27 June 1941. Initially taken on strength by No. 5 Squadron, then equipped with Stranraers, the Catalinas and many of No. 5's personnel were transferred at the beginning of July to form a new squadron, No. 116. On 21 June, the Catalina Is, which retained their RAF designation and serial numbers,[9] flew their first shipping-protection missions. This was possible because Air Force Headquarters posted to Dartmouth the RCAF personnel who had been loaned to the RAF for Catalina ferry operations, including Squadron Leader F. S. Carpenter, Flight Lieutenant W. G. Pate and Flight Lieutenant N. E. Small. Nevertheless, the squadron's operations were severely hindered by shortages of qualified aircrew, specialist officers and equipment. Beaching gear had to be borrowed from California, Bermuda and Trinidad; in mid-July, four aircraft were grounded for want of fuses whose nearest supplier was in Chicago; and complete crews could not be formed for all the aircraft.[10]

Despite these obstacles, the unit pressed ahead with the deployment of a detachment at Botwood, Newfoundland, for the defence of shipping on the ocean routes. The first aircraft arrived at the northern seaplane station on 7 July, with a second following on the 14th, and the third and fourth on the 22nd and 23rd. U-boats did not strike off of Newfoundland again until late October–November, however, when the detachment was winding down with the onset of winter. The aircraft remaining at Dartmouth had, meanwhile, undertaken convoy-protection missions and carried out a heavy schedule of transportation flights to North West River, Labrador, carrying equipment and personnel for the development of the new Goose Bay aerodrome. It was on one of these missions that aircraft Z2139 crash landed and sank in 60 feet [18.3 metres] of water; two crew members including the pilot, Flight Lieutenant R. E. Shaw, were drowned. The aircraft was recovered, however, and shipped to Montreal where it was used as a model for designing jigs and patterns by Canadian Vickers. (It was subsequently rebuilt, and Z2139 returned to service in Eastern Air Command in October 1942.)

During the summer and fall of 1941, changes in policy and equipment continued to buffet both No. 116 Squadron and its sister unit at Dartmouth, No. 5 Squadron. Delivery of Catalina flying boats off the Canadian contract from Consolidated to RCAF Station Rockliffe began on 23 August 1941 and continued well ahead of schedule. By the end of September, No. 116 Squadron crews brought seven of the new aircraft[11] to Dartmouth and were ready to return the British Catalina Is to RAF Ferry Command. As additional Catalinas arrived from San Diego, they were to replace No. 5 Squadron's Stranraers and equip a new east-coast flying-boat unit, No. 117 Squadron. Britain's urgent need for long-range aircraft to fight the pitched battle against the U-boats in the eastern Atlantic intervened, however. On 7 September, the Air Ministry signalled Air Force Headquarters in Ottawa, asking for not only the return of the loaned Catalina ls but also all 50 of the RCAF Catalina flying boats and amphibians now coming off the assembly line in California, a proportion manned, if possible, by formed RCAF squadrons.

The RCAF and the Canadian government responded generously. Although the 14 amphibians, due to begin delivery at the end of the year, were required in Canada, the RAF could have all 36 flying boats and the loaned Catalina Is. In addition, Nos. 5 and 116 Squadrons would be dispatched to the UK to operate 18 of the flying boats as soon as No. 117 Squadron formed with the first amphibians. Although appreciative of the last offer, the Air Ministry responded that there was no need for the two RCAF units to cross the Atlantic, as 36 flying boats would only be sufficient to cover wastage in existing Coastal Command squadrons. The arrangement finally agreed upon was that Canada should retain the RAF Catalina Is and the seven RCAF Catalinas that had already arrived at Dartmouth until the amphibians were delivered. During October and November 1941,

the remaining 29 flying boats off the Canadian contract at Consolidated were turned over to the RAF, 11 at Rockcliffe and 18 direct from the factory at San Diego.[12] Nine of these were to be treated as repayment for the borrowed British Catalina Is in No. 116 Squadron, and 20 were supplied on loan, subject to replacement by Catalinas off British contracts.[13]

As it happened, the borrowed RAF Catalinas constituted virtually the whole of Eastern Air Command's effective long-range flying-boat force for some weeks to come.[14] Because of a supply bottleneck in the US, only one of the Canadian Catalinas delivered to Dartmouth was equipped with bomb racks. Appeals through Washington brought the USN to release additional racks, but it was not until late December 1941 / early January 1942 that the new aircraft were fitted. The delay did not, in the event, seriously impair the command's capabilities, for on 11 October, No. 116 Squadron had turned five of the unarmed machines over to No. 5 Squadron, which had left operations for the welcome task of conversion training and ferrying the Stranraers to the west coast.[15]

During the last months of 1941, the Canadian PBYs underwent their second and final name change. In October, Wing Commander Adams suggested that the flying boat should be designated "Canso" and the amphibian "Canso A." The senior members of the Air Staff approved the proposal, remarking that the machines off the Canadian contract "are, in effect, not 'Catalinas' in that they have US Navy type wings fitted with bomb racks to take the US pattern bomb. Certain other differences exist; viz., the fuel tanks are not bullet-proof, and the provision is made for the use of 'Browning 303' machine guns instead of 'Vickers GO' [gas operated] guns." The new names were promulgated in Air Force Routine Order No. 1549 of 19 December 1941.[16]

By that time, amphibians had begun to arrive from San Diego, and larger events were once again forcing changes in plans for the deployment of the aircraft. Crews from Nos. 116 and 5 Squadrons started to ferry the Canso As from Rockcliffe to Dartmouth on 15 December, and deliveries were completed in the following month.[17] Consolidated fulfilled its contract as much as six weeks ahead of schedule, although at the cost of further delays in the supply of detail parts to Boeing of Canada. On learning of the early arrival of the first Canso As, Air Chief Marshal Sir Frederick Bowhill, the Air Officer Commanding-in-Chief RAF Ferry Command, asked Air Force Headquarters when he could take over the loaned RAF Catalina Is and the seven Cansos at Dartmouth in accordance with the agreement reached the preceding September. Bowhill sent his reminder on 11 December 1941, four days after the Japanese attack on Pearl Harbor had brought war in the Pacific. Air Vice-Marshal L. S. Breadner, Chief of the Canadian Air Staff, responded that the agreement was off: "all remaining Catalinas urgently required in Canada."[18]

Pearl Harbor, in fact, had more immediate repercussions on the east coast than on the west. Hitler had previously denied permission for naval operations close to the North American mainland for fear of antagonizing the neutral US. Now that the Americans were at war, he lifted the ban, and U-boats swarmed into the Canadian and US waters in January 1942, inflicting heavy losses on shipping along the coastal routes. No. 5 Squadron hurried back on operations on 14 January while the unit was converting to amphibians, which—able to take-off from runways when the unusually heavy ice at Dartmouth during that winter prevented the Catalinas and Cansos from flying—immediately proved their value. Plans to equip both Nos. 5 and 116 Squadrons with the new Canso As had been scrapped with the decision to retain the loaned RAF Catalina Is and the Cansos. During February, the amphibians were concentrated in No. 5 Squadron, which returned its flying boats to No. 116.

Like the other aircraft in Eastern Air Command, the Catalinas, Cansos and Canso As had a new main armament. In 1941, the flying boats had each carried two 227 kilogram (kg) or 500 pound (lb) antisubmarine bombs; experience showed the weapons to be extremely unreliable. The aircraft of Nos. 5 and 116 Squadrons now flew with either two 204 kg (450 lb) Mark VII naval depth charges or four 113 kg (250 lb) Mark VIII depth charges especially designed for aerial use.[19]

To counter the wide-ranging German thrusts from the Gulf of Maine to the northeast of Newfoundland, aircraft on charge to Nos. 5 and 116 Squadrons were used to form two additional units. In late March 1942, No. 10 Squadron at Gander sent a detachment to Yarmouth that took over three Canso As and experienced personnel from No. 5 Squadron; on 19 May, the detachment

was reorganized as No. 162 Squadron. (Because of delays in the delivery of Canso As from Canadian production, the unit remained at detachment strength, with no more than four aircraft on charge, for another 10 months.) During May 1942, six Cansos and personnel from No. 116 Squadron formed No. 117 Squadron at the North Sydney seaplane station. The new unit protected ocean and coastal convoys that sailed out of Sydney and, with a detachment at Gaspé, Quebec, covered shipping in the Gulf of St. Lawrence, where U-boats had scored their first successes on the night of the 11–12 May. At the end of May, No.116 Squadron dispatched four Catalina Is to Botwood, Newfoundland, for operations over the Strait of Belle Isle and the transatlantic convoy routes; in July, the main body of the squadron and the four remaining Catalina Is moved from Dartmouth to Botwood.[20]

The Cansos and Catalinas were the sheepdogs of Eastern Air Command, for the most part carrying out long escort missions. By mid-year, while the 29 flying boats and amphibians constituted less than a third of the RCAF's antisubmarine aircraft on the east coast, they accounted for 20,000 of Eastern Air Command's 50,000 operational flying hours during 1942. The Cansos and Catalinas, however, made only 3 of the 40 attacks on submarines, and in the one instance in which the presence of a U-boat can be confirmed by German records, only superficial damage was inflicted. The small, fast and agile Lockheed Hudsons that equipped four squadrons were better able to surprise surfaced U-boats in inshore waters than the large and lumbering Cansos.

It is of some interest, though, that the most successful Hudson squadron, No. 113, was led by Squadron Leader N. E. Small, one of the original Catalina hands, who scored Eastern Air Command's first victory when he destroyed U-754 on 31 July 1942. Still, the most effective answer to the German offensive in North American waters had been the extension of the convoy system to coastal shipping, and the long-legged Cansos and Catalinas were the backbone of the air defence for those convoys.[21]

In contrast to the dull, if essential, defensive work of 1942, during the early months of 1943, the Canso As of No. 5 Squadron had a chance to show their teeth. In November 1942, the unit, supported by a detachment of two aircraft from No. 162 Squadron, had moved to Gander, Newfoundland. Abandoning North American coastal waters in the face of increasingly effective defences there, the U-boats had returned to the mid-ocean convoy routes in the fall of 1942 and nearly won a decisive victory during the following months. Because ice had forced No. 116 Squadron's flying boats to leave Botwood for winter stations at Dartmouth and Shelburne, Nova Scotia, and No. 10 Squadron's overworked Digbys were becoming unreliable for long-range flying, the Canso As were the only aircraft available to the RCAF that could possibly support the beleaguered ocean convoys. As it was, the U-boats were concentrating beyond the normal range of the Canso As, and therefore, Squadron Leader Small, who had come to Gander with the No. 162 Squadron detachment, had the aircraft lightened by removing all non-essential equipment; they could now reach out as far as 1,127 km [700 miles] from base. (Small, unfortunately, died when his aircraft, Canso A 9737, crashed while taking-off on 7 January 1943.) Between 4 February and 12 May 1943, No. 5 Squadron made no less than nine attacks, damaging U-604, U-621 and U-438 as well as destroying U-630. The last victory, by Canso A 9747 with Squadron Leader B. H. Moffit at the controls, was achieved on 4 May 1943 over 1,046 km [650 miles] from base. By that time, Canadian-built Canso As were finally being delivered to the east coast in numbers.[22] By that time too, however, the Allies were gaining the upper hand in the war against the U-boats. It was American-built Catalinas, Canso and Canso As that had protected the sea lanes off Canada and Newfoundland when the Battle of the Atlantic hung in the balance.[23]

Notes

1. K. M. Molson and R. A. Taylor, *Canadian Aircraft Since 1909* (Stittsville, Ontario: Canada's Wings, 1982), 203–9.

2. Gordon Swanborough and Peter M. Bowers, *United States Navy Aircraft Since 1911* (New York: Funk and Wagnalls, 1968), 76–80; and Owen Thetford, *Aircraft of the Royal Air Force Since 1918* (New York: Funk and Wagnalls, 1968), 144–45.

3. Chief of the Air Staff to Minister of National Defence, 25 August 1939, Library and Archives Canada (LAC), Manuscript Group IIIB5, vol. 31, file X-47; and Stedman to Chief of the Air Staff, 3 September 1939, National Defence Headquarters, Directorate of History and Heritage (DHH) 78/478.

4. "RCAF Estimates for Fiscal Year Ending March 31, 1941," DHH 181.003 (D2319).

5. This paragraph and the ones that follow are drawn from RCAF Headquarters (HQ) file 1021-9-95 vols. 1–5, LAC, Record Group (RG) 24, boxes 5133–5134.

6. Consolidated designated the British variant of the PBY-5 as Model 28-5ME and the Canadian variant as Model 28-5MC.

7. Correspondence June–July 1940, DHH 181.002 (D107).

8. DHH 181.003 (D4095); and UK, The National Archives, AIR 8/461.

9. W8340, W8431, W8342, Z2134, Z2136, Z2137, Z2138, Z2139 and Z2140.

10. Daily diaries and operations record books (ORBs), 5 and 116 Squadron, June–July 1941, DHH.

11. RCAF serial numbers 9701, 9702, 9704, 9705, 9706, 9707 and 9709.

12. At Rockcliffe: RCAF serial numbers 9703, 9708, 9710–9718. At San Diego: RCAF serial numbers 9719–9736.

13. HQ file 60-3-12, vol. 1, LAC, RG 24, box 5395. The RAF repaid the loan with 8 Catalina IBs (RAF serial numbers FP 290–297) that came on strength in the RCAF in December 1942 and 12 Catalina IVs (RAF serial numbers JX 206, JX 207, JX 209, JX 211– JX 213, JX 217, JX 219, JX 571, JX 572, JX 579 and JX 580) that came on strength in the RCAF in May 1943. At least 17 of these aircraft were assigned to west-coast units.

14. In November 1941, one of the loaned Catalina Is, W8430, was returned to the RAF at Bermuda and replaced in No. 116 Squadron by Catalina I, DP 202, which had flown from Scotland to Dartmouth the preceding month to deliver equipment to the British air mission in the US.

15. Kottmeier to Secretary, Department of National Defence for Air, 2 September 1941 and following correspondence, LAC, RG 24, box 5134, HQ 1021-9-951 vol. 4; and ORBs, 5 and 116 Squadrons, November 1941–January 1942, DHH.

16. Adams to Director of Aeronautical Engineering, 10 October 1941, Air Members of Air Council minutes, 5 December 1941, LAC, RG 24, box 5134, HQ file 1021-9-95 vol. 5.

17. RCAF serial numbers 9737–9750.

18. ORBs 5 and 116 Squadrons, December 1941 to January 1942. Quote from Chief of the Air Staff to Air Officer Commanding-in-Chief, RAF Ferry Command, Dorval, signal, 16 December 1941, LAC, RG 24, box 5395, HQ file 60-3-12 vol. 2.

19. ORBs 5 and 116 Squadrons, January–February 1942, DHH.

20. ORB, 10 Squadron, 17, 19 March 1942, DHH; ORB, 162 Squadron, May–June 1942, DHH; ORB 116 Squadron, May–July 1942, DHH; and ORB 117 Squadron, May–August 1942, DHH.

21. Eastern Air Command monthly antisubmarine reports, January to December 1942, DHH 181.003 (D25); DHH 76/278 Large; and DHH 85/77.

22. Only one of No. 5 Squadron's string of nine attacks was made by a Canadian-built Canso A; it was an unsuccessful strike against U-706 by aircraft 9764 on 22 April 1943.

23. DHH 76/278 Large; and DHH 85/77.

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Chapter 6

A Most Abrupt Departure: The Royal Canadian Air Force and the United Nations Emergency Force

By William March

In 1956, the United Nations (UN) did not loom large in the collective consciousness of most Royal Canadian Air Force (RCAF) personnel. Early forays in support of the UN included an extremely modest contribution to the "police action" in Korea and the provision of a few staff as part of the International Commission for Supervision and Control (ICSC) in a forlorn attempt to bring peace to Indo-China. Certainly, there was little or no mention of the UN in the annual reports of the Department of National Defence (DND) between 1954 and 1955.[1] Nor was there an existing policy framework to govern contributions to the UN, either within DND or External Affairs. So while the commitment of Canadian forces to a "peacekeeping force" in November 1956 did not come as a complete shock (news of the fighting in the Middle East and UN deliberations had been front-page news for several weeks), it still left RCAF planners, focused as they were on the North Atlantic Treaty Organization (NATO) in Europe and a nascent North American Air Defence Command (NORAD), in a bit of a vacuum.

In collusion with the French and British, Israel commenced Operation KADESH on 29 October 1956 with ground and air assaults on Egypt. The following day, the governments of France and the United Kingdom presented an ultimatum to Egyptian President Gamal Abdel Nasser demanding the "right" for their forces to protect vital points, such as the Suez Canal. Nasser refused, and on 31 October, British and French aircraft began an air campaign against Egyptian targets (Operation REVISE). Less than a week later, on 5–6 November, Anglo–French ground forces landed in Egypt.[2]

Reaction in the UN was as predictable as it was initially futile. On 2 November, the General Assembly condemned the attack on Egypt and called for an immediate ceasefire and withdrawal of combatant forces. The UN Security Council, with France and Britain as permanent members, was stymied from taking action. Amidst rumblings by the Soviet Union threatening direct intervention, Canada's Minister for External Affairs, Lester B. Pearson, proposed the formation of a UN emergency force, made up of contributions from willing countries, to form a buffer between the combatants to permit a negotiated settlement. This proposal also had the merit of bypassing the Security Council, as it would be debated by the General Assembly with authority vested in the Secretary-General, Dag Hammarskjold. The resolution was approved during an all-night session on 3–4 November and became a legal entity on 7 November with the approval of the General Assembly.[3]

Prior to final UN approval, planning in Canada had already begun. As it had been Pearson's suggestion that started the ball rolling, Canada was one of the first nations (of an eventual 10) that pledged forces to the UN and would provide the force's first commanding officer (CO), Major-General (MGen) E. L. M. Burns, then assigned to the UN as part of the Truce Supervisory Organization. While planning between Canadian military staffs took place in Ottawa, a small contingent travelled to UN Headquarters in New York City for detailed discussions on the composition and transport of the force. It was estimated that approximately 6,000 personnel would be required and that an integral air unit would be essential.[4] With government approval, the Chief of the General Staff, General H. D. Graham, committed the Canadian Army to provide a battalion group of just over 1,000 soldiers formed around the Queen's Own Rifles (QOR) of Canada. However, Canada planned to commit medical and transport elements as well so that the Canadian contingent would be self-contained.[5] The Chief of the Air Staff (CAS), Air Marshal C. R. Slemon, tasked the RCAF to provide a transport element to ferry UN personnel from a staging base located at Capodichino airfield outside of Naples, Italy, to Abu Suweir, Egypt.[6]

Speed was essential, and the Canadian contingent had to get to Italy, and then to Egypt, as soon as possible. Air Transport Command (ATC) gave the first part of this task to 426 (Transport [T]) Squadron, located at Dorval, Quebec, under the command of Wing Commander (W/C) A. J. Mackie. Scheduled transport flights within Canada were cancelled, while RCAF Canadair DC-4M North Stars

were prepared for the mission.[7] The first flight in support of Operation RAPID STEP departed on 12 November and carried the advance party for what would officially become Canadian Base Unit Middle East (CBUME). Stopping only long enough to refuel at Gander, Newfoundland, Lajes in the Azores and Gibraltar, the North Star landed at Capodichino 29 hours and 20 minutes after departure; 25 hours and 10 minutes of this time in the air. North Star shuttle flights continued throughout November and December of that year, moving vital personnel and light equipment to permit the Canadian contribution to the UN to establish itself in both Italy and Egypt. By February 1957, scheduled service flights were established between Canada, Europe and Egypt to meet sustainment needs, especially with respect to the transfer of personnel.[8]

Although the RCAF would play a key transport role, it was by no means the only Canadian service to be "tapped" for transport duties. Among the first orders issued for Operation RAPID STEP I (there would ultimately be three iterations of this operation), Her Majesty's Canadian Ship (HMCS) MAGNIFICENT, Canada's only aircraft carrier on her last cruise before a scheduled replacement, was recalled to Canada on 7 November. Arriving in Halifax on the 13th, work was immediately commenced to permit the ship to transport the bulk of supplies for the Canadian contingent to the United Nations Emergency Force (UNEF). It was envisioned that the MAGGIE would serve as a floating headquarters in addition to a transport ship and, more ominously, as a "firm base to which we could evacuate quickly."[9] That same day, 435 (T) Squadron Fairchild C119 Flying Boxcars departed RCAF Station Namao, Alberta, to begin a 48-hour move of the 1st Battalion of the QOR from its depot in Calgary to Halifax. The necessary battalion and support equipment would follow by rail.

Preparations were well in hand with respect to the transport of the Canadian contingent to the Middle East, and all that was required was Egyptian approval, as mandated by the UN agreement, for the forces to proceed.[10] Then Nasser objected to the inclusion of the QOR, as it was deemed to be too "British," given the unit's name and similarity of uniforms. At almost the same time, planners in New York began to realize that the units promised by the other contributing nations lacked necessary administrative, logistic and support elements. Discussions between MGen Burns and the Secretary-General resulted in a request that "the Canadian infantry battalion be for the present held in reserve, and that the Canadian Government should concentrate on meeting the need for air transport, administrative units, signals, engineers, army service, and medical units."[11] By 11 December, it had been agreed to by all concerned that the QOR would not deploy, and the process of returning the unit to its Calgary depot and removing its equipment from the MAGGIE was hurriedly completed. Although unknown at the time, making a single nation responsible for the majority of a UN mission's support functions would be a problem.

Operation RAPID STEP 2 now began, as approximately 500 personnel from the Royal Canadian Corps of Signals, Royal Canadian Army Service Corps, Royal Canadian Ordnance Corps and Royal Canadian Electrical and Mechanical Engineers, plus equipment, were brought to Halifax from across Canada and placed on-board the Royal Canadian Navy's (RCN's) aircraft carrier. For the crossing, Army personnel would be joined by four de Havilland Canada DHC-3 Otter aircraft and a small RCAF contingent.[12] These aircraft would form the core of UNEF's dedicated flying support. The MAGGIE left Halifax on 29 December and arrived at Port Said, Egypt, on 11 January 1957. Four days later, the Otters made history by being the only fixed-winged RCAF aircraft to fly off of one of Her Majesty's Canadian aircraft carriers.

As a possible modification to Canada's Army contribution to UNEF was being considered, 435 (T) Squadron was placed on alert on 19 November 1956 for possible extended operations somewhere in the Middle East. The following day, a 16-person RCAF planning team led by Air Commodore F. S. Carpenter, the Air Officer Commanding (AOC) ATC, departed Canada for Capodichino, Italy. Included in this group was W/C H. A. Morrison, the commander-designate for the soon to be formed air-transport unit (ATU). Their objectives were:

a. to locate as quickly as possible an aerodrome near Naples from which 435 (T) Sqn [squadron] with C119 aircraft could transport United Nation's Emergency Force troops and supplies to Egypt, [and]
b. to prepare facilities to such an extent that the C119s could commence flying to Egypt immediately after their arrival in Naples.[13]

The base at Capodichino had the necessary facilities for the RCAF operation. Negotiations with Italian government and United States Navy (USN) authorities, who were utilizing the airfield as a transportation facility, quickly led to an agreement permitting Canadian transport aircraft to utilize the airport for UN purposes. As well, the USN agreed to provide a communication link back to North America.[14]

At RCAF Station Namao, Alberta, 435 Squadron began its lengthy move to Capodichino. Given the limitations of the Boxcar, the approximately 10,500 kilometre (km) journey would take several "hops." Aircraft flew to Downsview, Ontario, then on to Italy via the route established by 426 Squadron. The first aircraft were loaded with both RCAF and Canadian Army personnel and equipment for the facilities in Italy and Egypt. Eventually, there would be 12 C119s located at the Italian airfield with 435 Squadron providing the bulk of the aircraft as well as air and ground crews; augmentees were provided by 436 (T) Squadron, Downsview, as well as various other RCAF stations and units. Under the able command of W/C W. C. Klassen, the CO of 435 Squadron, the first UN flight took place within four days of getting the "go" order.[15]

Command and control (C2) arrangements were relatively straightforward. Command of the ATU, Canadian United Nations Emergency Force (CANUNEF), the official name as of 11 February 1957, was vested in the Commander, UNEF. The senior RCAF officer would serve as the CO of the ATU, and he was responsible to:

a. Execute such plans and carry out such tasks as may be assigned from time to time by the Commander, United Nations Emergency Force; and
b. Direct and control the activities of:
    i. 114 Communications Flight, Capodichino, Italy; and
    ii. 115 Communications Flight, Abu Suweir, Egypt.[16]

Those administrative responsibilities not undertaken by the UN or UNEF were to remain the responsibility of the RCAF and ATC. By late January 1957, the establishments for the various RCAF components were: ATU – 11 officers, 85 airmen and 40 civilians; 114 Communications Flight – 22 officers and 86 airmen; and 115 Communications Flight – 17 officers and 64 airmen.[17]

The majority of the transport required to move the various UN contingents from their respective countries to Italy was undertaken by the United States Air Force. As the major powers were "forbidden" to fly into Egypt, trans-shipment from Italy to Egypt was first undertaken by chartered Swissair aircraft and then by the RCAF with occasional assistance from the Italian Air Force.[18] The first RCAF UN flight in support of Operation READY LIFT, the airlift from Italy to Egypt, departed Capodichino on 24 November loaded with UN troops bound for Abu Suweir, located approximately 116 km north-east of Cairo. Given recent hostilities, the C119s were initially restricted to flying in Egyptian airspace from one half hour after local sunrise to one half hour before local sunset. The entry and exit point was over the port city of Rosetta, located approximately 65 km east of Alexandria. To maximize the payload, Canadian C119s took off with sufficient fuel to reach the USN facility at Souda Bay, Crete, where they took on additional fuel to complete the run to Abu Suweir.[19] Facilities at the Egyptian airfield were primitive at best, as it was heavily damaged by French and British air attacks during the recent hostilities. When the first Canadians arrived, the violence of the attacks was clearly in evidence, including an unexploded rocket lodged in the roof of one of the hangars. Considerable work was required to render the field both safe and fit for the steady stream of arriving and departing aircraft.[20]

It was a busy time at Capodichino, with the ground crews working round the clock in three shifts. Although they had hangar and ramp space (and the local economy provided all the Canadians needed in the way of accommodations, rations and amusement), the technicians were faced with a host of problems. The lack of engine maintenance stands suitable for the C119 and the difference in electrical voltage proved the most vexing. Ingenuity and improvisation were the order of the day, as the small maintenance organization struggled to keep pace with the demanding flying schedule.[21]

By the end of December, the initial rush to deploy UN forces to serve as a buffer between Egyptian and Israeli forces was mostly complete. Between them, the 12 RCAF C119s had carried 1,712 passengers

and 306 tons [278 tonnes] of freight.[22] With the mission of the ATU/CANUNEF transitioning from deployment to sustainment, the decision was made to reduce the number of Boxcars, as the aircraft were needed back in Canada. By the end of January 1957, their number had dwindled to four. In due course, 114 and 115 Communication Flights were designated as ATUs in their own right, with a small headquarters element at Capodichino providing higher-level administrative support.[23]

The C119s continued to shuttle back and forth between Italy and Egypt, moving cargo and personnel as required. In March 1957, this included transporting elements of 56 Canadian Reconnaissance Squadron, manned primarily from the Lord Strathcona's Horse and the Royal Canadian Dragoons. It had been determined that UNEF required additional mobile ground units for monitoring purposes, and via Operation RAPID STEP III, personnel for the latest addition to the Canadian contingent proceeded overseas. As of March, the Canadian contribution to UNEF stood at approximately 1,000 all ranks. By January 1958, UNEF was deemed to be well-established, with the UN capable of meeting heavy cargo requirements by other means. The remaining C119s returned to Canada, and 114 ATU was disbanded.[24]

The RCAF Otters of 115 ATU took up residence at Abu Suweir, where they were soon joined by three CC129 Dakota aircraft, used primarily for transport to and from Abu Suweir and the major airports such as Beirut, Lebanon. When a steady state was reached, approximately 90 RCAF and a varying number of Army personnel—for movement control, communications and postal duties—called this little bit of desert home. From the beginning, the Dakotas and Otters attached to 115 ATU were expected to conduct light-transport duties. The Otters, with their short take-off and landing (STOL) capability, became an important "connection" to the isolated UN outposts. In addition to carrying passengers, mail and fresh rations, the aircraft were used to evacuate casualties, many of which were caused by mines.[25]

As well, the Dakotas and Otters were a vital part of UNEF's surveillance apparatus. Given the 273 km length of the Demarcation Line, the 60 km perimeter of the Gaza Strip, the lack of roads, the paucity of ground reconnaissance units and the danger of mine fields, surveillance from the air was the only viable option.[26] This was not a high-tech operation. Aircrew, and the occasional additional observer, conducted surveillance using the "mark-one eyeball," augmented from time to time with field glasses. If something was spotted, it was either reported upon landing or, if the opportunity existed, a nearby mobile patrol would be contacted to investigate. Initially, these flights were conducted once a day at varying times to provide a better chance of detecting unauthorized movement along the few roads or overland across the desert. By August 1957, the frequency of these patrols was reduced to three times per week, but air surveillance often made a noticeable impact.[27] For example, on 18 July, after persistent rumours in New York that the Egyptians were fortifying the island of Tiran east of Sharm El Sheik in violation of the ceasefire agreement, an Otter was sent to investigate. The Canadian crew confirmed the reports, leading to a protest and the eventual dismantling of the offending outpost.[28]

In March 1957, UNEF moved from Abu Suweir to the Gaza Strip, setting up its headquarters in Gaza City. As part of the overall relocation of UNEF, 115 ATU moved in September to the airfield at El Arish, as it was the closest suitable airfield located approximately 100 km west of Gaza City. Meanwhile, the majority of Canadian Army personnel found themselves at a main UN base—Camp Rafah, established near the headquarters—but outside of the Gaza Strip. Although personnel from the two Canadian services were relatively close together, there would be no formal relationship between them until the mid-1960s. Until that time, the ATU was under the operational control of the UN but under the command of ATC, with no requirement to report to the senior Canadian officer at Camp Rafah.[29]

Operating conditions at the new airfield were even more primitive than at Abu Suweir, as all meagre facilities had been destroyed by the Israelis. The RCAF arranged for accommodations within the village of El Arish, located on the coast 15 km north of the airfield. Known as Camp Marina, these RCAF facilities allowed personnel to enjoy the occasional dip in the warm Mediterranean waters, an activity that also allowed the RCAF to hone their surveillance skills, as every so often, sharp-eyed observers in the Otter spotted sharks just off the beach.[30] This normally led to the end of any aquatic activities until the offending predator had left the area.

Further complicating UN air operations was the need to share the use of one runway with combat elements of the United Arab Republic (UAR) Air Force. A squadron of 12 MiG jet fighters commenced operations from El Arish airfield on 15 December 1958.[31] Stationed at opposite sides of the airfield, day-to-day activities were kept completely separate, and RCAF personnel made sure that flight plans were filed with Egyptian authorities to prevent any inadvertent problems. And not wanting to leave anything to chance, the Canadians strove to maintain good relations with their Egyptian counterparts by socializing at their respective messes when the opportunity arose.[32]

Nevertheless, periodically throughout the tenure of UNEF, tensions between Israel and Egypt rose, and often there were military clashes between their respective forces. Although relatively minor in nature, these altercations meant that non-Egyptian aircraft, even those in UN white, were viewed with suspicion. An example of these dangers occurred on 17 June 1958, when Dakota 666 with Squadron Leader K. M. Han in command was forced down by UAR MiGs at Abu Suweir when it was deemed to be "flying [outside] the established air corridor."[33]

Egyptians and Israelis aside, desert flying with the sand, heat and primitive maintenance facilities made for a challenging environment.[34] Despite the best efforts of maintenance crews and the skills of the flight crews, keeping the Dakotas and Otters safely airborne was a challenge. Aircraft were often forced to make unexpected landings due to unserviceable equipment. At times, these forced landing took on the nature of a farce, as on 9 May 1959, when a Dakota making a passenger run to Cairo lost an engine and landed near a small village. Upon landing, the aircraft was surrounded by local farmers who were prepared to arrest all of the passengers. Fortunately, one of the passengers was the daughter of the Governor of Gaza; she quickly calmed their fears. Crew and passengers were subsequently escorted to the village as honoured guests.[35]

The Otter was a rugged aircraft, but desert flying meant often operating at, or near, the flight envelope. Three aircraft were lost during the history of 115 ATU. Two crashes—Otter 3675 during a landing attempt at Rafah, Egypt, on 15 April 1957 and Otter 3744 in the Gaza Strip on 19 September 1958—did not result in severe injuries. However, on 26 April 1966, Otter 3678 crashed on take-off from El Kuntilla, Egypt. The two Canadian pilots and one of the passengers died from their injuries within a few days.[36] In total, four RCAF servicemen lost their lives while serving on 115 ATU; the other two were killed in car accidents on 2 November and 26 December 1963 respectively.[37]

Eventually, the Dakotas were withdrawn from service and replaced with two DHC-4 Caribou (designated the CC108). The aircraft and 20 technicians arrived at El Arish on 28 September 1960 as part of a regular rotation of personnel. Accompanying the aircraft were three instructors who quickly familiarized 115 ATU's aircrew with the latest addition to the UN fleet. The first Caribou mission was flown on 4 October with a regular transport run to Beirut.[38] For the next few months, the Dakotas and Caribous shared the Middle Eastern skies. Withdrawn later that year, a Dakota made a brief re-appearance in the summer of 1963 as a replacement for a Caribou assigned to other UN duties in Yemen, but by November, the last of the Dakotas departed El Arish. The Caribous were worthy successors to the Dakotas and quickly proved their worth in the demanding desert environment, being far more capable than the aircraft they had replaced. As well, being a relatively new aviation product, they provided the opportunity for 115 ATU personnel to break up their normal routine, as they were called upon from time to time to demonstrate the Caribou's capabilities for potential foreign buyers.[39]

By 1960, for all practicable purposes, UNEF 1 had reached a "steady state" concerning RCAF support, but these were tumultuous times with respect to peacekeeping as an important element of Canadian defence and foreign policy. Ushered in by the Liberal Government of Louis St. Laurent, this type of direct support for the UN came under scrutiny by the Conservative Government of John Diefenbaker after his 1957 election win. J. L. Granatstein noted, "we have now forgotten that Canada initially was not enthusiastic about the idea of participation in UN peacekeeping operations."[40] The new Conservative Minister of National Defence (MND), George R. Pearkes, certainly had his reservations, or at least, this is what his senior generals believed. This position was put forward in a letter from the Chairman of the Chiefs of Staff Committee, General Charles Foulkes, to the Under-Secretary of State for External Affairs in August 1957; "The Minister has observed that these [UN] commitments are a very heavy drain on this Department and provide little benefit for the Services.

He wishes a review of these commitments with a view to reducing them as soon as possible."[41] For an MND who was dealing with spiraling defence expenditures, typified by the Avro Arrow project, it was understandable that he sought to cut costs where possible. Unfortunately, his desire to do so at the expense of UN operations was opposed by External Affairs and then was quickly torpedoed when Diefenbaker announced during an address to the General Assembly on 23 September that "Canada's commitment to the UN [was] the cornerstone of our foreign policy."[42]

Hyperbole aside, Diefenbaker—and after 1963, Liberal Prime Minister Lester B. Pearson—recognized that supporting the UN was growing in political importance to a level just below that of NATO and NORAD. This was depicted by its subordinate position with respect to those other organizations in the list of priorities outlined within the 1964 *White Paper on Defence*.[43] Yet, it was qualified support that Canada sought to provide. Granatstein argued that:

> Canadians were not asked to participate in any of the peacekeeping operations for their inherent neutralism or because our soldiers and airmen were the equivalent of a gendarmerie. Far from it. We were … needed in the Suez because, as a NATO ally with a tradition of overseas service in two world wars we had sophisticated technical capabilities … .[44]

This was a sentiment echoed by the politicians of the day. Paul Martin (senior), the Minister for External Affairs, in a speech delivered at Wayne State University on 19 June 1964, noted that peacekeeping was a difficult sell at home due to its inherent problems and risks, with "small thanks abroad" when the task was undertaken. Nevertheless, he argued that it was the "duty of a nation that has the ability to move quickly with an effective force" to do so.[45]

Increasing the transport capability of the RCAF featured prominently in the 1964 *White Paper*. Still, it was only one element of an approximately $1.5 billion re-armament programme underway for Canada's defence forces in the first half of the 1960s. The need to replace fighter aircraft for NATO and NORAD, as well as acquiring a modest nuclear capability, meant that the RCAF would continue to spend the bulk of its budget allocation on Air Defence Command and the Air Division in Europe.[46] The RCAF was cognizant, indeed supportive, of the need to "beef-up" its global transport capacity, having purchased four CC130B Hercules transport aircraft and directed the refurbishing of the venerable Boxcars; they needed these aircraft to support existing alliance commitments. Senior RCAF officers understood that the increased *White Paper* emphasis on UN tasks and mobile land forces was merely the double- or triple-hatting of the same forces, albeit with a more robust airlift capability. These forces would be used in the Arctic or for NATO or UN purposes as the government saw fit.[47]

The RCAF did not seem to have the same presence of mind when it came to the purchase of a new generation of utility aircraft. Although they were the proud owners of a number of DeHavilland Canada Otters, they did not appear to be all that interested in the Caribou, an excellent STOL aircraft with greater speed and cargo capacity. In 1961, the United States Army ordered 173 of the rugged aircraft, but the RCAF only acquired five, two of which were the original prototypes. Their utility was well understood. In testimony before the House of Commons Special Committee on Defence on 31 October 1963, Air Marshal C. R. Dunlap, the CAS, stated that for UN operations "reconnaissance can be done by any one of a variety of aircraft … . But by the nature of the operation it is not fighting aircraft that one needs. The aircraft used are the Otter, and the Caribou, that sort of thing, for transport and reconnaissance."[48] This led to an additional question with respect to the Caribou, where the CAS admitted:

> We have only a very limited number of Caribou. The total is four only; and we have found that in our operations for the United Nations we could have used considerably more … . We are over-extended in the matter of the Caribou. I think that in any further programme we will find that we must have more of this class of aircraft.[49]

These small, utility aircraft were, more often than not, grouped together into small organizations such as 102 Composite Unit (designated "KU") at RCAF Station Trenton. Although these units often provided the aircraft and personnel that formed the bulk of the Canadian ATUs on UN service,

they simply were not that important in terms of long-range RCAF planning, as they had no war-fighting role. Perhaps the Air Force could be forgiven its short-sightedness given the government's apparent ambivalence to peacekeeping (noted above). Additionally, there was confusion within the RCAF on how to deal with a "temporary" unit that would eventually exist for almost 10 years. In March 1960, 114 ATU's CO, W/C R. H. Manson, wrote ATC seeking clarification of a system where domestic equipment was provided by the UN. Dakota parts, national clothing and technical equipment were provided by Air Materiel facilities in Langar, United Kingdom; Otter parts came from Downsview, Ontario; mobile equipment came from the Air Division in Europe; and local purchases were restricted to $1000 or less.[50] This problem was never resolved and in a few short years grew even worse with added complications brought about by the unification of the three services and the establishment of an overarching Armed Force Headquarters.

The early 1960s saw the growth in peacekeeping missions throughout the world, and Africa was no exception. As a long-standing UN operation, UNEF often found its personnel "borrowed" for other missions and its facilities and aircraft seconded to these new operations. During the four-year duration of UN operations in the Congo, select RCAF personnel found themselves temporarily assigned to Opération des Nation Unies au Congo (ONUC) to provide advice on the growing air effort, while the airfield at El Arish served as a transit hub for aircraft moving between Europe and UN bases in the former Belgian colony.[51]

In June 1963, as the situation in nearby Yemen deteriorated into open conflict, the UN moved quickly to establish a presence. Taking personnel and resources from both ONUC and UNEF, Canada was asked to provide the United Nations Yemen Observer Mission (UNYOM) with 50 personnel to serve in what would become 134 ATU. Even while the necessary aircraft and personnel resources were being gathered, 115 ATU sent a Caribou, an Otter as well as air and ground crew to commence surveillance operations as quickly as possible.[52] Air operations in Yemen would gradually wind down, but 115 ATU continued to support the mission until it ended in September 1964.[53]

Tensions between Israel and its neighbours, never cordial at the best of times, escalated rapidly in late 1966. Terrorist attacks against Israel led to reprisals against Jordan and Syria, the more serious of which resulted in the shooting down of six Syrian MiGs in April 1967. Nasser, who had recently signed a mutual-defence pact between the UAR and Syria, felt pressured to do something in support of the pact or perhaps lose influence in the Arab world.[54] Accordingly, on 13 May 1967, Nasser decided to remove UNEF and place UAR forces along the Egyptian–Israeli border. And while it was "doubtful that [he] intended his actions to provoke a war with Israel, … the alternative—losing prestige and influence throughout the Arab world—was deemed even less palatable."[55] Three days later, the following message was conveyed to Indian Major-General Indar Jit Rikhye, the current UNEF Commander, by the UAR chief of staff on behalf of Nasser:

> I gave my instructions to all of the Armed Forces of the United Arab Republic to be ready for action against Israel the moment it might carry out any aggressive action against any Arab country. Due to these instructions our troops are already concentrated in [the] Sinai on our eastern borders. I request that you issue your orders to withdraw all these troops immediately.[56]

Rikhye insisted that his message be conveyed directly to the UN in New York, which it was on 18 May 1967. The Secretary-General, U Thant, felt strongly that UNEF could only remain in place with the consent of the host nation, which Nasser had withdrawn. U Thant replied to the Minister of Foreign Affairs for the UAR that:

> Your Government's request will be complied with and I am proceeding to issue instructions for the necessary arrangements to be put in train without delay for the orderly withdrawal of the Force, its vehicles and equipment and for the disposal of all properties pertaining to it.[57]

Not everyone agreed with the Secretary-General's decision, and there was some question with respect to the legality of withdrawing a UN-mandated force based upon a single nation's demands.[58]

In Canada, the matter was discussed in Cabinet. Prime Minister Lester B. Pearson, whose actions a little more than a decade ago resulted in the creation of UNEF, felt that Egypt's demand should have resulted in a discussion within the UN rather than a precipitous decision on the part of U Thant.[59] Nevertheless, the decision had been made, and the force would have to leave. Unfortunately, no procedures existed that covered the requirement to evacuate thousands of UN personnel and tons of equipment in a quick and efficient manner.

A plan that did exist, based on initial work undertaken in 1959 by MGen Burns and updated in 1964, assumed a gradual withdrawal over a period of weeks or months. Deemed politically sensitive, there were only two copies of this document. The one that was supposed to be held by the UN Secretariat in New York could not be found, so the copy at UNEF Headquarters became the basis for recommendations pertaining to the necessary airlift and sealift required to remove UNEF in an orderly fashion. It was estimated that a minimum of six weeks would be required to complete the task, and the Canadian contingent, who provided the majority of logistical support and air transport, would be required to the end.[60]

Authorities in Canada neither knew of the UN plan nor had a valid one of their own pertaining to the withdrawal of the Canadian contingent. As early as 1959, the potential for a unilateral withdrawal of Canadian forces serving with UNEF had been recognized, and it had been recommended that airlift and sealift contingency plans be developed. Nothing was done until 1964, when the Chief of the General Staff, Lieutenant-General G. Walsh, directed that a plan for the evacuation of the Canadian contingent by air be developed. Unfortunately, by the time it was required in 1967, it had become hopelessly out of date.[61] Nevertheless, ATC had benefited from the emphasis placed on air mobility in the 1964 *White Paper*, especially with the addition of Hercules transport aircraft. In a 1966 report, Air Commodore G. G. Diamond, the AOC ATC, emphasized that ATC's "operating concept is correct for meeting DND emergency demands quickly and effectively."[62]

On 18 May, ATC, responding to a Canadian Forces Headquarters' (CFHQ's) request, submitted a plan to evacuate not just the Canadian contingent but the entire force, utilizing the airfield at El Arish. The evacuation would proceed at a deliberate pace, airlifting UN personnel and select equipment to an as yet undetermined location. Heavy equipment would follow by sea. However, on Friday, 19 May, all of this careful planning fell apart as the UAR announced that no foreign military aircraft would be allowed to land in Egyptian territory.[63]

Senior Canadian planners were in a quandary. The continued escalation of harassment of UN forces, from both Arabs and Israelis, heightened concern for the safety of the Canadian contingent. One incident in particular—where Israeli aircraft attempted to force down an RCAF Caribou, for which the pilots were recognized for their professionalism—was particularly troubling.[64] By the end of 19 May, a revised plan was in place to permit the evacuation of the force utilizing civilian air and sea transport, but at the same time, the Chief of the Defence Staff (CDS), General J. V. Allard, quietly ordered Maritime Command to examine the possibility of removing the Canadian contingent via Canadian warships. Within a day, Maritime Command responded that suitable ships, with embarked Sea King helicopters, could sail within 36 hours and be in place in 10 days.[65]

The week of 20–27 May 1967 was one of confusion both in Ottawa and in Gaza. Mixed signals from both Canada's representative at UN headquarters in New York and diplomats in Egypt spoke equally to the possibility of imminent hostilities or a lessening of tensions. On 23 May, Allard, acting on his interpretation of the situation, ordered the implementation of Operation LEAVEN, the planned naval evacuation of the Canadian contingent, with a target date of the first week of June. At the same time, based on the possibility that the UAR would relent and permit military aircraft to use El Arish or another airfield, ATC was instructed to press on with refining an evacuation plan based primarily on airlift. To add to the confusion, communications between Ottawa and the CBUME and 115 ATU were less than stellar, which meant that senior Canadian commanders on the ground had little idea of what Ottawa was planning, nor had they provided detailed information with respect to numbers of personnel, type of equipment and weight of freight that needed to be removed. Within ATC, all planning was based on the assumption that a maximum of 740 individuals, each limited to 45 kilograms (kg) of baggage, would need to be flown out of El Arish.[66]

Despite everyone's best efforts, it appeared as if a withdrawal, given Egyptian restrictions and unexpected damage to the transiting Canadian warships, could not take place until early June.[67] Then on Saturday, 27 May, MGen Rikhye was handed a note by Egyptian authorities stating that:

> Owing to the biased attitude of the Canadian Government towards Israel, the general feeling among the masses of the people and the Armed Forces became mobilized against Canadian policy, and being aware for the safety of the Canadian troops and for the reputation of the United Nations emergency forces [sic], which have done their best in carrying out their task, we demand the immediate withdrawal of the Canadian troops from the United Arab Republic territories within 48 hours, and we are ready to give all facilities if required for their transport by air or any other means.[68]

Early the following morning, the CBUME CO submitted a plan to CFHQ estimating that between 20 to 25 Hercules loads would be required to remove personnel and cargo from Gaza—more than double the initial ATC estimate. Planners scrambled to accommodate the inclusion of over 160,000 kg of materiel, apparently unbeknownst to CFHQ, which had been accumulated over 10 years.[69] As plans were adapted, the CDS gave the order to withdraw the UNEF Canadian contingent at 1920 hours (Ottawa time) on 28 May.

Planning for the airlift had been revised throughout May in accordance with the changing situation. Arrangements were made for the necessary over-flight clearances, fuel, accommodations, communications and weather-forecasting support. Under the command of W/C J. C. Wynn, an ATC detachment was placed at Pisa, Italy, the initial evacuation point. As of 25 May, two Hercules aircraft—drawn from 435 and 436 Squadron detachments at Lahr and Soellingen, Germany, respectively—were in place at Pisa. They were joined by two CC106 Yukon aircraft to permit the onward flow of Canadian personnel to Canada. When the Egyptian demand for the immediate withdrawal of the Canadian contingent became known on 27 May, the ATC detachment at Pisa was increased to six Hercules aircraft with 12 crews, 14 personnel of a mobile air movement section, 2 operations officers and 27 personnel with a servicing team.[70] Although it was difficult to obtain all of the necessary flight clearances in a timely manner (it was the weekend after all) and communications were sometimes "spotty," all was in place so that when the CDS gave the order for the withdrawal to begin on the 29 May only an hour passed before the first Hercules aircraft was airborne on its way to El Arish.[71]

There were numerous difficulties encountered by Canadian personnel as they transported themselves and their equipment through what would soon become an active war zone. W/C J. W. Fitzsimmons, the CO of 115 ATU (consisting of 94 all ranks), exercised "on-the-spot" control of processing and loading ATC aircraft. In the space of approximately 55 hours, between 29 and 31 May, 702 Canadian soldiers and airmen, along with almost all of their equipment, were safely evacuated from Egypt. Operating up to six flights per day, the Hercules aircraft made 18 trips between El Arish and Pisa, 3 from El Arish to Nicosia, Cyprus (heavy cargo), and 12 flights to move individuals and materiel from Pisa to Canada (these 33 flights totaled 530 hours and 45 minutes of flight time). The Yukons were busy as well, making six trips from Pisa to Canada (112 hours and 40 minutes of flight time). The three 115 ATU Caribou "self-deployed" back to Canada, arriving on 6 June 1967—the last of the Canadian contingent with UNEF to return home.[72]

The successful removal of the Canadians from harm's way created innumerable problems for the remaining UN forces, not the least of which was the loss of the ATU. The lack of regular air support and a central organization responsible for logistics meant that national contingents were, for all practicable purposes, on their own. Rikhye recommended the speedy withdrawal of UN forces and was in the process of making arrangements for UNEF forces to be evacuated via Israel when fighting broke out on 5 June between Egyptian and Israeli forces. For the UN, the net result was 15 peacekeepers killed, 17 wounded and significant damage to an already shaky reputation.[73]

It was a less than auspicious end to Canada's first major peacekeeping commitment. Fortuitously, the rapid withdrawal undoubtedly saved Canadian lives and underscored both the necessity of preparing national contingency plans in case of trouble and the prescience of those politicians and senior officers who supported a more robust military air-transport capability. ATC had performed admirably

through the provision of the ATU and timely evacuation. However, the operation highlighted a number of deficiencies with respect to the administration of UN contributions, particularly keeping track of equipment and materiel, communications and C2.[74] Perhaps the most profound outcome of this particular event was the observation that "the operation illustrated conclusively that the act of placing troops under the control of other than Canadian authority does not alter basic national responsibility which must be retained to secure their safety, proper direction, and to render them assistance when needed."[75] Canadian air power, as in 1967, is a central element in the successful implementation of these national responsibilities.

Notes

1. Canada, DND, *Department of National Defence, Report for Fiscal Year 1953–1954* (Ottawa: Queen's Printer, 1954); and Canada, DND, *Department of National Defence, Report for Fiscal Year 1954–1955* (Ottawa: Queen's Printer, 1955).

2. There are a multitude of books on the Suez Crisis; however, for a succinct recount of the military aspects of the operation, I suggest Derek Varble, *The Suez Crisis 1956*, Essential History Series (Oxford: Osprey, 2003).

3. For a detailed overview of these events from a Canadian point of view, see Michael K. Carroll, *Pearson's Peacekeepers: Canada and the United Nations Emergency Force, 1956–67* (Vancouver: University of British Columbia Press, 2009), 3–56.

4. UN, Document A/3943, "Summary Study of the Experience Derived from the Establishment and Operation of the Force: Report of the Secretary-General," 9 October 1958, 13, paragraph 34, accessed June 16, 2015, http://www.un.org/en/ga/search/view_doc.asp?symbol=a/3943.

5. Canada, DND, Directorate of History and Heritage (DHH), Report No. 4, "Canada and Peacekeeping Operations," 22 October 1965, 16.

6. Laurence Motiuk, *Thunderbirds for Peace: Diary of a Transport Squadron* (Ottawa: Larmot Associates, 2004), 500.

7. The North Star was a Canadian development of the Douglas C-54/DC-4 and was equipped with Rolls-Royce Merlin engines. It was noisy and unpressurized which made for long, loud and often uncomfortable trips for passengers. For additional information, see Larry Milberry, *The Canadair North Star* (Toronto: CANAV Books, 1982).

8. For a detailed appreciation of those early North Star flights, see Motiuk, *Thunderbirds for Peace*, 504–9, 513.

9. J. L Granatstein and D. J. Bercuson, *War and Peacekeeping* (Toronto: Key Porter Books, 1991), 195.

10. One of the key aspects in the establishment of UNEF was the concept of "consent of the host Government" which meant that the UN force was obliged to respect the sovereign rights of the host nation (Egypt) and that the force could "enter and operate in Egypt only with the consent of the Egyptian Government." See "Middle East – UNEF 1, Background," UN, accessed June 16, 2015, http://www.un.org/en/peacekeeping/missions/past/unef1backgr2.html.

11. Canada, Department of External Affairs, *The Crisis in the Middle East, October–December, 1956* (Ottawa: Queen's Printer, 1957), 27.

12. The Otter was a STOL aircraft used by the RCAF for a variety of utility tasks and was deemed extremely suitable for operating from austere airfields. Although envisaged as a "northern" aircraft, it acquitted itself admirably in the Middle East. Eventually, seven Otters (serial numbers 3675, 3677, 3678, 3696, 3743, 3744 and 3745) served as part of UNEF. Three were destroyed in accidents (3675, 3678 and 3744). For more detailed information on this important Canadian aircraft, see Karl E. Hayes, *De Havilland Canada DHC-3 Otter: A History* (Killiney, Ireland: Karl E. Hayes, 1982).

13. Canada, DHH, File 8-200-115, ATU, CANUNEF, Capodichino Daily Diary, 1.

14. Ibid., 1–3.

15. Larry Milberry, *Sixty Years: The RCAF and CF Air Command 1924–1984* (Toronto: CANAV Books, 1986), 310.

16. Canada, DHH, File 8-200-115, ATU, CANUNEF, Organization Order 8.12, Air Transport Unit, Canadian United Nations Emergency Force, Capodichino, Italy, 11 February 1957, 1. These arrangements were in place as of 22 November 1956, but this order made it official.

17. Canada, DHH, File 8-200-115, ATU, CANUNEF, Capodichino Daily Diary, 4.

18. UN, Document A/3943, "Summary Study," 14, paragraph 38.

19. Motiuk, *Thunderbirds for Peace*, 502.

20. Carroll, *Pearson's Peacekeepers*, 124.

21. Squadron Leader J. A. Connolly, "Determined on Delivery," *The Roundel* 9, no. 1 (January–February 1957): 10. North American electrical equipment operated on 110–220 volts, while at Capodichino the current was 160.

22. "Details/Information for Canadian Forces (CF) Operation *United Nations Emergency Force I*," Canada, DND, accessed June 16, 2015, http://www.cmp-cpm.forces.gc.ca/dhh-dhp/od-bdo/di-ri-eng.asp?IntlOpId=273&CdnOpId=324#cfi-rof.

23. Canada, DHH, File 9-200-115, Historical Narrative (HN), 115 Air Transport Unit, UNEF, El Arish, Egypt (hereafter 115 ATU HN), Organization Order 8.12, 31 December 1957.

24. "Details/Information for Canadian Forces (CF) Operation *United Nations Emergency Force I*."

25. One such casualty evacuation mission was undertaken in January 1960 with Dakota 656, when a member of the Danish contingent was wounded by a mine. Interestingly, these types of missions were routine enough that they rarely rated a mention in the ATU's historical narrative. 115 ATU HN, From 1 December 1959 to 31 May 1960, entry for 6 January 1960.

26. Carroll, *Pearson's Peacekeepers*, 124.

27. UN, Document A/3943, "Summary Study," paragraph 71.

28. Canada, DHH, File 8-200-115, Appendix A to Air Force Administrative Order 71.00/01, ATU, CANUNEF, Naples, Italy, 1 June 1957 to 30 November 1957, 2, entry for 18 July 1957.

29. Carroll, *Pearson's Peacekeepers*, 137.

30. 115 ATU HN, From 1 June to 30 November 1960, entry for 29 August 1960.

31. 115 ATU HN, From 1 December 1958 to 31 May 1959, Part III, entry for 15 December 1958. The UAR was a short-lived political union between Egypt and Syria, lasting from 1958 to 1961; though, Egypt continued to be officially known as the UAR until 1971.

32. 115 ATU HN, From 1 June 1961 to 30 November 1961, entries for 9 and 13 June 1961.

33. 115 ATU HN, From 1 June 1958 to 30 November 1958, Part III, entry for 17 June 1958.

34. Weather conditions rarely rated a mention in the historical narrative, but on 16 April 1960, 115 ATU experienced the "first real sand storm of the year … . Visibility was limited to 50 feet [15.3 metres], and winds were up to 60 miles per hour [96.6 kilometres per hour]. There was no flying until 1600 hours." 115 ATU HN, From 1 December 1958 to 31 May 1959, Part III, entry for 16 April 1960.

35. File 9-200-115, Letter from AOC ATC to the Editor of the *Roundel*, 5 June 1959.

36. See Canada, DND, Directorate of Flight Safety, "Occurrence Report for 25 April 1966 Air Accident," accessed June 16, 2015, http://www.115atu.ca/Files/1861%20CC123%20Accident.pdf. Flying Officers J. P. M. L. Picard and R. V. Edwards succumbed to their injuries respectively on 30 and 28 April 1963.

37. W/C E. D. Harper and Sergeant J. K. Hermann were killed in separate car crashes. A total of 31 Canadians lost their lives while serving with UNEF 1. For a complete list see, "Canadian Peacekeepers Honour Roll," Knight's Canadian Info Collection, accessed June 16, 2015, http://www.members.shaw.ca/kcic1/peacekeepers.html.

38. 115 ATU HN, From 1 June to 30 November 1960, entries for 28 September and 4 October 1960.

39. 115 ATU HN, From 1 December 1961 to 31 May 1962, entry for 28 January 1962.

40. J. L. Granatstein, "Peacekeeping: Did Canada Make a Difference? And What Difference Did Peacekeeping Make to Canada?" in *Making a Difference? Canada's Foreign Policy in a Changing World Order*, ed. John English and Norman Hillmer (Toronto: Lester Publishing, 1992), 225.

41. Letter from Chairman, Chiefs of Staff, to Acting Under-Secretary of State for External Affairs, 13 August 1957, quoted in Canada, DHH, Canadian Forces Headquarters, Directorate of History, Report No. 8, "Canada and Peace-keeping Operations: The Congo, 1960–64," 16 June 1966, paragraph 6, accessed June 16, 2015, http://www.cmp-cpm.forces.gc.ca/dhh-dhp/his/rep-rap/doc/cfhq/cfhq008.pdf. Hereafter referred to as "Report No. 8."

42. John G. Diefenbaker, *One Canada: The Years of Achievement, 1956 to 1962. Memoirs of the Right Honourable John G. Diefenbaker* (Toronto: Macmillan, 1976), 121.

43. Canada, DND, *White Paper on Defence* (Ottawa: Queen's Printer, 1964), 24, accessed June 16, 2015, http://publications.gc.ca/collections/collection_2012/dn-nd/D3-6-1964-eng.pdf. Support to the UN was number four on the priority list after deployable forces for the protection of Canada, forces to serve as a deterrent in Europe, and maritime forces in-being.

44. Granatstein, "Peacekeeping," 231.

45. Joseph T. Jockel, *Canada and International Peacekeeping* (Toronto: Canadian Institute of Strategic Studies, 1994), 11.

46. Stephen L. James, "The Formation of Air Command, A Struggle for Survival" (master's thesis, Royal Military College, 1989), 19. By 1962, approximately half of the RCAF's budget was spent on these two commands. The other 50 per cent was shared among Maritime, Training, Air Materiel and Air Transport Commands.

47. J. L. Granatstein, *Canada: 1957–1967* (Toronto: McClelland and Stewart, 1986), 225–26.

48. Canada, House of Commons, Special Committee on Defence, Minutes of Proceedings and Evidence, No. 18, 31 October 1963, 638.

49. Ibid.

50. Library and Archives Canada, Record Group 24, Vol. 20, 250, File 895-100-118/115, Vol. 1, Letter from W/C R. H. Manson to AOC ATC, 4 March 1960.

51. 115 ATU HN, From 1 June 1961 to 30 November 1961, entries from 24–29 June 1961. For a comprehensive overview of ONUC, see "United Nations Operation in the Congo," UN, accessed June 16, 2015, https://www.un.org/en/peacekeeping/missions/past/onuc.htm.

52. 115 ATU HN, 1963, Appendix A.

53. For an overview of the mission, see "Details/Information for Canadian Forces (CF) Operation *United Nations Yemen Observation Mission*," Canada, DND, accessed June 16, 2015, http://www.cmp-cpm.forces.gc.ca/dhh-dhp/od-bdo/di-ri-eng.asp?IntlOpId=311&CdnOpId=382; and Fred Gaffen, *In the Eye of the Storm: A History of Canadian Peacekeeping* (Toronto: Deneau & Wayne, 1987).

54. Michael K. Carroll, "From Peace(keeping) to War: The United Nations and the Withdrawal of UNEF," *Middle East Review of International Affairs* 9, no. 2, Article 5 (June 2005), accessed June 16, 2015, http://www.gloria-center.org/2005/06/carroll-2005-06-05/.

55. Ibid.

56. UN, "Report of the Secretary-General on the Withdrawal of the United Nations Emergency Force," Document A/6730 and Addendums 1–3, 26 June 1967, main body of the document, paragraph 6, accessed June 16, 2015, http://unispal.un.org/UNISPAL.NSF/0/D21AF95689E8F2C00525660B0051640F.

57. Ibid., Addendum 3, paragraph 24.

58. For a comprehensive overview of this issue, see Canada, DHH, Canadian Forces Headquarters, Directorate of History, Report No. 16, "The Withdrawal of UNEF from Egypt May–June 1967, Canadian Aspects," 1 April 1968, paragraphs 14–29, accessed June 16, 2015, http://www.cmp-cpm.forces.gc.ca/dhh-dhp/his/rep-rap/cfhqrd-drqgfc-eng.asp?txtType=4&RfId=307. Hereafter referred to as "Report No. 16."

59. For an overview of this period and the Canadian government's actions, see Sean M. Maloney, *Canada and UN Peacekeeping: Cold War by Other Means, 1945–1970* (St. Catharines, Ontario: Vanwell Publishing, 2002), 229–36; and Carroll, *Pearson's Peacekeepers*, 161–81.

60. Carroll, *Pearson's Peacekeepers*, 172.

61. Report No. 16, paragraph 34. With the administrative and operational upheaval that was going on due to the unification of the three services, it should not be surprising that the plan was not updated.

62. Report No. 16, paragraph 35. This robust air-transport capability had just been demonstrated with Operation NIMBLE, a four-month airlift of petroleum products between the Congo and Zambia, as well as Exercise WINTER EXPRESS. The latter was a NATO exercise in which 1,000 troops, 197 vehicles and over 45,000 kilograms of freight had been airlifted from Canada to northern Norway and back.

63. Report No. 16, paragraphs 47–48.

64. Canada, *Canada Gazette*, 16 September 1967. The incident took place on 17 May 1967 during a flight from El Arish to Gaza. Flying Officer (F/O) R. J. V. Simpson (pilot) was awarded a Queen's Commendation for Brave Conduct, and F/O J. T. S. L. Gagnon (co-pilot) was awarded a Queen's Commendation for Valuable Services in the Air. For the full text of the award, see "Honours and Awards to Canadian Forces Personnel for Postwar Services Related to Aviation," RCAF Association, accessed June 16, 2015, http://rcafassociation.ca/uploads/airforce/2009/07/postwardec.html.

65. Report No. 16, paragraph 50.

66. Report No. 16, paragraphs 51–65. Carroll, *Pearson's Peacekeepers*, 161–81, also provides an excellent overview with more emphasis on the political aspects.

67. Report No. 16, paragraph 62. HMCS SAGUENAY suffered damage from heavy seas during the transit, resulting in a recommendation that it be replaced.

68. As quoted in Report No. 16, Appendix C, paragraph 70.

69. Report No. 16, paragraphs 71–75.

70. Report No. 16, paragraph 82.

71. Report No. 16, paragraphs 82–83. France was the last country to provide overflight clearance. Communications, such as provided by UN telex, were described as being available only by "happy accident."

72. Canada, DHH, File 112.302.005(D4), Memorandum V1550-1 (Temporary Docket) 7164 (D Ops [Director, Operations]), 16 June 1967, to Parliamentary Returns on the UNEF withdrawal. Additional details can be found in Report No. 16, paragraphs 84–97. For a personal perspective on just how confused everything was, see Flight-Lieutenant (Retired) M. G. Belcher, "Exodus El Arish," *Airforce Magazine* 7, no. 3 (September 1983), 26–27. Belcher remembers that in his haste to depart he forgot to lower the RCAF Ensign from the flagpole in front of the headquarters building for which he was duly "chastised."

73. Carroll, "From Peace(keeping) to War."

74. Report No. 16, paragraph 99. These issues were raised at a meeting held with the CDS on 16 August 1967, attended by Colonel Power, W/C Fitzsimmons and W/C Wynn.

75. Quoted in Report No. 16, paragraph 99. This is an excerpt from C.O.S. [Chief of Staff] Minutes Staff Meeting 18/67 of 16 August 1967, attached minute dated 21 August 1967.

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Chapter 7

Flying "Truck Drivers" or "Captains of the Clouds": Paul Hellyer and the RCAF's Acquisition of the CC130 Hercules

By Richard Mayne

According to Minister of National Defence Paul Hellyer, Air Force officers in Ottawa shunned the idea of spending money on air transport simply because, in his words, "they abhorred the thought of being seen as 'truck drivers for the army.' Any airman worth his salt had to be a 'Captain of the Clouds,' an air-superiority, one-on-one type, just like you see in the movies."[1] This was a serious charge directed at the top leadership of the Royal Canadian Air Force (RCAF). Situations such as the Suez crisis in 1956 and the Congo four years later were interpreted by Hellyer as clear evidence the Canadian military had to prepare versatile forces that could respond to emerging peacekeeping and limited-war situations, in addition to more traditional roles such as defending Europe and North America from Soviet aggression. In Hellyer's view, however, the RCAF had an unhealthy bias towards fighter aircraft which was the product of a narrow-minded air staff that did not understand—or worse yet, deliberately ignored—the new strategic realities of the early 1960s. In fact, Hellyer would go one step further by implying that their efforts to procure more fighters over the C-130E Hercules transport was a "classic case" of how Canada's military leadership purposely hid the truth from their political masters. This, the minister elaborated, they did to get what they wanted rather than what the nation's defence requirements actually called for. There is no doubt that the modern Air Force's identity continues to be shaped by close-knit communities based around airframe types or trades, but the key question here is whether this culture was so pervasive in the 1960s that it actually led to a situation where Hellyer had to force the RCAF's senior officers to accept an improved airlift capability through the acquisition of the C-130E Hercules.

At the time Hellyer was defence minister, the RCAF's transport command was relatively young, but they were already building a proud heritage. Although the RCAF had been flying individuals and cargo to various locations since its inception in 1924, it was not until the Second World War that the Air Force developed a significant transport capability. Beginning with the formation of an air-transport directorate in the summer of 1943, the RCAF's domestic units were joined by three overseas transport squadrons.[2] All gave distinguished wartime service, and this formed the basis of a new capability for the RCAF that was carried over into the post-war period. The creation of Air Transport Command (ATC) on 1 April 1948 and the immediate post-war acquisition of aircraft such as the Canadair North Star and Fairchild C-119 Flying Boxcar (which complemented an existing fleet of C-47 Dakotas among other types), identified that airlift would remain a part of the RCAF's force structure.[3] Indeed, while the establishment of the Air Division in Europe and the growing requirement for air defence at home clearly placed an emphasis on fighter production, post-war planning acknowledged the importance of air transport.[4] This was made clear when the RCAF was looking for a replacement for its ageing fleet of North Stars. ATC had played key domestic roles such as Arctic supply, area and photographic reconnaissance as well as support to the Army, but it was the strategic value of airlift that received the bulk of the attention. A report from the mid-1950s observed how:

> Since the end of the last war the deterrent effect to aggression by use of air transport has been clearly demonstrated, notably by the Berlin air lift. Furthermore, it will be recalled that the RCAF was able to make a notable contribution to the UN cause through air transport in the critical days of Korean War. Today our ability to make such a contribution has not only greatly diminished but could be undertaken only at the expense of other equally important military operational commitments.[5]

This logic explained the RCAF's efforts to develop a true airlift capability.

While the strategic value of airlift was understood, the aircraft selected to perform this vital role was not. For some, the CC106 Yukon, produced by Canadair in Montreal, was a worthy airlifter with a top speed of 320 knots [592.6 kilometres per hour] as well as an extensive range and load. Others, however,

were not so impressed. Take, for instance, the comments of Lieutenant-General David Adamson, who, as a junior staff officer at Air Force Headquarters (AFHQ) in the mid-1950s, was troubled that the decision to acquire the Yukon had more to do with politics and the economics of saving 6,000 jobs at Canadair rather than the real needs of the RCAF. Based on the RCAF's experience with the de Havilland Comet, there were a number of individuals on the Air Staff who wanted a jet transport such as the Douglas DC-8, but as Adamson observed:

> Canadair, Rolls Royce, and Bristol had beaten our opinions to parliament hill. A political decision had been made that another version of the Bristol Britannia … would be built at Canadair, thus solving the political and aerospace industries problem while relegating the military to making do with an aircraft that was to be obsolete before the first aircraft rolled off the production line … . [Nevertheless,] the plan was stubbornly followed.[6]

There was much truth to this statement. In fact, when the Orion engine being developed for the Yukon was cancelled, some members of the Air Council saw it as a golden opportunity to get out of the contract altogether and go with another aircraft. At the Air Council meeting of 11 February 1958, Air Commodore W. R. MacBrien was one of the first senior officers to officially note that the Hercules transport under development at the Lockheed Corporation was a much better option than the Yukon. The Chief of the Air Staff (CAS), Air Marshal Hugh Campbell, agreed that the Hercules was an "attractive aircraft" because of its "flexibility as a freighter," but he was more cautious. Campbell argued that the Yukon was faster and had better range than the current version of the Hercules, and therefore, he was not prepared to give up on the Canadian-built transport.[7] For a number of staff officers, however, the Hercules (particularly the B version coming off the Lockheed production line) was a superior aircraft and one that the RCAF just had to have.

The argument for the Hercules acquisition was simple and effective; they were the perfect aircraft to complement the Yukon which, by design, were incapable of heavy bulk airlift. Put another way, what the RCAF needed was a transatlantic-capable aircraft with a hinged loading ramp at the rear of the fuselage that could carry Army vehicles. The Yukon's high tricycle undercarriage design made this impossible. After studying five types of aircraft, it was determined that the C-130B offered the best marriage of capabilities, enabling it to do the heavy lifting, while the Yukons would transport the troops and lighter equipment.[8] Aside from being able to do tasks that the Yukon could not, AFHQ also used the changing strategic environment to justify the purchase. The likelihood that Canada would get involved in limited war situations was only growing, and as a result, the RCAF placed heavy emphasis on the fact that the Hercules would be a key enabler in supporting United Nations tasks as well as other Army and Air Force requirements, such as re-enforcing the Air Division and Brigade in Europe, not to mention various domestic and Arctic operations.[9]

It was for these reasons that a proposal was submitted to Air Council on 31 October 1958, arguing that the RCAF should purchase at least six Hercules. The trouble was, there was potential they would have to come at the expense of four aircraft from the Yukon programme. Reducing an order from a Canadian producer for an American-built aircraft was not going to be an easy sell, and the CAS knew it. He, therefore, instructed his staff to create a study that re-examined how the RCAF planned to use the Yukons and identified areas where savings could be made to that programme. Campbell did not stop there; he wanted confirmation from the United States Air Force (USAF) that the RCAF's proposed role for the Hercules was a legitimate one. And finally, arrangements were made for a small contingent of RCAF pilots to go to the Lockheed plant at Marietta, Georgia, and fly the C-130.[10] It was given a ringing endorsement. The enthusiasm did not end there, as word of the possible acquisition of the Hercules resulted in unsolicited letters of support from Air Force officers outside of AFHQ. Wing Commander C. F. Sanford, a staff officer who was writing on behalf of the Air Officer Commanding (AOC) ATC, did not mince his words when he told Campbell that "many occasions have arisen in the past few years when an aircraft of the C 130 type [was] either essential or would have both expedited and improved the ATC operation."[11]

This type of internal support was particularly important since the RCAF had to fight hard to get the C-130. Canadair's claim that they were developing a swing tail version of the Yukon (which would permit rear loading) was one challenge. But the RCAF made an effective counterargument that the

rear-loading Yukon still required special lifting equipment, could not operate off short and hastily prepared runways, was more expensive and would not have the Hercules' air-drop capability. They also did their best to ward off the government's desire to buy from a Canadian firm, as Air Vice-Marshal (AVM) Murray D. Lister stressed that the RCAF "not colour our statement of that requirement with commercial or political considerations," while Campbell emphasized that the need for the Hercules was "urgent and will become increasingly so in the immediate future."[12] It was not enough. The programme's cost of $22 million was judged by the Treasury Board as too expensive for the 1960 fiscal year, and as a result, it was rejected for "budgetary reasons." Luckily for the RCAF, fate intervened. Thanks to the sudden and unexpected availability in the Lockheed production line—along with Canadian pleas to USAF that the "program has great significance to the RCAF" and was of "very real importance," the Americans made the government an offer it could not refuse, and this resulted in acquisition of four Hercules in 1960.[13]

This unexpected development was good news, but the RCAF still wanted the remaining two Hercules from their original requirement. The Deputy Minister of National Defence, E. B. Armstrong, was doubtful that they would succeed. In his view, the Treasury Board was unlikely to approve a request that was not in the department's current estimates. Worse yet, the government would have great difficulty supporting the purchase of additional aircraft from US production, particularly when the Canadian air industry had unsold aircraft available. He was right. The politics of aircraft procurement in Canada had, at times, benefited the RCAF, but in this instance, it was about to frustrate its efforts to get the transport that they wanted. Anticipated sales of the Yukon to the US had not materialized, and this left the RCAF on the hook to potentially acquire five additional aircraft from Canadair that the government had relegated as a "contingent liability."[14] Yet the CAS was unwilling to concede defeat, and he ordered his staff officers to rewrite the requirements for the Hercules for another attempt at acquiring them. It was a frustrating task. The original arguments to acquire the Hercules were already strong, and it was hard to devise new ones. With little original material to use, some staff officers justified the need for two additional C-130s by emphasizing the limitations of the Yukon. That troubled the Deputy Vice Chief of the Air Staff (D/VCAS), who reminded the staff that "the 106 [Yukon] is extremely useful—don't degrade it."[15] But it was AVM D. M. Smith who best illustrated the frustration that the Air Staff was feeling towards their attempts to acquire more Hercules. With the spectre of general war raised during the 1961 Berlin crisis, Smith argued that these types of geopolitical situations were a prime example of why the RCAF needed more airlift, telling the Conservative defence minister, Douglas Harkness, that: "There has never been the slightest doubt within the RCAF that the requirement … is valid. I need hardly say that the present international situation accentuates our requirement even more—and, in fact, for all the long range aircraft that we can get."[16] Unfortunately, using the geopolitical and strategic environment to justify the Hercules acquisition was no more successful than the earlier attempts. Once again, the Treasury Board rejected the RCAF's pleas by noting that there was insufficient evidence to indicate a critical requirement that could outweigh the budgetary pressures that were being placed upon them.[17] This was yet another setback for the Air Staff, but they kept going.

The RCAF was in a difficult situation. On the one hand, they emphasized that Cabinet had bestowed the responsibility of being "the air carrier for the Department of National Defence" entirely on the RCAF's shoulders. Yet on the other, the RCAF had not received sufficient direction on what the government expected them to do with this capability. Moreover, Air Council was further troubled by the fact that the number of aircraft to perform airlift duties was selected entirely on an arbitrary basis. Uncomfortable with this situation, the Air Council set about to create a definitive air-transport policy along with firm force requirements that would allow them to justify what further aircraft should be procured.[18] In many ways, the latter decision had already been made. Having kept a close eye on it ever since its days as a "paper aircraft," the model E version of the Hercules was the clear front-runner to replace the aging Boxcars.[19] The case certainly appeared clear cut. First, the C-130E was capable of performing both the passenger and bulk-cargo carrying roles in a single airframe and had the extended range that the B model was lacking. Second, the C-130B had already "demonstrated outstanding performance," which, for the Air Staff, proved that the improved E version "would considerably increase capacity of [the] Air Transport system." And finally, it was felt that, aside from meeting all of the RCAF's requirements, it was also the least costly of any other aircraft under consideration.[20]

The result was that, beginning in mid-1962, the RCAF began a new campaign to acquire additional Hercules aircraft. This time, however, there would be no half measures. The RCAF determined that it needed at least 24 Hercules to meet its transport needs as well the Army's requirement to provide simultaneous airlift for two home-defence battalions. Once the original four C-130Bs were factored into the equation, as well as four other Hercules that Air Council had already approved to replace 408 Squadron's ageing fleet of photo-reconnaissance Lancasters, the RCAF was effectively asking the government to purchase 16 aircraft from Lockheed. Anything less than this amount was considered operationally unacceptable, and the RCAF gladly would have asked for even more had it not been for manning restrictions. Put simply, manpower caps placed on the RCAF meant that the number of Hercules they could acquire was limited by the current establishment of personnel assigned to the Boxcars and North Stars.[21] This was the situation one month prior to Paul Hellyer becoming Minister of National Defence in April 1963. Whether it was budgetary restrictions, procurement considerations related to the purchase of domestic aircraft or manpower ceilings, the RCAF's efforts to acquire a sizable fleet of Hercules was continually frustrated by political decisions. As a result, the election of a new Liberal Government, and a minister who had a desire to expand the Air Force's airlift role, should have been welcome news to the RCAF—instead the situation became worse.

Soon after assuming the defence portfolio, Hellyer warned the three services that significant budget cuts were on their way. He further advised that he had a vision for the Canadian military, called Mobile Force, which was described as "basically an air transportable fighting unit which could be airlifted with its equipment for quick deployment anywhere in the world."[22] The C-130E was a good aircraft to complement Hellyer's vision, but the Air Staff was having a hard time coming to grips with how it was going to maintain a multipurpose Air Force that could respond to Canada's air-defence, maritime-air, tactical and alliance needs, as well as expand its airlift role through an enlarged Hercules force while at the same time dealing with significant budget cuts.[23] Of course, costs savings through the integration of the three services was supposed to free up money for new equipment, but this concept—which, in reality, never fully produced the promised dividends—was not yet understood.

Air Marshal C. R. "Larry" Dunlap, who had replaced Campbell as CAS in mid-1962, was equally perplexed, and he tried to use the contradiction between proposed budget cuts on the one hand and maintaining capabilities on the other to the RCAF's advantage. In some measure, it is hard to escape the conclusion that Dunlap was playing his own politics with the minister, as one staff officer recorded how:

> the reason for limiting the procurement of additional C130E aircraft is manpower under present circumstances, but in view of recent discussions and studies on possible budget restrictions, the CAS wishes to use financial limitations as the reason for restricting our purchase. It is suggested that this be developed along the lines of a limited amount of money available for capital coupled with the need to "cut the cloth" in many ways.[24]

Dunlap's message was clear. The RCAF understood the necessity of providing a "flexible response" through a balanced force structure, but if Hellyer wanted the aircraft for his Mobile Force concept then it would either have to come at the expense of another capability or the government simply would have to provide additional funds to pay for it. To further illustrate this point, the Air Staff issued instructions that the Hercules submission was again to be strengthened by reiterating how the RCAF felt that this was the perfect aircraft to meet the transport needs of the new strategic realities of the early 1960s.[25] Staff officers also observed that "production-line considerations" meant that delaying the procurement of the C-130 by one year would result in an additional cost of $6 million. Dunlap noted that this point would be "valuable" in his discussions with the Minister. Presumably, it was Dunlap's intention to use this reduced cost as a means to exert some pressure on Hellyer for a quick decision, but unfortunately, the entire campaign backfired.

At the same time that the memo substantiating the Hercules procurement was on its way to the Chief of Staff and Defence committees for approval, Dunlap and Hellyer met to discuss the programme. Exactly what was said at that meeting is unknown, but there is evidence that Dunlap had overplayed his hand. That things had not gone well for the RCAF was evident when the decision on the C-130E procurement was deferred because "it was not timely" to go forward with it.

Money was the key factor behind this decision; as one staff officer observed, "this item has apparently died a slow death due to budget cuts."[26] Dunlap's efforts to balance the cuts against capability requirements had not worked, as what the Minister clearly heard was the RCAF saying airlift was unaffordable. This encounter likely contributed to Hellyer's perception that the RCAF was a fighter-based clique who had no interest in air mobility.

Other examples only reinforced his perception. For instance, when Hellyer asked his chiefs to produce an economically sound force structure projected out to 1972, the RCAF suddenly seemed to throw caution to the wind, as he was presented with a costly plan centred on the purchase of 217 F-4C Phantom tactical fighters at a total programme cost of $712 million. While the overall programme did include a call for a total acquisition of 32 C-130Es (along with 2 DC-8 and 10 C-141 strategic lifters), the emphasis placed on the Phantoms was not lost on the Minister. At least one senior naval officer agreed since it was clear that the RCAF simply was not listening to direction. He noted that: "in general the Navy and Army appear to have followed the Minister's proposal literally while the Air Force have [sic] approached the proposal on a somewhat lavish scale."[27] Nor did it help matters that the RCAF was not entirely enthusiastic about the procurement of the de Havilland CC108 Caribou for light transport duties, and it was likely that Hellyer's misreading of all these events confirmed his growing suspicion that the RCAF had little interest in providing aircraft for the transport role.[28]

In direct contradiction to Hellyer's original charges, however, the evidence clearly identifies that the RCAF understood and appreciated its airlift role and its senior staff had fought hard to acquire what they considered was an ideal aircraft to help perform this task. These efforts were often frustrated by political considerations, such as budget and manpower restrictions, as well as by the need to satisfy domestic aircraft production. This made Hellyer's allegations about the Hercules and his perception of the RCAF's attitude towards airlift a particularly difficult pill for the staff officers involved to swallow. The trouble with the Minister's claims is that they also perpetuated other stereotypes. Given the way the Air Force operates, it is natural for its culture to be dominated by communities associated with particular aircraft types or trades,[29] but the idea that the RCAF of the early 1960s shunned its transport role—or that tribal fissures caused senior officers to ignore strategic realities—is simply untrue. Instead, the evidence clearly shows that senior RCAF officers were able to overcome considerable political and economic obstacles to acquire a fleet of transport aircraft that would give Canada a remarkable four decades of service. And the RCAF's air-transport legacy—as demonstrated by the key role played by the Air Force's current fleet of CC130J Hercules, CC150 Polaris and CC177 Globemasters in supporting missions in Afghanistan, Libya, Mali and Iraq—is brought to life by the enduring mottos of units like 435 Squadron: **We Carry the Load!**

Notes

1. Paul Hellyer, *Damn the Torpedoes: My Fight to Unify Canada's Armed Forces* (Toronto: McClelland & Stewart, 1990), 74. Hellyer was the Minister of National Defence between 1963 and 1967.

2. Larry Milberry, *Canada's Air Force at War and Peace*, vol. 2 (Toronto: CANAV Books, 2000), 205–7; and R. J. Lane, "The Evolution and Current Status of Air Transport Command," *The Roundel* 14, no. 2 (March 1962): 5–6. For other books on this period see: T. W. Melnyk, *Canadian Flying Operations in South East Asia, 1941–1945*: *The Sixth Year* (Ottawa: Department of National Defence, 1976); Brereton Greenhous et al., *The Crucible of War 1939–1945: The Official History of the Royal Canadian Air Force* (Toronto: University of Toronto Press, 1994); and Larry Milberry, *Air Transport in Canada* (Toronto, CANAV Books, 1997).

3. Larry Milberry, *The Canadair North Star* (Toronto: CANAV Books, 1982); and Larry Milberry, *Canada's Air Force at War and Peace*, vol. 3 (Toronto: CANAV Books, 2000), 360–61.

4. Randall Wakelam, *Cold War Fighter: Canadian Aircraft Procurement 1945–54* (Vancouver: UBC Press, 2012).

5. Minister of National Defence (MND), RCAF Requirement for Long Range Transport, 7 June 1956, Directorate of History and Heritage (DHH), 73/1223, Box 8, file 128.

6. David R. Adamson, "The Yukon Saga," *Airforce Magazine* (Fall 2009): 30–31.

7. Air Council Meeting, 11 February 1958, DHH, 73/1223, file 1828.

8. Group Captain (G/C) Anderson to CAS, Long Range Transport Aircraft, 11 September 1958, Library and Archives of Canada (LAC), Record Group (RG) 24, Accession (Acc) 1983-84/167, Box 6499, file 1038LT-180, vol. 1.

9. Memorandum to Chiefs of Staff Committee (CSC), Aircraft to Provide Complementary Hulk Bulk to CC 106 – C130B, n.d., circa 1959, DHH, 73/1223, Box 8, file 129; and CAS Memo to CSC committee, 1 June 1959, LAC, RG 24, Acc 1983-84/167, Box 6499, file 1038LT-180, vol. 1.

10. Air Council Meeting, 31 October 1958, DHH, 73/1223, Box 92, file 1828.

11. Wing Commander C. F. Sanford for AOC RCAF ATC to CAS, 25 February 1959, LAC, RG 24, Acc 1983-84/167, Box 6499, file 1038LT-180, vol. 1.

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23. Long Range Plan for the Royal Canadian Air Force, 1956–1966, Long Range Plan 56, DHH, 73/492.

24. Squadron Leader Sturgess (CAS SO4) to VCAS, 9 August 1963, LAC, RG 24, Vol. 18150, file 981-101-93.

25. Air Council, 16 August 1963; Supporting Data for Air Council Meeting, 12 August 1963, DHH, LAC, RG 24, Vol. 18150, file 981-101-93; and MND submission memo to Cabinet, n.d., circa August 1963, LAC, RG 24, Vol. 18150, file 981-101-93.

26. Graves, 1 October 1963, on Minute notes attached to draft of Memorandum to CSC, 27 August and 6 September 1963, LAC, RG 24, Vol. 18150, file 981-101-93.

27. Vice Chief of the Naval Staff (K. L. Dyer), Possible Force Structure 1963–1972, 23 December 1963, DHH, 91/297.

28. For more on the CC 108's procurement, see various correspondence on Air Council minutes, DHH, 73/1223, Box 92, file 1828.

29. Allan English and Colonel John Westrop, *Canadian Air Forces Leadership and Command: The Human Dimension of Expeditionary Air Force Operations* (Trenton, ON: Canadian Forces Aerospace Warfare Centre, 2007). See, in particular, Chapter 7.

Richard Mayne

Dr. Richard Mayne, CD, received his BA from the University of Toronto, MA from Wilfrid Laurier University (Waterloo, Ontario) and a PhD in military history from Queen's University (Kingston, Ontario). While attending these institutions, Dr. Mayne won several academic awards and scholarships such as Wilfrid Laurier's Graduate Gold Medal for Arts (1999) and a Social Sciences and Humanities Research Council Scholarship at Queen's. After serving 17 years as a maritime surface and sub-surface officer in the Canadian Armed Forces (CAF), he now serves on the Air Staff as the Director of RCAF History and Heritage. Prior to this appointment, he was employed as a defence analyst with the Chief of Force Development, performing the function of deputy section head for the Future Security and Analysis Team. His work for the Chief of Force Development covered a broad spectrum of defence subjects such as the military implications of future shocks on the CAF as well as the nature of future warfare and expeditionary operations. Before joining the public service in 2008, Dr. Mayne spent nine years as a historian at the Directorate of History and Heritage at National Defence Headquarters. He has authored, co-authored or co-edited a number of books, chapters for edited volumes and articles on various aspects of Canadian military history and defence issues.

Dr. Mayne also contributes to history-related associations and funds by sitting as the Co-Chairman of the Board of Directors for the Air Force Heritage Fund as well as being a member of the Board of Directors for the Canadian Aviation Historical Society and the Canadian Aeronautical Preservation Association. Additionally, he is a member of the CAF's Museum's committee.

He has been involved in other capacities for the Department of National Defence over the years, such as part-time work for the Canadian Forces Leadership Institute and academic staff for the Canadian Forces College's Joint Command and Staff program in the mid-2000s.

Chapter 8

Creating an Air Arm for the Canadian Army: Lessons from the Past

By Randall Wakelam

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In 1967 a study was released by the recently amalgamated Canadian Forces Headquarters (CFHQ) that called for the introduction of broad helicopter support for the restructured Canadian field force.[1] The authors stated succinctly that "air mobility is the next major revolutionary cycle in land force development."[2] Air mobility would give the army an edge by permitting the optimal use of limited resources in all five of the then existing land combat functions: combat manoeuvre, fire, communications, reconnaissance, and supply. The study noted that "none of our likely enemies, or countries requiring a peace-keeping operation, has a significant air mobile capability. Our possession of one would therefore give us a favourable mobility differential and redress our inferior strength."[3]

This article seeks to answer, or at least expose, a number of issues. Did this vision align with the thinking of major allies and their experiences at the time? What happened after the study was promulgated? Are the central tenets of the study still of any merit today? This article is intended to look at these questions within the broader context of a Canadian land aviation experience. The author's hypothesis is that while the notion of a mobility differential was understood and accepted, the Canadian Forces (CF) until very recently was never able to effectively provide that differential in a meaningful fashion. This article will therefore examine past army studies and public discourse on the matter, the latter largely contained in articles appearing in the defence publications *The Snowy Owl*, the *Canadian Army Journal* and the *Canadian Defence Quarterly*. It will also compare what was happening at the time in Canada with the doctrinal developments then going on in the United States (US) and the United Kingdom (UK). From that point the article will take a somewhat autobiographical approach, comparing the experiences of aviators (the author included) with the concepts that led the Army to lean towards air mobility. Overall this article argues that although the CF developed and espoused a fairly sophisticated concept of tactical air mobility, the implementation of that concept has until only recently been less than effective.

Given the paucity of sources available on the subject, it is not surprising that relatively little analysis of the subject has been undertaken to date. There is relatively little written on Canadian helicopter concepts or doctrine and even less about Canadian land aviation in general. Much of the existing literature consists of technology-oriented glossy volumes or personal accounts, largely from Vietnam, with a growing number dealing with the Gulf Wars and Afghanistan. Of these sources, the best is Robert Mason's 1983 memoir *Chickenhawk*, which describes the experiences of a young Warrant Officer pilot flying with the 1 Cavalry Division (Air mobile) in Vietnam;[4] in terms of quality of content and literary style, the author would put it on the same shelf as Farley Mowat's *And No Birds Sang*. There are only a few volumes dealing with the development of helicopter doctrine, and many of those are US Army reports and studies, which are not always easy to locate. One that is in most major libraries is General John Tolson's 1973 *Airmobility 1961–1971*, part of the US Army's Vietnam Study series.[5] The best comparative analytical monograph available is Matthew Allen's 1993 *Military Helicopter Doctrines of the Major Powers, 1945–1992*, which deals principally with the US and the Union of Soviet Socialist Republics (USSR) but also includes analysis on the UK, France and Germany.[6] Allen makes a number of general observations that will reappear from time to time in this paper. First, he says, there was not much doctrinal development in the early post-1965 period because the technology did not lend itself to significant advances in concepts or doctrine. Allen focuses on the period after the mid-1960s because it was only then, he says, that helicopters and air mobility began to have an impact on the thinking surrounding major conflict scenarios.[7] After examining the various national experiences indicated above, Allen concludes, "The helicopter's particular contribution [to air-land warfare] was to make available to land forces the speed of movement by air, while retaining the capacity for

direct and intimate interaction with ground troops and ground terrain. Some have argued … that this process can be termed a 'rotary-wing revolution.'"[8]

For published works of the Canadian land aviation experience, readers must look to the unit histories of 408 and 430 squadrons, which focus almost entirely on the people and places; as well, a manuscript dealing with air and aviation support to the army is being prepared by Hugh Halliday.[9] Only scant reference to helicopters and land aviation have appeared in the various journals mentioned above; the few articles found on the topic from the 1950s and 60s will be discussed below. A number of primary sources do reveal some important thinking about the use of helicopters. The first is the army's Cold War–era Exercise GOLD RUSH Study, conducted in the latter half of the 1950s at the direction of the then-serving Chiefs of the General Staff, Generals Guy Simonds and Howard Graham, and the second is the aforementioned Smith Study of 1967.[10] Between the two sources is a 1961 Canadian Army Combat Development Study entitled "The Canadian Army Post-1970 Operational Study."[11]

On 19 January 1955 Lieutenant-General Guy Simonds met with the Vice Chief of the General Staff (VCGS) Major-General Herbert A. Sparling, the Quarter Master General (QMG) Major-General Samuel Findlay "Fin" Clark, and the Deputy Chief of the General Staff (DCGS) Brigadier Robert W. Moncel; the topic was the use of aircraft for the resupply of forward formations within the Army maintenance area.[12] Major-General Sparling noted that using fixed-wing aircraft for this function would be problematic for a number of reasons, but noted also that these could be addressed by using vertical take-off and landing aircraft. Simonds indicated that the use of helicopters as a solution should be carefully considered. After some philosophical discussion it appeared that further exploration of helicopter resupply was appropriate, and the formation of an experimental helicopter unit was suggested. Simonds gave his approval, saying that the matter should be looked at with some degree of urgency. But he warned that the introduction of air resupply was not to be viewed as a simple substitution for land transport or even as the overlaying of a second delivery option. Rather he felt that there was a need to look at resupply afresh and perhaps see it in terms of a just-in-time system; to do otherwise was "wrong."[13] Of note, appended to the minutes of the meeting were two analyses comparing the efficiency of the two-and-a-half-ton trucks then in service with that of five-ton payload helicopters, which were thought to be commercially available in the relative near term.[14]

Within weeks of the January discussions Simonds had commissioned an in-depth study of tactics and logistics. The Exercise GOLD RUSH directive of 15 February 1955 signalled a "fresh approach."[15] "The object of the study is to determine what new organization is needed in the field forces at or below the corps level, and in the logistic implications, to meet the conditions of future warfare, bearing in mind the necessity for these formations to be able to fight equally efficiently in a conventional or atomic war."[16] The directive stipulated that the study was to take place in several phases, the first looking at tactical concepts and the resulting logistic support requirements. As part of the logistic studies, the viability and characteristics of vertical take-off and landing and fixed-wing supply aircraft capable of supporting infantry and armoured formations was to be determined. Also within Phase 1, a more detailed examination of how an air supply system would work was to be undertaken. To that end an experimental helicopter unit was to be activated sufficiently quickly so that it could take part in Phase 2 of the exercise. In Phase 2 Simonds said, "With the formation of an experimental helicopter unit I have planned that this unit, in conjunction with the exercise team, will conduct the trials and exercises." Those exercises were intended to determine the practicalities of using helicopters in support of the infantry and armoured formations of the field force.[17] A third phase of the exercise was to develop a fixed-wing "flying truck" which, in Phase 4, would be tested similarly to the helicopter. All this work and final conclusions were to be complete within four years.[18]

Once GOLD RUSH was underway Simonds wrote to the Minister to explain what he was doing and why. He stated that he felt US and British conclusions about the future operational environment did not reach far enough into the future and "nor do I feel that the studies made to date really represent a fundamental appreciation of the problems we now face."[19] From this it seems reasonable to conclude that while the Canadian Army might in the future make use of concepts, doctrine, and equipment developed or endorsed by the two allied armies, it would likely do so only after serious reflection and even the generation of independent concepts.

While GOLD RUSH was a uniquely Army undertaking, the value of helicopters was recognized by all three services, and work was going on to define just what types were needed and how they could be bought and operated. On 21 December 1955 the "Report of the Ad Hoc Committee on Service Requirements for Helicopters" stated that its "aim was to make recommendations to the Chiefs of Staff Committee concerning the minimum number of helicopter types which would meet the requirements of the three services, the procurement of such equipment, its maintenance and training of personnel, in accordance with the terms of reference issued by the Chiefs of staff committee."[20] Significantly the second paragraph of the study went on to say that "each service has an immediate helicopter requirement to carry on existing tasks and to develop procedures for known future tasks." Subsequently the study indicated that for the Canadian Army there were two aircraft required: the first, a light helicopter for training and utility work including "intercommunication" and the second, logistic support including casualty evacuation.[21] The study concluded that the needs of the three services could be met by acquiring two types of helicopters: the Bell Model 47 and the Sikorsky S-58.[22] Remaining aspects of the study covered such issues as procurement, maintenance, and training of personnel.

A number of recommendations were made at the conclusion of the document. In addition to suggesting that only two aircraft types were needed, the authors also proposed that the Land/Air Warfare Committee should be designated as the body responsible for the coordination of future helicopter requirements for the services, and that in this regard it should be given two principal tasks: "To determine the minimum number of different types of helicopters which would be needed to meet the future needs of the services; and to recommend, from the Services point of view, the desirability of having such helicopters developed in and produced in Canada."[23] It was also noted that "when two or more of the services have similar requirements which can be met by an identical helicopter, the administration of design and development aspects should be undertaken by one service designated by the Principal Supply Officers Committee (PSOC). This could be accomplished by the establishment of [a] PSOC subcommittee on helicopters with similar terms of reference and method of operation to that of the joint services vehicle committee."[24] In passing, it is both intriguing and significant to note that as early as 1955, the services were prepared to entertain the acquisition of common platforms; the Joint Helicopter Acquisition Project (JHAP) of the late 1980s was at that time viewed as having revolutionary potential for common fleet synergies, but apparently JHAP, which was to see the army medium transport helicopter, the navy antisubmarine warfare (ASW) helicopter and the air force search and rescue (SAR) helicopter all replaced by the EH101, came some three decades after coordinated acquisition was already an accepted principle.

Indeed, along these lines, attached to the report was a service paper entitled "A Paper on the Control and Operation of Helicopters in the Canadian Services," dated 17 November 1955.[25] The introduction to this paper stated, "The helicopter is still in its infancy and will be subject to extensive development. To date, a variety of helicopters have been procured to meet the needs of the Canadian services and there are now no less than six different types in use." The theme of the paper, therefore, was "to examine the various roles of the helicopter in the Canadian services, and where possible, recommend unification and standardization of helicopter types, training facilities, spares, procurement and maintenance facilities."[26]

The paper went on to describe the helicopter holdings and uses within the Canadian Army:

> The Canadian Army has participated jointly with the RCAF [Royal Canadian Air Force] in the operation of the basic helicopter training school and CJATC [Canadian Joint Air Training Centre], [at] Rivers [Manitoba], and over the past two years a small number of Army pilots have received helicopter training at the school. The two Bell-47 and two Sikorsky S-51 helicopters established at the school were procured by the RCAF for the Army, however the RCAF has been responsible for the maintenance of the aircraft and for the procurement and supply of spare parts. Flying instructors at the helicopter school have been provided by both the RCAF and the Canadian Army. Therefore, the Canadian Army's experience in the operation of helicopters has been restricted to flying and instructing on light helicopters only. The Army has no experience in the spares procurement or the maintenance of helicopters.[27]

Later in the paper was a short discussion on the use of helicopters in the transport and transport support roles, and it was noted that "since the Korean War, the Canadian Army has shown great interest in the helicopter as a transportation aircraft for the RCASC [Royal Canadian Army Service Corps]. Additionally the RCAF is keenly interested in the transport helicopter as part of the RCAF air transport role."[28] The paper went on to say that the Army had recommended the establishment of an evaluation flight for transport operations and that seven H-34 aircraft (the military designation for the Sikorsky S-58) should be purchased in order to study the potential. While not directly mentioned, there would seem little doubt that this was related to the GOLD RUSH program. In addition the paper said that the army had recommended that Army pilots and Army maintenance people be used for this training and evaluation.[29]

By June 1956 Simonds had retired, having been replaced by Lieutenant-General Howard D. Graham. Soon after taking command of the Army, Graham was presented with a review of Exercise GOLD RUSH. Extensive portions of the brief built with the tactical concept, which was to have been considered in Phase 1 of the exercise. The concept described a fairly classical structure of covering force, main force, and corps reserve actions, but then included a separate appendix dealing with conclusions derived from the tactical concept with regard to mobility and noted that "the degree of mobility required on the nuclear battlefield will be ultimately achieved by the combination of two methods: air transportability; [and] rapid cross-country performance of vehicles including the means to overcome obstacles."[30] [C-1] Separately it was also noted that "aviation must become an integral part of all Army ground operations. This can be divided into two parts: Army tactical aircraft under the control of Army commanders; logistic aircraft (subject to call for certain tactical missions)."[31] [C-2][32]

By September 1956 a related activity, Exercise FIRE-FLY, was well underway. While GOLD RUSH had identified the rationale for aircraft portable forces, FIRE-FLY's mandate was now to develop in some detail both models of organizations and operating principles. Tactical air transportability factored in the discussion document, but in a subsequent organization chart dated 22 October 1956, which laid out what was called the "new infantry division," while there was some form of aviation organization within the divisional trains as it was called, established at a squadron or company level, there is no explanation as to how that organization would support the division.[33]

The draft GOLD RUSH tactical concept document, which unfortunately has no date or author, indicated that it had been written based on a 1960 strategic forecast.[34] In this version the 80-page document contained some fairly extensive comments on Army aviation, and that discussion was part of a larger section entitled "New Equipment."[35] Those comments began by noting the contemporary technical shortcomings of aviation and the absolute need for a heavy-lift helicopter able to move light or even medium tanks. The authors then admitted that such a capability would not be available during the time frame in question. The concept also pointed to the difficulties of using fixed-wing aircraft with their encumbering requirement for landing strips. The commentary went on to say that aviation would be able to lift all infantry weapons and eventually artillery guns and light vehicles and that with the ability to move loads of these types and weights, it would be possible to use helicopters to constitute reasonably effective anti-tank defences based initially on recoilless rifles and then hopefully anti-tank guided weapons in the future. It is further noted that aviation could provide a number of tactical capabilities which did not otherwise exist. These were listed as observation and surveillance (as an extension to the existing air observation post); rapid deployment and redeployment of screening forces; rapid transport of one or more battle groups, although these would be obliged to operate without heavy equipment; the rapid reinforcement or reestablishment of positions after nuclear attack; the deployment of small reconnaissance patrols deep in enemy rear; supply forces where ground transportation was impractical; and casualty evacuation. Given that this document is procured somewhere in the 1956 or perhaps early '57 time frame, it was a fair description of what was or what could relatively soon thereafter be available and, as we know from historical hindsight, heavy-lift helicopters such as were desired were only just coming into service.

Here then we have the Canadian Army of the mid-1950s examining some fairly weighty issues of mobility on the high-intensity, and for that period almost certainly nuclear, battlefield. The discussion seems relatively mature and sophisticated, but arguably all that the evidence shows is that Canadians were parroting, or at least adopting, the notions being put forward by the US and the UK.

This would seem, after the experience of the Second World War, a normal state of affairs given our historical disposition to work with the British Army, and then post-1945 a shift towards adopting US doctrine, tactics and equipment. At that time, and for the next 15 years, the Canadian Army's North Atlantic Treaty Organization (NATO) brigade was part of the British Army of the Rhine, and so it would seem fair that we might be following a British lead in our helicopter thinking.

In truth, however, from the perspective of aviation capability, the British Army of the 1950s and 60s was not well organized, either conceptually or practically. During the Second World War the British had developed and shown the great value of "army" aviation, employing both air observation post squadrons and airborne divisions with associated glider forces, the latter capable of some dramatic, if one-way, operations. But after the war these capabilities had atrophied. As General Sir Anthony Farrar-Hockley, one of the pioneers of the British army aviation community, notes in *The Army in the Air: The History of the Army Air Corps*, "Experience in Malaya and Korea notwithstanding, the Army as a body in 1956 lacked a professional precept for the tactical use of helicopters and, indeed, Austers beyond AOP [air-observation-post] and taxi work. Few had seen a helicopter in a military environment."[36] Farrar-Hockley goes on to note that when an Army Air Corps was formed in 1956, there was neither doctrine nor plans nor equipment. While there were aircraft in the field, it was not until 1964 that a coherent five-year plan was in place and that without, apparently, any conceptual study such as GOLD RUSH. The helicopter selected during these first chaotic years was the Saunders Roe Skeeter, which was an underpowered and somewhat hard-to-fly machine, even by helicopter standards.[37]

This diagnosis of a general malaise is supported by the conclusions of Matthew Allen, who says that the period from 1945 to 1967 was not a happy one for helicopter proponents in either the British Army or the Royal Air Force (RAF). In looking at the mobility side of the ledger, he points out that it would only be in the late 1980s that Britain introduced a permanent air mobile brigade. Even then he concludes that while the equally new anti-tank role caught on easily as an extension of ground-based anti-tank doctrine, air mobility, a completely new concept for the British Army, was not as well received.[38]

We may reasonably conclude, it would seem, that even while we had army officers on flying postings with the British Army, there was not much to be learned that would help shape or even inform our own thinking on air mobility.[39] What, then, of the influence of the US Army?

Here too we had officers on exchange, but while the British were in some disarray, the Americans seemed to have grasped the conceptual basis of air mobility and the use of helicopters fairly well. Allen describes how within the US Army there was a strong cadre of high-ranking and influential thinkers who saw the utility of helicopters, particularly on the nuclear battlefield. As early as 1954 General John Gavin had written a piece entitled "Cavalry … And I Don't Mean Horses!" which appeared in *Harper's Magazine*. The central theme, says Allen, was that mobility would be paramount on the nuclear battlefield and that the helicopter was the means for that mobility, be it for reconnaissance, the movement of troops or for logistic functions. Despite this vision there was little money to acquire the capabilities described, but that changed in 1961 with Secretary of Defense Robert McNamara directing the establishment of an Army Tactical Mobility Requirements Board in 1961. Within months the Board's report was ready. Chaired by General Hamilton Howze, it recommended the creation of multiple air assault divisions, air cavalry combat brigades (complete with anti-tank helicopters) and air transport brigades. The central "assumption was that aircraft, and helicopters in particular, were capable of fulfilling the army's five combat functions—reconnaissance, maneuver, firepower, command and control, and logistics."[40]

Only three years earlier, in a 1958 article in the US Army's *Ordnance Magazine*, Howze, a self-acknowledged horse soldier, laid out an impressive, but measured, vision for aviation, which could be seen in the conclusions and recommendations to McNamara.[41] In his article Howze began with some caution, pointing out that while helicopters could do great things, they were also very expensive. He underscored that "its use should be reserved for certain special purposes, for which it is indispensable."[42] These sorts of special purposes included moving troops and supplies across obstacles or moving them over great distances very quickly, but to do these things, he pointed out, required many helicopters, and the operation of large fleets of aircraft was an expensive proposition. He said, "It should be

first acknowledged that the helicopter is not routine substitute for the truck."[43] But he did reiterate that mobile defence did presume mobility and the helicopters would be well suited for that purpose, even going so far as to suggest that infantry and aviation should perhaps be "bivouacked alongside and ready to go."[44] He went on to discuss dispersion on the modern battlefield and how helicopters could be used to concentrate forces at particular times and places. But he also looked at the issue of resupply of these dispersed organizations and opined that "we consider the resupply of isolated units (which in effect means the majority of units in the most forward areas) by air to be routinely necessary."[45] From mobility on the battlefield, he then turned to the requirement for reconnaissance, again in the dispersed tactical setting, arguing that integration of aircraft into reconnaissance doctrine and organizations could be highly useful. To maximize the effectiveness of aviation assets, he spoke of the need for trained observers. And he went further, saying, "I visualize … platoons of these reconnaissance teams flying for the most part and light reconnaissance helicopters, each of which will be armed with a single light machine gun. The techniques of operation of the small teams have yet to be developed, but we are working on it."[46] These aircraft would fly at low level in order to minimize observation. Further, Howze said, these reconnaissance platoons would be backed up by rifle platoons flying in somewhat larger aircraft, and he went further to say that reconnaissance and rifle teams should be backed up by a number of what he called "shooting helicopters," which would operate at treetop level in close coordination with the reconnaissance forces.[47]

What, for this paper, is perhaps most striking about the article is not what Howze was thinking, although there is little doubt that he was clearly describing what came to be the air mobile and air cavalry concepts of the 1960s. Rather, it is the fact that this article was reproduced in the *Canadian Army Journal* in 1958, suggesting that the editors, if no one else, recognized the importance of air mobility. But this was not a one-off; there was a small but informed scholarship on air mobility.

In a comprehensive study that looked at the use of helicopters in counter-insurgency operations, "Vertical Envelopment in Anti-Guerrilla Warfare," Australian Major (Maj) G. R. Mills, a student at the Canadian Army Staff College, argued that guerrilla forces in general had two major advantages, intelligence and mobility, which counter-insurgency forces must negate. He reasoned that air mobility "provides the anti-guerrilla fighter with the requisite speed and surprise that will enable him to attack the guerrilla speedily."[48] He pointed to the defeat of the French in Indochina and the problems of the British in Malaya as indicators of what could happen if guerrillas were not beaten in these terms. The solution, he said, could be achieved through the use of airborne forces or helicopter-borne forces, but he then went on to explain why airborne forces were problematic given the general nature of counter-insurgency terrain. Heliborne forces, by comparison, could be highly effective. He noted that technologies had now reached the point where helicopters could carry significant payloads. Moreover, infantry soldiers used in these operations did not require specialized parachute training, and helicopters required no particular special airfields or landing surfaces and could drop troops exactly where they needed to be and organized to fight rather than dispersed, as was often the case with paratroops.[49] Mills went on to indicate that using a heliborne force of significant size, which would arrive quickly and without warning, would neutralize enemy intelligence and certainly mobility. Mills also recognized, however, that helicopters were not without their limitations and in particular that they were susceptible to ground fire at certain points in an air mobile assault. He countered that certain strategies could be used to negate or at least minimize these weaknesses, pointing to the use of armed helicopters and also intriguingly to the French example in Algeria where all helicopters were flown with two pilots, leading over a three-year period to a reduction in losses.[50]

Looking at the possibility of a European conflict, in a 1959 article in the *Canadian Army Journal* entitled "The Nuclear Battle Group," Colonel (Col) A. J. B. Bailey of Western Command wrote that dispersion on the nuclear battlefield would require mobility on the ground and in the air.[51] There was not much difference, he said, from what had gone on in the past in terms of actual operations, but nuclear weapons meant that there had to be greater dispersion in the presence of such weapons on the battlefield. In detailing his concept he proposed that the nuclear battle group, in effect a brigade group in modern parlance, would be built around the use of and protection of a guided missile or rocket battery equipped with nuclear munitions. In addition to these there would be what he called conventional forces, essentially four battalion teams which would do some protection of the nuclear delivery means as well as some normal manoeuvring in the brigade area. Within each of the

battalion teams, Bailey saw the requirement for air resources in the form of liaison aircraft, observation aircraft, and light transport aircraft. He said, "The rifle companies must have superior cross country and across obstacle mobility; this can be achieved by light amphibious tracked vehicles and by light fixed or rotary wing aircraft. Sufficient carriers should exist within the battle group to lift by ground and/or by air at least three of the four infantry battalions."[52] Similarly he believed that the reconnaissance regiment should have both fixed- and rotary-wing aircraft within each of the reconnaissance squadrons and, in a somewhat futurist way of thinking, felt that there should be infrared photographic equipment available for the aircraft.[53] Turning to logistics, he again stressed the requirement for light transport aircraft, particularly for the resupply plan for fuel and nuclear ammunition. He underlined once again the need for mobility, which could be provided either by tracked vehicles "and/or rotary wing aircraft can serve as personnel or weapons carriers and for the transport of supplies."[54] Thus at every level within the battle group headquarters, reconnaissance regiment, nuclear artillery regiment, battalion teams, and finally administrative services, Bailey saw a requirement for aircraft of one sort or another.[55] In practical terms, and likely because this was very much a concept piece, Bailey made no suggestion of any particular numbers or type of aircraft.

These pieces were counterpoised by some interesting and direct marketing from firms that could provide the mobility differential. Similar to the helicopter advertisements which would appear later in the *Canadian Defence Quarterly*, *The Snowy Owl* carried adverts in several editions: 1961–1963, 1965–1966 and 1969–1970. The 1961–1963 editions had a full-page ad from de Havilland Canada featuring the Caribou light transport in US Army colours. The 1965–1966 edition included an ad from Boeing helicopters asking rhetorically, "When can you send a platoon to do the job of a company?" and offering the response that the platoon was appropriate and it got to the right place at the right time, the helicopter being the obvious way to ensure that would happen. And finally in 1969–1970 issue, the Bell 212 and the whole family of Bell helicopters were showcased in a full-page spread.[56]

Away from the public scrutiny of journal articles, in August 1961 the Army was to produce "The Canadian Army Post-1970 Operational Study."[57] This was very much a conceptual study which tried to lay out the strategic, operational and tactical circumstances of the world almost 10 years into the future. In looking at the operational environment, the authors noted that the 1966–1970 period would have led to some shifts in thinking such that "there may be a greater *understanding* of the *application* of the principles of *firepower* and *mobility* as needed in the battlefield environment foreseen in the timeframe after 1970"[58] [emphasis in original]. An associated paragraph dealing with mobility began by saying that "the greatest mobility today is that which is provided by man's mastery of the air."[59]

The document subsequently went on to say that "mobility, even more than firepower, will provide the type of operational environment in which war will be waged in the post-70 timeframe."[60] When all factors were considered, the authors felt that the post-1970 battlefield and the environment would be one of great fluidity. They said, "The 1970–1975 timeframe will be under the threat of nuclear weapons and therefore the dispersed and mobile tactical concept of 1966–1970 will still be required. However, the increased mobility capability, particularly from the standpoint of air mobility will allow this form of warfare to take a better shape."[61] This statement underscored the significant requirement for mobility, and the authors indicated that air mobility and ground mobility would be essential. They wrote, "The theme of any tactical plan will be to strike at some vital enemy point with air mobile forces, and then to exploit with a larger-scale follow-up operation of ground mobile forces."[62] "This combination of air mobile and ground mobile troops will allow land forces to operate in depth on the battlefield on which dispersion and defence in depth will be encountered."[63] While it was admitted that air mobile troops would be vulnerable to enemy action, particularly while in the air, it was felt that the use of air mobile troops would ultimately be more economical and more effective than trying to break through on the ground. It was thought that the air mobile force would operate in low-flying vehicles, either vertical take-off and landing aircraft or helicopters, or perhaps even in some sort of air cushion vehicles.[64] Air mobile troops were also seen as having a role in raids, the seizure of small objectives across barriers, deep reconnaissance, rear area harassment, and shows of force.[65]

The study then turned to the roles of the various arms and corps of the army. Discussing the combat arms the authors noted several "points of departure"; the move towards integration of all three combat arms (infantry, artillery, armour) into one modern organization was one such point, but another more striking one stated that "the Army will 'take to the air' in every possible way, only scientific and technological limitations restricting its full tactical and logistic use of air vehicles of all types."[66] Later in the study this point was reinforced when looking at the post-1970 organization: "Technology may allow for a much higher degree of mobility than at present. By 1985 cross-country performance may mean above the ground rather than on it, subunits may be able to actually fight while vehicle borne or airborne."[67] Finally the study said, "The Canadian Army must become fully mechanized and as fully air mobile as possible. There can be no half measures except as forced on us by science and technology. No Canadian Army of the future can afford to be 'pinned to the ground.'"[68] Overall the field force would need several capabilities, among them: "the highest possible degree of ground and air mobility to allow it to concentrate despite seemingly impossible ground."[69] And finally "the post-70 Army must include a field force which is organized, equipped and trained to live, move and fight in a completely mobile environment on the ground or in the air."[70] As a conceptual document this study said about as much as it could with regard to aviation considering that, at the time, the Canadian Army was essentially still one of limited mobility and one lacking in significant helicopter resources. Indeed the study did not use the term "helicopters" in many places but rather used the word "air," and there could be some reasonable argument that air would from time to time even at the tactical level include transport aircraft as opposed to transport helicopters. It is perhaps for some of these reasons that the study was as imprecise or as incomplete as we might today assess it to be, looking back some 50 years. Nonetheless these words provided a clear rationale to move ahead in exploring the acquisition of helicopters in support of an air mobility concept.

What sort of acquisition plans the Army might have was hinted at in short order. In 1962 the *Canadian Army Journal* included a short article called "Wings for the Canadian Army," which offered a brief history of Army aviation plus a statement of holdings in 1962. Most of the article dealt with pilot training and employment, but a couple of key points were made. First the article said that improvements in the technologies associated with light reconnaissance and cargo helicopters were recognized and that these would provide the Army, or rather could provide the Army, with excellent cross-country capability in the Army sense of the word. The article concluded by identifying the five main functions of aviation: reconnaissance, artillery air observation post, command liaison, tactical movement of troops, and logistical support. That said, the article also indicated that there were only 46 fixed- and rotary-wing aircraft, all of them light aircraft or helicopters available at that time although there were future plans to acquire a cargo helicopter.[71]

The notion of air mobility had not caught on universally, and intriguingly and ironically an article in the following edition of the *Canadian Army Journal* by Maj V. J. Ferguson took a more traditional slant on the question of mobility. In his piece "What Do We Mean by 'Mobility'?" he said that "the aim of this paper is therefore to consider the term 'mobility' and define basic concepts that are suitable for military discussions."[72] The article ranged broadly from conceptual to technical but was focused very clearly on land vehicles. If there was a clue to this, when the author began to talk about armoured protection and swimming characteristics as well as the main armament the possibility that he was discussing aviation was quickly refuted.

Regardless of Ferguson's musings, the decision had been made to buy helicopters. On 20 August 1962, E. B. Armstrong, Deputy Minister of National Defence, wrote to the Secretary of the Treasury Board asking for authority to procure 12 cargo helicopters for the RCAF and Army. He made reference to the fact the Treasury Board had actually approved procurement in January of the same year. This new letter now provided further details on the procurement plan, specifically indicating that since the US Marine Corps and US Air Force had in the intervening months both decided to procure hundreds of the same aircraft type, the Vertol 107, the Army was now faced with the necessary, but happy, prospect of purchasing the US Marine Corps variant, which was in fact a more substantial aircraft than the Army had initially planned. There was additional good news: the Marine Corps variant of the aircraft was actually more capable than that proposed by the Army, and the manufacturer was prepared to sell it to the Canadians at the original price. The bad news was that because of differences

in exchange rates, these aircraft would now cost approximately $680,000 more than had been originally budgeted.[73] On 27 August the Assistant Secretary of the Treasury Board replied, indicating that on 24 August, Treasury Board had considered the request and had approved it allocating funds on a priority basis to allow for the acquisition of 12 aircraft.[74]

News of this acquisition was out by the end of the year. *Army Aviation News*, a mimeographed journal produced by the Army Aviation Tactical Training School located at Rivers Camp Manitoba, made mention of the purchase decision among its 50-plus pages. The journal was an intriguing publication that spoke to the tactical and individual interests of army aviators, its aim being "to encourage serious writing on topics of professional military aviation interest." In this particular issue Maj Bert Casselman, the commanding officer (CO) of the school and editor-in-chief, provided editorial comment in the form of an excerpt from the *Canadian Journal of Economics and Political Science* of 1954. Casselman, who would go on to command 403 Squadron, the first tactical helicopter squadron formed at the end of the decade, quoted from the journal: "a modern army is above all a dynamic institution, seeking to adapt to rapidly changing conditions largely outside its control. It constantly exhibits an amazing flexibility and versatility." Casselman went on to say that "it is the word 'dynamic' that must be applied to Army aviation if it is to keep step with the Army as a whole." He then pointed out that the acquisition of new equipment in the form of the CH112 observation helicopter and L-19L artillery spotting aircraft, new radios, and the impending purchase of the CH113 were all indicative of this dynamism. Further, he said it was incumbent on all members of the Army aviation community to be technically and tactically proficient.[75]

This then was the context as the newly created Canadian Forces set out to define in specific terms its concepts and practical abilities in terms of battlefield mobility and the use of helicopters.

When published some four years later, the Wilson Smith study, the "Canadian Forces Helicopter Study," began by reiterating its mandate as set out by the Minister of National Defence. The study team had been directed to "assess the operational effectiveness of vertical takeoff and landing aircraft in providing support to a mobile force in all ranges of worldwide conflict." The report noted that in conducting their investigations the study group, composed of Brigadier N. G. Wilson-Smith, Senior Army Liaison Officer, Canadian Defence Liaison Staff (Washington); Group Captain G. B. Murray, Director of Land Forces Operational Requirements (Air); Lieutenant-Colonel (LCol) R. E. Borland, Tactical Aviation Branch Headquarters Mobile Command; F. J. Joyce, Directorate of Special Studies, National Defence Headquarters (NDHQ); and S. Woodend, Directorate of Land/Air Operational Research[76] had visited a range of countries, aircraft manufacturers, research agencies and organizations, and had also interviewed an extensive number of experienced officers.[77] Chapter 1 provided a summary and conclusions, the major one being that "the air mobility concept … is valid in all possible military situations which might face us, and that the provision of helicopters will greatly enhance our operational capability thus enabling us to do more with less manpower."[78] It has also been concluded that while the chances of nuclear war were decreasing, limited wars seemed more possible and peace enforcing operations in the Third World were much more likely than had been the case only a few years before. "Conflicts at the lower end of the scale will be in underdeveloped countries possessing large populations, difficult terrain, and in different communications."[79] Turning to the issue of air mobility, the authors noted that "to meet superior numbers we require superior mobility" and that mobility was important in executing all five of the land combat functions: manoeuvre, fire, communications, reconnaissance, and supply.[80] Of specific and significant note, "none of our likely enemies, or countries requiring a peacekeeping operation, has a significant air mobile capability. Our possession of one would therefore give us a favourable mobility differential and redress our inferior strength."[81] Moreover, the conclusions continued, "Air mobility is the next major revolutionary cycle in land force development."[82] The study also noted that "where sufficient aircraft are provided so that fully air mobile operations are habitual, large savings in ground vehicles can be made. Where aircraft are supplied only temporarily and occasionally, savings within combat units are not significant."[83] Taken together these conclusions seem to indicate that air mobility would render the Army more effective within a finite set of resources and strength in that dollar-for-dollar aircraft were more cost-effective than ground transportation. The study did go on to say the helicopters were indeed vulnerable but that by using effective tactics it was possible to minimize losses. Four types of aircraft were proposed: a light observation helicopter, or LOH, a utility tactical transport helicopter, a cargo helicopter,

and an armed helicopter. Intriguingly the Hughes OH-6 was suggested for the LOH role; this was the type then in service with the US Army in Vietnam. As well, while a study mentioned an "armed helicopter," the type suggested for this was the Bell AH-1G Huey Cobra.[84] It should be noted that at that moment in time, the Huey Cobra was deemed an armed helicopter, but it would soon become known as an attack helicopter.

Turning to the roles of air vehicles, it was noted that helicopters could be of use in executing all five ground force combat functions: command, reconnaissance, manoeuvre, fire, and logistics. But this section of the summary went on to say that "in peacekeeping operations helicopters are particularly useful. Such operations are most likely in countries possessing few roads and difficult terrain. Air mobility would allow the situation to be controlled by a strong screen backed by highly mobile, responsive, central reserve."[85] As if it had not said enough, the introductory chapter closed by repeating that air mobility was important and that all five army functions could be satisfied or enhanced using helicopters. It was noted that the study's mandate had not included a review of the Mobile Command helicopter program. The authors did say that they had looked at the program and felt that it was completely appropriate.[86]

Subsequent sections and chapters of the study continued to emphasize the practicality of air mobility both in general terms and with reference to specific examples such as Malaya, Korea, the Suez, and Algeria, in addition to Vietnam. It was noted that "the helicopter gives ground forces the capability of using the air without basic change to the principles and procedures of ground combat. A helicopter borne force fights with the same aims and tactics as a vehicle borne force. A combat unit requires little readjustment to becoming air mobile."[87] At the same time it was emphasized that "helicopters provide an extra dimension to every function of the ground battle. … . Their introduction will have an equivalent, if not greater, impact on ground force effectiveness than the replacement of the horse by the motor vehicle."[88]

The study noted an additional benefit from the introduction of helicopters. "Ideally the addition of helicopters to the force structure should be matched by reductions in ground vehicles." For units using helicopters on a continuing basis it would be possible, the study suggested, to remove virtually all of their ground vehicles. An example here was the US Army's First Cavalry Division (Air Mobile), which had sufficient helicopter lift to move one third of its ground forces at any time and, that being the case, the division was able to operate with 1,500 vehicles compared to a normal division's 3,500. The study further noted that virtually all of these vehicles were light utility vehicles.[89]

The authors spent some time talking about vulnerability, about the tasks of aviation, and about how aviation resources could be used in the various theatres of war that might develop in the coming years. It was felt that helicopter operations would be even more effective in regions where limited wars were taking place or where peace enforcement or peacekeeping was the core mission. Finally, the authors noted that helicopters could be of extensive use in Canada, either in support of civil governments or in the event of an incursion into the north when helping to deal with an enemy lodgement there.[90]

Turning briefly to cost-effectiveness, the authors commented, "The cost figures for air vehicles are within the economic capability of any nation which now maintains ground mechanized units and tactical air force aircraft. For example, fully air mobile divisions are only slightly more expensive than other types." A number of figures were given for equivalent US Army organizations. The study stated that if an air mobile division's cost factor was rated as 100 per cent that of an armoured division would be 93 per cent with a mechanized division at 92 per cent and an infantry division at 87 per cent.[91]

The Helicopter Study Report seemed to have captured the essence of the previous decade's thinking about the importance of mobility and how to create and exploit mobility in the air. Moreover, it had factored in some important historical evidence from that same period and had not shied away from making use of US concepts and equipment. While not specifying numbers of aircraft, it seemed to have pragmatically captured the essential ideas of air mobility and the "mobility advantage." The question to which we must now turn is one simply of how well the concept managed once it crossed the start line.

A 1972 article in the then newly revived *Canadian Defence Quarterly* by Captain I. R. Binney provided a significant snapshot of the helicopter situation.[92] In his introduction Binney said, "The vision of every troop marching 50 miles [80.5 kilometres] into battle has become a matter largely for historians." He then went on to describe the numbers and types of helicopters that the Canadian Forces had bought or were in the process of buying over the next two to three years, and suggested that there were more aircraft coming particularly a larger medium transport helicopter and even perhaps some form of armed helicopter. Binney also noted that "Canada has been a late but avid participant in the 'airmobile' concepts for tactical troop operations."[93] Then he said that the move towards helicopters had to do with finding ways to increase tactical mobility to address problems with logistic support. He said that Canada had recognized in the early 1950s and at the beginning of the 1960s that there was large potential in vertical take-off and landing aircraft.[94] The problem now, he said, was that there simply was not enough money to purchase everything that was deemed necessary.[95] More significantly, Binney noted, planners had initially said that air vehicles could replace ground vehicles, and a dollar-for-dollar resupply by air vehicles was more cost-effective. That might have been conceptually true, but it was now apparent that there was a requirement for both ground resupply capability and air resupply capability.[96] Moreover, he also recognized that it was inappropriate to use aircraft such as the medium transport Vertol when trying to move only a few men or a few pounds of equipment. Binney happily noted that Canadian planners had recognized this and therefore elected to have a range of aircraft in the upcoming purchases. To move one or two people, a light observation helicopter could do the job; to move a few people a utility helicopter would be more appropriate, but it was still recognized, as had been seen from the experience by the US Army in Vietnam, that the medium transport helicopter was essential to move large heavy items such as artillery pieces and artillery ammunition.[97]

At this point in his article, having introduced the vexing problem of finance, he noted that the Canadian requirement had been for 18 medium helicopters based on the needs of an air transportable brigade's 125 tons [113.4 tonnes] of logistics per day, but that because of financial constraints only 12 machines had been purchased. He went on to address the Helicopter Study Report's recommendations for four types of helicopters. He also said that Canada had quickly purchased 10 utility helicopters, CH118, single Huey, in order to develop doctrine and procedures. He explained also that the Canadian requirement for a twin-engine utility helicopter had led to the development of the Bell Model 212, but at the same time he indicated that while the Canadian Forces had originally required 90 of these machines, now budget restrictions had limited purchases to only 50. Similarly Binney said that while the force structure model identified a need for 107 observation helicopters, only 74 would actually be purchased; although there were plans to buy more, these were for the moment only plans.[98]

He also addressed some of the problems associated with attack helicopters; while these were seen as advantageous from the Vietnam experience, he noted that the Americans had lost several when going against advanced air defence forces in Cambodia. He also noted that the Israelis had decided to use helicopters only where there is either light or no enemy air defence capability. These two high-risk experiences seem to fly in the face of the most obvious use of Canadian helicopters in any future conflicts in northern Europe. Binney ended his article somewhat pessimistically, or perhaps realistically, by noting that while there had been plans developed to use helicopters, these plans, as was the case with all defence plans, were subject to significant modification due to the change of government. He wrote that "between a drastic financial squeeze in the current government's apparent intention to [a] generally less warlike stance in defence policy, the Canadian forces have been forced to reorganize downwards." Where helicopters would be used and in what numbers were his questions. He also wondered where helicopters would be used if the Canadian Forces moved away from what might be deemed classic military roles.[99]

The problem of using helicopters in Europe was well understood and, even as Binney's article was being published, NATO was conducting a trial using the Bell TOW [tube-launched optically-tracked wire-guided] Cobra against modern armoured forces. As Wayne Ralph noted in the *Canadian Defence Quarterly*, the Bell attack helicopter equipped with TOW missiles was a formidable opponent. Ralph noted that the problems of helicopter vulnerability were offset by the helicopter's narrow frontage and an ability to side slip at up to 35 knots [64.8 kilometres per hour], making it hard to track. When used in conjunction with a reconnaissance helicopter that would spot targets before bringing the attack helicopter forward, it was possible, as the trials in which Canada participated demonstrated,

to achieve a kill ratio of anywhere from 18 to 34:1. Ralph, however, also noted that helicopters generally had to operate in what he called a "permissive environment"; that is, they had to operate over terrain held by their own forces. Ralph concluded by saying that the projected introduction of the Hellfire missile system, a fire and forget missile, would make the use of attack helicopters on the battlefield much more effective.[100]

Curiously, the following year *Canadian Defence Quarterly* published an article discussing Arctic warfare. The author, Maj Ken Eyre, an experienced and open-minded infantry officer, made no reference whatsoever to the use of helicopters. Instead he said that infantry would either be foot borne or use over-snow vehicles such as Skidoos and that air resupply would be conducted by Hercules aircraft. It was perhaps curious, but he made no reference to helicopters because part of his concept called for the use of a full artillery regiment and, even had these guns been the light pack howitzers in use by the airborne regiment at the time, it would have been extremely difficult to move guns, ammunition and soldiers over extended distances in the north, particularly in winter. Interestingly, two years later, the cover of *Canadian Defence Quarterly* (Vol. 6, No. 3, Winter 1977) shows a Chinook helicopter operating in the Canadian Arctic, while an earlier edition of the magazine showed troops in winter camouflage embarking in a Vertol on snow-covered ground.[101]

During this same period tactical doctrine for aviation was promulgated in the form of Canadian Forces Publication 311 (5), *The Tactical Helicopter Squadron in Battle*, first issued in May 1971 and reissued in 1978.[102] The preface of the new volume noted that "the composition of helicopter squadrons described herein is just one of the number of possible options. The actual composition of helicopter squadron may vary depending on policy, roles, equipment, or composition of the field force of which it forms part."[103] The preface continued, "Like any doctrine, it must not be implemented slavishly but must be applied with common sense and adapted to the prevailing circumstances and tactical situation."[104] These words seemed reasonable enough and perhaps even innocuous, but they opened the door to some unanticipated consequences. However, they were repeated in the opening lines of the body of the document: "The organizations presented in this manual merely illustrate the tactical employment concepts discussed, and should not be construed as representative of war establishments."[105] If one may make an observation: Why was this doctrine promulgated which did not represent war establishments?

The volume then set out the roles and tasks of an aviation squadron in support of a brigade group. Tasks included reconnaissance and observation; direction of artillery fire; airborne command post and liaison; airborne control of close air support aircraft; anti-armour and fire support; tactical airlift troops and equipment; logistic airlift; radio relay; and casualty evacuation.[106] The volume also described several characteristics of aviation, most notably mobility and flexibility. Curiously, and in juxtaposition to the fact that the volume was not meant to construe war establishments or perhaps by extension war capabilities, one of the characteristics of aviation was firepower, yet at the time no Canadian aviation resources were able to provide anything other than self-defence, and that with some degree of difficulty.[107]

Chapter 2 of the volume dealt with organizations and began by discussing the various land force organizations down to division level; these included infantry, mechanized, armoured, airborne, and again, curiously, air mobile. But it was also noted that most Canadian field formations were actually organized as brigade groups: "The Canadian brigade group is designed to operate independently of a division. Consequently, in addition to armour and infantry units, it possesses its own combat support and combat service support units." Listed among these units was a tactical helicopter squadron.[108] Section 3 of the same chapter talked about tactical air organizations and operations. Curiously, under "Tactical Air Transport Operations," the reader could find helicopter borne assault while in the next subparagraph, "Tactical Aviation Operations," was listed tactical and logistic airlift of troops and material.[109] There was also some description of functional and tactical organizations, and it was noted that "the establishment and equipment scales of a tactical helicopter squadron are based on: the number and type of aircraft and a specified flying rate required to meet the assigned role" as well as the maintenance and support personnel to allow squadrons operate.[110] In discussing tactical organizations the authors said, "The size and operational mission of the supported formation and the roles assigned to the supporting tactical aviation squadron determine the number and type of aircraft

grouped as a squadron to support the land formation." Factors that needed to be considered here were whether or not resources were required on a continuing basis or for specific tasks of limited duration.[111] From these generalities it was then possible to go on to more specific groupings of helicopters: for reconnaissance support, six observation helicopters would normally be assigned to a reconnaissance troop; for air observation or forwarder controlling, three observation helicopters were the norm; command and liaison for the brigade group headquarters normally required two airborne command post configured utility helicopters and four observation helicopters; medical evacuation was normally the task for six utility helicopters; and finally mobile operations required four utility helicopters to move a platoon and 12 to move the company.[112]

After discussing the various leadership and administrative positions within a typical squadron, the manual turned to a discussion of the various squadrons which could be formed: brigade tactical helicopter squadron; standard brigade group helicopter squadron; air assault helicopter squadron; medium transport helicopter squadron; attack helicopter squadron; and finally the aircraft field maintenance squadron.[113] The detailed composition and organization of each of the types of squadrons was then presented. The brigade tactical helicopter squadron "could have a complement of 12 observation and six utility aircraft. It would be organized into a squadron headquarters, two observation flights, one utility flight" along with administrative and supporting organizations. The standard brigade group helicopter squadron would operate in support of a brigade group that had been detached for independent operations. In this case a squadron would have a utility flight composed of a lift section of seven utility helicopters able to move a platoon at a time and an armed helicopter section also having seven aircraft able to provide fire support in the form of rockets and anti-armour weapons. The squadron's observation flight was also divided into two sections totalling 13 aircraft to provide reconnaissance and artillery support. Finally, there was a medium transport flight of four aircraft.[114] An assault helicopter squadron had the role of conducting a two-company lift air mobile assault. There were three flying flights within the squadron, two identical flights of 12 utility helicopters each, and headquarters (HQ) flight containing four utility and six observation helicopters. The observation helicopters were intended to provide pathfinding support for the assault.[115] The medium transport squadron would operate 12 transport helicopters with an additional four observation helicopters in the squadron headquarters. Finally, an attack squadron would have four attack teams or flights each operating two observation and three utility helicopters the latter presumably operating as pseudo-attack helicopters.[116]

In hindsight, the imprecision of this doctrinal document was disturbing, but at the time, as a pilot flying and instructing within 10 Tactical Air Group (10 TAG), it seemed simply like a pragmatic way of describing a somewhat fluid circumstance. The doctrine had been written by people who, like the author, were simply trying to be as transparent as possible in describing the organization and employment of those resources which had been purchased in the early 70s. But what it meant quite often was that the squadrons in support of brigades were not organized based on the requirements of the land formation, but rather simply on what could be cobbled together on any given day or for any given exercise. Aircraft and capabilities were in essence penny-packeted across the country with not much more than a training cadre of aviation available most days (but certainly not every day) to the affiliated brigade. Matters were worse in the west, where distances were such that it took a full day of flying to even reach units in Manitoba or British Columbia. Compounding the shortfalls in aircraft, crew ratios were never such that serviceable aircraft could be operated even close to the necessary flying rate. In one case in 1993, 408 Squadron had 10 observation helicopters available but had only 10 pilots within the observation flight. Given that the tactical flying limitations of the period limited flyers to not more than six hours of tactical flight per day (with the six hours including any time that the engine was running), and after officers had been taken away to operate the flight command post and act as liaison for supported units, often the observation flight was effectively grounded by noon, having started operations sometime before 0600.[117]

In the late 1970s the Army had introduced into its conceptual framework a field force structure known as Corps 86. The corps was a very robust combat formation which included an aviation group. At the group level, providing support to all corps formations were transport and attack helicopter wings, as well as electronic warfare squadrons and an air ambulance wing. Directly supporting each division was a composite helicopter squadron, as well as utility squadron of 24 utility helicopters.

Finally each brigade was supported by an observation squadron. Ironically the resources of the groups were not always well understood or employed. In at least one instance, a major command post exercise conducted by the Canadian Forces College in the winter of 1988, Army students completely ignored the availability of the attack helicopter wing when trying to stem a major enemy land breakthrough. It was only at the insistence of the aviation group commander with some support from the exercise director that the attack helicopters were brought into play. Arguably it was the continuing inability of existing aviation resources to adequately support the mobility and anti-armour requirements of the Army which caused the students to forget the utility and availability of aviation.[118]

At about the same time while students at Canadian Forces College, the author and, now Lieutenant-General, Marcel Duval wrote papers arguing that 10 Tactical Air Group should routinely be organized along doctrinal lines. While there were no attack resources in Canada at least the balance of units could be organized in accordance with approved doctrine so that there would be significant support for individual brigades when they needed it during training concentrations. The wisdom of this approach had in fact been seen during the 1980s and the Rendezvous series of exercises. Most particularly during Rendezvous 85 a divisional utility squadron had been created and all available medium transport resources had been grouped as well, but this practice was discontinued by Rendezvous 92 for reasons unknown. During that exercise, however, the utility helicopters of all participating squadrons were brigaded from time to time to at least provide an effective lift capability similar to that which a full utility squadron could offer, and consequently a number of significant company group and battalion air mobile activities were executed.

The small successes were in stark contrast to some of the abject failures which also occurred during this period. In one particular example, during a winter exercise in the Gaspé Peninsula in 1986, only three Hueys were available to move an entire battalion. Later that year the same battalion planned a 50-kilometre airmobile insertion using 10 Hueys and two Chinooks; in the event the plan called for only one Chinook of the two, but both broke down before the beginning of the operation, causing a complete unravelling of the ground tactical plan. These sorts of SNAFUs had an impact on Army leaders' confidence in aviation's ability to create that mobility differential.

By comparison, during these same years, 10 TAG initiated a series of exercises to train its own personnel; these were called Exercise Winged Warrior and were a week-long confirmatory phase of the Advanced Aviation Course, which trained aircrew for employment as mission commanders and subunit level commanders within aviation units. For these exercises sufficient resources were brought together to conduct extensive reconnaissance and artillery observation, pathfinding, troop lift, and gun lift. When available, attack helicopters from the United States were also integrated into the exercise. As a bit of a reversal it was the combat arms which provided support to these training exercises, usually in the form of a company group as well as mortars or guns. Almost invariably at the end of the exercise, the infantry company commander would express much satisfaction in the ability of the aviation resources to get him and his men where they needed to be to conduct effective ground operations. One can conclude, fairly reasonably, that senior aviators understood well enough what was required in terms of organization and capability to provide the mobility differential. What seems curious was that no attempts were made to permanently organize so that this reasonable level of mobility could be provided to each of the formations within the field force on a regular basis. This would have done something not just for the reputation of the aviation community but also for the tactical competency on both aviation and Army organizations when the threat of the day was still seen as the Warsaw Pact in central Europe.

The threat, of course, went away approximately 20 years ago, and as the army became increasingly pulled into peace support operations, aviation units were similarly engaged in operations other than war. Beginning in 1985 with the dispatch of helicopters to the Multinational Force in the Sinai, there began a series of peace support operations, several of them in Central America, which saw helicopters, principally Hueys and then the newer Griffons, used for utility operations. But when aviation units were stood up in the former Yugoslavia, it was recognized that the fleet, by this time consisting of only the CH146, needed to have more than just a utility capability. Leaders at 10 TAG and subsequently at 1 Wing argued hard and ultimately successfully for the acquisition of surveillance technologies and suppressive firepower systems to give the Griffin an ability to seek out information and to protect

itself in hostile environments. What the Griffin did not have was an ability to work in a high/hot environment such as that found currently in Afghanistan. Both for the very real technical reason but also perhaps because of the Army leaders' continuing lack of satisfaction with aviation, no aviation resources were sent to Afghanistan until very recently. Indeed it was only when the then-Chief of Defence Staff Lieutenant-General Rick Hillier, who along with his successor, Lieutenant-General Walt Natynczyk, had served with American forces and well understood the abilities of aviation and in particular transport, the push was started from the very top to acquire and deploy aviation resources. Subsequently, with the arrival of Chinooks and Griffons in Afghanistan, aviation has been able to provide the Army with the mobility differential so sorely needed to be able to conduct operations from the air, much as the Canadian Army Post-1970 Operational Study postulated and as the Helicopter Study Report repeated. The issue here is not being to get there the "firstest with the mostest" but rather to avoid operating on the ground in any sense and thus to negate the insurgent threat. In that sense the capabilities of aviation very much support the observations of the 1960s. There is perhaps a certain irony, albeit a very sad one, that almost half a century after the writing of these two documents, that aviation has provided the support needed by the Army to get an operational job done in a combat theatre. While both documents very clearly and logically, and with significant prescience, identified the viability and importance of aviation resources, the *realpolitik* and real circumstances of budget cuts, doctrines skewed by domestic geography, and the seeming inability of leaders to recognize and mitigate those limitations, have meant that the ability of aviation to provide both mobility and firepower would not be fully accepted until Canadians were sent into harm's way.

Notes

1. The author, a former 10 TAG aviator, is conscious of the fact that while today we might speak of aviation support for the army, in those years such terms were either little understood or relatively frowned upon.

2. Canada, Department of National Defence, *Canadian Armed Forces Helicopter Study Report May 1967*, NDHQ file 11520-1, Vol. 2, 4.

3. Ibid., 4.

4. Robert Mason, *Chickenhawk* (London: Penguin, 1984).

5. General John Tolson, *Vietnam Studies: Airmobility 1961–1971* (Washington, DC: Department of the Army, 1973).

6. Matthew Allen, *Military Helicopter Doctrines of the Major Powers, 1945–1992* (Westport, Connecticut: Greenwood Press, 1993).

7. Ibid., xx.

8. Ibid., xxi.

9. 408 and 430, Hugh Halliday.

10. Directorate History and Heritage (DHH), 73/1299 GOLD RUSH folder 1, "GOLD RUSH Exercise Directive," 15 February 1955.

11. Canadian Army Combat Development Study, "First Draft: The Canadian Army Post-1970 Operational Study," 11 August 1961.

12. DHH 73/1299, GOLD RUSH folder 1, "Record of the Meeting Held in the Office of the Chief of the General Staff on Wednesday, 19 January 1955 to Discuss Logistics Support by Aircraft in the Forward Area," 19 January 1955.

13. Ibid., para 7.

14. Ibid., Appendices A and B.

15. DHH 73/1299, GOLD RUSH folder 1, "GOLD RUSH Exercise Directive," 15 February 1955, para 2.

16. Ibid., para 3.

17. Ibid., para 11.

18. DHH 73/1299, GOLD RUSH folder 1, "Exercise GOLD RUSH Terms of Reference for a Study of the Organization of Field Formations to Meet the Conditions of Future Warfare," 15 February 1955.

19. Letter Simonds to the Minister of National Defence, 14 Mar 55 cited in HQS [Headquarters Secret] 2001-91/G9 (Exercise GOLD RUSH [Ex GR]) Brief for the Chief of the General Staff, 12 Jun 56.

20. CSC [Chief of Staff Committee] 10-9 (TD [Temporary Docket] 3), "Report of the Ad Hoc Committee on Service Requirements for Helicopters," 21 December 1955 (document provided to the author by LCol Dean Black [ret'd]).

21. Ibid., para 3.

22. Ibid., para 7.

23. Ibid., para 20.

24. Ibid., para 20 g.

25. "A Paper on the Control and Operation of Helicopters in the Canadian Services," dated 17 November 1955 (document provided to the author by LCol Dean Black [ret'd]).

26. Ibid., para 2.

27. Ibid., paras 4–7.

28. Ibid., para 14.

29. Ibid., para 15.

30. DHH 73/1299, GOLD RUSH folder 1, "Appendix C to HQS 2001-91/G9 (Ex GR) dated 12 Jun 56," para 1 (b).

31. Ibid., para 1 (j).

32. DHH 73/1299, GOLD RUSH folder 1, "Brief for the Chief of the General Staff Exercise GOLD RUSH," file HQS 2001-91/G9 (Ex GR) 12 June 1956.

33. DHH 73/1299 GOLD RUSH folder 1, "Operation 'FIRE-FLY,'" file HQS 2001-91/F15 (Ex GR) 28 September 1956.

34. DHH 73/1299 GOLD RUSH folder 2, "Exercise 'GOLD RUSH' Volume 1 The Tactical Concept," file HQTS [Headquarters Top Secret] 1200-6/9, no date, para 5.

35. Ibid., para 37, 10–12.

36. General Sir Anthony Farrar-Hockley, *The Army in the Air: The History of the Army Air Corps* (Stroud, Gloucestershire: Alan Sutton Publishing, 1994), 186.

37. Ibid., 187–94, 202.

38. Allen, *Military Helicopter Doctrines*, 127–9, 168.

39. Among others, Col Leo Noiles (ret'd) and LCol Allan Cooper (ret'd) flew Skeeters with the British Army during the early 1960s.

40. Allen, *Military Helicopter Doctrines*, 6–9.

41. Major-General Hamilton Howze, "Helicopters in the Army," *Canadian Army Journal*, Vol. 12, No. 2, April 1958, 48–58 (reproduced with permission from the January–February 1958 issue of *ORDNANCE Magazine*).

42. Ibid., 48.

43. Ibid.

44. Ibid., 49.

45. Ibid., 53.

46. Ibid., 54.

47. Ibid., 55–56.

48. Maj G. R. Mills, Royal Australian Engineers, "Vertical Envelopment in Anti-Guerrilla Warfare," *The Snowy Owl*, Vol. II, No. 3 (1963–1965 of the Snowy Owl), 66.

49. Ibid., 64.

50. Ibid., 59–68.

51. Col A. J. B. Bailey, Chief of Staff, Headquarters Western Command, "The Nuclear Battle Group," *Canadian Army Journal*, Vol. 13, No. 2, April 1959, 5–22.

52. Ibid., 14.

53. Ibid., 14–15.

54. Ibid., 16.

55. Ibid., 17.

56. Info on journals.

57. Canadian Army Combat Development Study, "First Draft: The Canadian Army Post-1970 Operational Study," 11 August 1961. This document had been previously titled "Canadian Army in 1971–75 Tactical and Logistic Appreciation."

58. Ibid., para 402.

59. Ibid., para 411.

60. Ibid.

61. Ibid., para 417.

62. Ibid., para 421.

63. Ibid., para 422.

64. Ibid., para 423.

65. Ibid., para 424.

66. Ibid., para 609.

67. Ibid., para 805.

68. Ibid., para 907.

69. Ibid., para 912.

70. Ibid., para 916.

71. Directorate of Air/Land Warfare, Army Headquarters, "Wings for the Canadian Army," *Canadian Army Journal*, Vol. 16, No. 2, April 1962, 84–89.

72. Maj V. J. Ferguson, "What Do We Mean by "Mobility"?", *Canadian Army Journal*, Vol. 16, No. 3, July 1962, 48–52.

73. HQ 7811-0 TD 1313 Memorandum "Cargo Helicopters RCAF and Army" Deputy Minister, Department of National Defence to Secretary Treasury Board 20 Aug 62 (provided to the author by LCol Dean Black [ret'd]).

74. T. B. [Treasury Board] 589042-1 Memorandum Secretary Treasury Board to Deputy Minister, Department of National Defence 27 Aug 62 (provided to the author by LCol Dean Black [ret'd]).

75. Maj A. K. Casselman, ed., *Army Aviation News* Vol. 3, No. 14 (December 1962): 1. The CH112 Nomad was the same aircraft then entering service with the US Army and the L19L was the most modern variant of the Bird Dog observation aircraft called the O-1 in US Army parlance.

76. "Helicopter Study Report," Annex A.

77. Ibid., 1.

78. Ibid.

79. Ibid., 3.

80. Ibid., 4.

81. Ibid.

82. Ibid.

83. Ibid.

84. Ibid., 5.

85. Ibid., 7.

86. Ibid., 9.

87. Ibid., 18.

88. Ibid., 17.

89. Ibid., 18.

90. Ibid., 23–24.

91. Ibid., 24–25.

92. Captain I. R. Binney, "The Helicopter in the Canadian Forces," *Canadian Defence Quarterly* 1, 3 Winter 1972, 28–33.

93. Ibid., 28.

94. Ibid.

95. Ibid., 29.

96. Ibid., 29–30.

97. Ibid., 30.

98. Ibid., 30–31.

99. Ibid., 32–33.

100. Wayne D. Ralph, "The Bell AH-1Q TOW Cobra: Operational Experience and Field Trials," *Canadian Defence Quarterly* 4, 2 Autumn 1974, 24–27.

101. Major K. C. Eyre, "Tactics in the Snow: The Development of a Concept," *Canadian Defence Quarterly* 4, 4 Spring 1975, 7–12.

102. Canada, Department of National Defence, B-OG-311-005/FT-001, *Tactical Air Volume 5 Tactical Helicopter Squadron in Battle*, April 1978.

103. Ibid., iii–iv.

104. Ibid., iii.

105. Ibid., 1-1.

106. Ibid., 1-1, 1-2.

107. Ibid., 1-3.

108. Ibid., 2-3.

109. Ibid., 2-4.

110. Ibid., 2-5, 2-6.

111. Ibid., 2-6.

112. Ibid., 2-7.

113. Ibid., 2-11.

114. Ibid., 2-12, 2-14.

115. Ibid., 2-15.

116. Ibid., 2-17.

117. The author was CO of 408 Squadron during this episode.

118. Still looking for Corps 86 ORBAT [order of battle]. The episode described was one in which the author was a participant.

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List of Abbreviations

10 TAG	10 Tactical Air Group
Acc.	Accession
ADM	Admiralty File
AFHQ	Air Force Headquarters
AG	air gunner
AHB	Air Historical Branch
AM	air marshal
AOC-in-C	air officer commanding-in-chief
AOC	air officer commanding
ATC	Air Transport Command
ATU	air-transport unit
AVM	air vice-marshal
BCATP	British Commonwealth Air Training Plan
BdU/B.d.U.	Befehlshaber der Unterseeboote
C-in-C	Commander-in-Chief
C2	command and control
CAB	Cabinet
CAF	Canadian Armed Forces
CANUNEF	Canadian United Nations Emergency Force
CAS	Chief of the Air Staff
CBUME	Canadian Base Unit Middle East
CDS	Chief of the Defence Staff
CF	Canadian Forces
CFC	Canadian Forces College
CFHQ	Canadian Forces Headquarters
CFLI	Canadian Forces Leadership Institute
CO	commanding officer
COR	Chief Operational Research
CSC	Chiefs of Staff Committee
CWM	Canadian War Museum
D/VCAS	Deputy Vice Chief of the Air Staff
DFC	Distinguished Flying Cross
DGofS	Director General of Staff
DHH	Directorate of History and Heritage

DND	Department of National Defence
Ex GR	Exercise GOLD RUSH
F.d.U.	Führer der Unterseeboote
GNAT	German Naval Acoustic Torpedo
HG	convoy departing from Gibraltar
HMCS	Her Majesty's Canadian Ship
HMS	His Majesty's Ship
HMSO	Her Majesty's Stationery Office
HN	Historical Narrative
HQ	headquarters
HQS	Headquarters Secret
HX	convoy departing from New York
JHAP	Joint Helicopter Acquisition Project
kg	kilogram
km	kilometres
LAC	Library and Archives of Canada
lb	pound
LCMSDS	Laurier Centre for Military Strategic and Disarmament Studies
LMF	lack of moral fibre
LOH	light observation helicopter
MGen	major-general
MND	Minister of National Defence
MO	medical officer
NA	National Archives
NATO	North Atlantic Treaty Organization
NAUK	The National Archives of the United Kingdom
NCO	non-commissioned officer
NDHQ	National Defence Headquarters
NORAD	North American Air Defence Command
ON	convoy outbound from England to North America
ONS	slow convoy outbound from England to North America
ONUC	Opération des Nation Unies au Congo
ORB	operations record book
OR	operational research
PBY	designation for Consolidated Aircraft Corporation's Model 28 flying boat

PREM	Prime Minister's Office
PSOC	Principal Supply Officers Committee
QOR	Queen's Own Rifles
R.E. 8	Reconnaissance Experimental 8
RAFDEL	Royal Air Force delegation
RAF	Royal Air Force
RCAF	Royal Canadian Air Force
RFC	Royal Flying Corps
RG	Record Group
SC	slow convoy
SNO	Senior Naval Officer
STOL	short take-off and landing
TD	Temporary Docket
TOW	tube-launched optically-tracked wire-guided
T	Transport
UAR	United Arab Republic
UK	United Kingdom
UNEF	United Nations Emergency Force
UN	United Nations
USAAF	United States Army Air Forces
USAF	United States Air Force
USN	United States Navy
US	United States
VCAS	Vice-Chief of the Air Staff
VLR	very long range
VLT	Visual Link Trainer
W/C	wing commander
WO	wireless operators
W	waverer
WWII	World War II