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ANSWERING THE CALL

A HISTORY OF THE ROYAL CANADIAN AIR FORCE'S
NON-COMMISSIONED MEMBERS

MATHIAS JOOST



CANADIAN
ARMED FORCES



FORCES ARMÉES
CANADIENNES

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TABLE OF CONTENTS

PREFACE	V
COMMAND TEAM COMMENTS	VII
INTRODUCTION.....	1
CHAPTER 1: TOWARDS A ROYAL CANADIAN AIR FORCE, 1914–1923	9
Canadian Aviation Corps	9
The Royal Flying Corps – Canada	10
Canadian Air Force in England	11
Air Board / Canadian Air Force.....	12
Conclusion	14
CHAPTER 2: THE LONG ROAD TO INDEPENDENCE AND WAR	16
Background	16
Boys’ Technical Training Plan	21
Permanent Force Ab Initio Trainees	22
Sergeant Pilots	22
The Non-Permanent Active Air Force	23
Recruiting and Terms of Service	24
Trades in the RCAF	25
Training in the RCAF	28
Leave and Dress Off Station.....	30
Conclusion	31
CHAPTER 3: THE SECOND WORLD WAR	32
Personnel.....	33
Training	35
Trade Groups	36
Maintenance	37
Women	39
Operations in Canada	42
British Commonwealth Air Training Plan	42
Home War Establishment	43
Operations Overseas.....	46
Fighter Squadrons	47
Bomber Command	48
Transport Squadrons.....	50
Conclusion	51

CHAPTER 4: FROM THE LARGEST SERVICE TO NOTHING (FROM HERO TO ZERO)	53
Regular Force	54
Auxiliary	57
Personnel	58
Trades and Training	62
Operations	63
Peacekeeping	67
Unification	70
Conclusion	71
CHAPTER 5: THE AIR FORCE RESURGENT	73
Restructuring within Air Command	75
Operations	77
Conclusion	84
CONCLUSION	85
ABBREVIATIONS	89
ENDNOTES	91

LIST OF TABLES

Table 1. Sampling of the senior NCOs in the CAF	13
Table 2. Hours for CGAO vice RCAF training and operations	17
Table 3. Hours and minutes flown on various missions	20
Table 4. RCAF trades and groups, 1927	27
Table 5. Aircraftmen who enlisted on 1 April 1924 and rose to higher ranks	34
Table 6. RCAF personnel overseas	46
Table 7. Squadrons and units of the RCAF expansion	54
Table 8. Strength of the RCAF	59
Table 9. Canadian peacekeeping missions / RCAF participation	68
Table 10. Air force humanitarian airlift operations with detachments	69
Table 11. Peacekeeping operations between integration and formation of Air Command	71
Table 12. Selected operations with deployed air force participation	78

PREFACE

The Royal Canadian Air Force (RCAF) has a long and rich history and non-commissioned members (NCMs) are a pivotal reason for that success. They have served Canada with distinction in times of peace and war. Put simply, their commitment to the Air Force allowed the RCAF's early role in nation building to flourish and continue throughout a remarkable 100 years of service. Whether it was involved with a host of initiatives, such as photographic efforts to explore the North or combat operations in support of alliance commitments (cornerstones of Canadian geopolitical security—just to name two), the Air Force and its NCMs have been integral to an effort that has made our country the great nation that it is today. Their legacy, therefore, is also Canada's story and must be told.

Through a review of the literature, it is easy to attest to the many outstanding historical books, articles, dissertations, and other writings that examine the contributions, and challenges, faced by the RCAF. But, as with any topic, there are always gaps in the literature. As several distinguished scholars have correctly identified, the study of the Air Force has often been too “officer centric” and this needs to change. A specific recounting and understanding of the RCAF's NCMs is therefore an essential topic that has not yet received the attention it deserves.

The approaching RCAF Centennial presented the perfect opportunity to begin to correct this imbalance in the literature. RCAF History and Heritage, with essential support from the RCAF 2024 Centennial Committee, proceeded to write a volume that puts the spotlight on the RCAF's NCMs. This project was very fortunate to secure Mr. Mathias Joost, a recognized expert on the subject, as its author. As well as being a general examination of the RCAF NCMs' contributions, this publication is specifically designed to encourage other writers to use it as a springboard to further explore the past efforts of these NCMs. The pages that follow in this book reflect an important acknowledgement of those who served (and continue to serve) in the NCM ranks and provided an indispensable backbone for the RCAF. It is for this reason that I take great pride in seeing this project come to fruition as the first example of the RCAF 2024 Centennial history publication series, especially as it celebrates people who were often unsung heroes.

In summary, this important book chronicles the dedication to duty and professionalism of the RCAF's NCMs who have served the Air Force with bravery and distinction over the last 100 years and will continue to do so as the organization embarks on its second century. It seems fitting that the Centennial historical publication series begins with the individuals upon whom the RCAF relies so heavily. Their efforts are a symbol of Canadian values and our nation's desire to protect international stability through its commitments to the United Nations, the North Atlantic Treaty Organization, and the North American Aerospace Defence Command, not to mention the multiple domestic operations that represent its essential internal national requirements.

On a personal note, it is with much joy that I see this book in print, as my own father served with the Royal Air Force's 50 Squadron as a flight sergeant with Bomber Command from 1943 to 1946. He was proud when I became an officer in the Canadian Armed Forces in 1992, but he always reminded me, with a wink and smile, that it did not mean that I should expect him to start calling me "Sir." That joke stuck with me during my own service, as I quickly learned the value of listening to and considering the sage advice of the NCMs.

For my father and all other NCMs, this book is a tribute to 100 years of proud service for which the nation owes a tremendous debt.

Dr. Richard Mayne, CD
Director and Chief Historian
RCAF History and Heritage

COMMAND TEAM COMMENTS

Shortly after this book is published we will celebrate the 100th anniversary of the Royal Canadian Air Force (RCAF). The RCAF has enjoyed a storied history in its first 100 years. From its humble beginnings as a civilian flying service, the RCAF evolved to become a military force in the Second World War and has continued to serve Canada at home and around the world to this day. This is our shared history.

In the past, histories of the RCAF have tended to focus on the RCAF as a whole, or on its formations, aircrew, aircraft and squadrons. With our centennial approaching, it is timely that we recognize those who have been as much a part of history as those who we have honoured in the past.

To celebrate this 100th anniversary, RCAF History and Heritage, in partnership with the RCAF Centennial Committee, has been preparing historical works which examine aspects of the RCAF that have not yet been covered in previous publications. A series of books will be published through the centennial year and afterwards as legacy projects. *Answering the Call: A History of the Royal Canadian Air Force's Non-Commissioned Members* is the first of these.

It is our distinct pleasure to introduce you to this book as the inaugural effort in the series. It provides long-overdue recognition of the countless non-commissioned members (NCMs) who have served in the RCAF with pride, duty and sacrifice. If there is one theme that runs throughout *Answering the Call*, it is the noteworthy professionalism of the RCAF's NCMs. People are the heart of the RCAF; this has been true since 1 April 1924, and it will continue to be the case in our next 100 years. Whether serving on combat operations, through peacekeeping or by supporting Canadians at home, our NCMs have been a key part of the RCAF achieving its mission. This book recognizes these contributions, and we hope you enjoy reading about those who have served proudly in your Air Force.

Sic Itur Ad Astra

Lieutenant-General Eric J. Kenny
Commander
Royal Canadian Air Force

Chief Warrant Officer W. John Hall
Command Chief Warrant Officer
Royal Canadian Air Force



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INTRODUCTION

When people first began to fly, the maintenance and management of aviation were fairly simple. Early aviators like the Wright brothers, Glenn Curtiss, Louis Bleriot, Henry Farman, and Gabriel Voisin, to name a few, not only flew the airplanes, but built them. And if they damaged them, they also repaired them. These were simple times, as this was a new technology that had yet to be fully exploited. But these and other aviators had ideas about the use of airplanes in the future.

The military also had its visionaries who saw how aircraft could potentially be used to support and even change warfare. Air forces began to emerge a few years after the Wright brothers' flight in 1903.¹ The United States Army Signal Corps purchased its first airplane in 1908, the French Air Force bought its first in 1909, the Italian Air Force in 1910 and the Royal Flying Corps (RFC), formed in 1912, bought its first aircraft that year. In Canada, it would be in 1914, as the country mobilized for the First World War, before its first military aircraft was purchased.

With the creation of these first air services, military regimentation took over. Pilots were trained to fly and conduct operations, maintainers² were there to keep the aircraft serviceable, and clerks were required to keep the paperwork in order. Occupational specialization became the organizational norm for the military. In the civilian realm, pilots were still predominantly the maintainers of their aircraft, although a few mechanics began to emerge. Overall, aviation was still in its infancy and very much unregulated by any government.

The First World War brought about major changes in the structure of these early air forces, not just in aircraft, organization and tactics but also in the type of personnel needed. Not only was there a need for fitters, riggers³ and clerks, but also for armourers for the machine guns and bombs, carpenters for the larger wooden structures, fabric workers for the wing and fuselage coverings, motor transport drivers and mechanics to move squadrons and pick up supplies—all of the trades required to keep a squadron operational. The war hastened the emergence of non-commissioned personnel as the specialists who kept the air force flying. In a few cases, such as medical services, the nascent air organizations were reliant on other branches of the military to provide support. Otherwise, these new branches and services were almost full-fledged entities of their own.

On April 1, 1918, the RFC merged with the Royal Naval Air Service (RNAS) to form the Royal Air Force (RAF). As a new military service, it incorporated the various support functions provided by the branches of the British Army and Royal Navy into one organization—the first independent air force. Canadians who were part of the RFC and RNAS, plus those who had supported flying operations from other branches of the British armed forces, made up a sizable contribution to the new service.

In Canada, the first air force was more of a jest than a military branch. The first true air forces in Canadian military service followed the example of their British counterparts. As a result, Canadian forces adopted the same types of trades as the British. When the Royal Canadian Air Force (RCAF) was formed on April 1, 1924, it was because military planners realized that it was not only pilots who had to be full-time to have an effective military force but also its non-commissioned members (NCMs), then known as “other ranks.” This was clear recognition of the importance of NCMs to the air force.

Yet, when one looks to learn about the contributions of the trades to the RFC, RNAS and RAF during the war, there is very little to be found. The autobiographies of many of the aircrew, whether Canadian or British, mention the ground crew on occasion, but these works are all about the experiences of the author. The histories written about the British air services are similarly lacking. After the creation of the RCAF and its participation in the Second World War, nothing much changed. There are hundreds of autobiographies and biographies of aircrew but very few by any of the hundreds of thousands of individuals whose efforts kept them in the air before, during and after the war.

So, why are the activities of the RCAF’s NCMs not better known? There are a number of reasons. For instance, when aviation began, the inventors/pilots were the darlings of the media and the heroes of the public. When the First World War started, this celebrity continued. The British public needed its heroes to keep morale up and feed support for the war effort. The military created this, fed by the British War Office and later by RAF Public Relations, which was a branch of Military Intelligence. What they produced were glorified tales of the exploits of the pilots who fought the Germans, Austrians and noteworthy adversaries such as the Red Baron. For the NCMs, there was nothing “glamorous” about their activities, so little was said about them. They toiled away in anonymity. This glorification of aircrew continued through the Second World War, except for when hometowns would celebrate NCMs who served as ground crew or in support trades in the RCAF, and to a large extent this phenomena is still ongoing today.⁴

A second reason that NCMs received little notice is that war diaries and historical reports focused on operations. For the British services and as long as the RCAF has been active, squadrons and units have had to submit historical reports during peacetime and war diaries / operations record books during times of conflict or when deployed on an operation. These official reports have always been focused on operations—what it was that the squadron achieved. The result is that the records would mention the activities of the pilots and later the aircrew, as they were the ones who conducted the missions. Even today, many RCAF annual historical reports mention only the officers of the unit’s nominal roll; if they are fortunate, the NCMs who deploy are noted in an annex.

Just as war diaries and peacetime reports focused upon operations, so too did the various official histories of the RCAF. The RCAF Overseas series⁵ produced during the Second World War and shortly thereafter⁶ started this focus on operations and aircrew. The three-volume official history⁶

prepared in the 1990s was a little better; there was additional information about the contribution of the ground crew to operations. This was particularly so for the second volume, which examined the interwar period. Yet, in both series, the emphasis lay with the personnel doing the actual flying and fighting. Even when there were opportunities to mention the NCMs, such as in the various squadron histories produced outside the realm of “official history,” these tomes focused on operations and those who conducted them.

Often, the mention of the NCM was linked to the exploits of the aircrew. Those who did not fly were rarely mentioned. Occasionally, NCMs did make it into the news. After the RCAF led the Hudson Strait Expedition of 1927–28, which was primarily designed to study ice floes and navigable waters between Churchill, Manitoba, and the North Atlantic, Corporal Arthur Hicklin Warner received prominence in a newspaper article published in Calgary about the expedition, but this was mainly because he was from the local area.⁷

So, what did non-commissioned personnel actually contribute? From the start of the existence of air forces, the maintainers and the NCMs in other trades were the backbone of the services. Without them, the air force would not fly, aircrew could not train and operations would grind to a halt. The original establishment of the RCAF had a ratio of roughly four airmen to one officer that reflected this requirement for support.⁸ This ratio changed over the years as the RCAF evolved, but even within the current RCAF, support trades still vastly outnumber officers.

Despite the fact that they were supposed to be on the ground, NCMs in the RCAF have been in the air from the very start. In the early years of the RCAF, pilots flying various types of missions took along a fitter so that in case of breakdowns, which were frequent, the aircraft could be repaired—sometimes in the air. During aerial-surveying flights, photographers kept the photo plates cool on the ground, operated the cameras in flight and then developed the plates back on the ground. Mapping Canada accurately was a vital operation and one to which NCMs made a solid contribution.⁹

Mapping operations continued into the 1930s. As new aircraft arrived in the mid-1930s, ground crew were trained to cover new operational requirements. They became air gunners and flight engineers as well, until separate trades were developed as part of aircrew classification. When the RCAF needed pilots but could not increase the size of the establishment, the Air Force trained NCMs to fly, although they would eventually return to their original trades after their flying service was done.

During the Second World War, all aircrew started as NCMs, although this detail is beyond the scope of this short history. Yet, ground crew did fly. When the RCAF needed flight engineers for the newly arrived Cansos and other multi-engine aircraft, select ground crew were trained in this role and flew on operations but remained in their ground crew trades. In transport squadrons in the war zones, they served as “kickers,” pushing the cargo out the side door. After the war, NCMs would

still fly, but their occupations now included aerial sensor operators, loadmasters, aircraft security officers and flight attendants; new trades that evolved as the RCAF grew and adapted to new roles.

“Grounded” is one thing that the category of ground crew was not. The name “ground crew” suggests what their role was. The RCAF, from just before the Second World War, had three categories of personnel: aircrew, ground crew and general duties. Aircrew served in the aircraft, ground crew maintained them and general duties provided other support. Although the origin of the names is not stated in RCAF documents, the close relationship in the names aircrew and ground crew suggest that the NCMs in the latter category were closely related to the aircraft; one flew them and the other maintained them. Both were needed to use the aircraft as the tools and weapons they were designed to be.

The technical expertise of NCMs has allowed them to take on a wide range of flying and non-flying roles. As instructors, they have constantly passed on their knowledge to the next generation. In the interwar years, this meant teaching not just what was involved in a specific occupation but also the tricks of the trade learned on operations. This was a matter of necessity given the state of technology at the time. NCMs even taught officers. The sergeant pilots of the interwar period not only flew on operations, they instructed pilot trainees. When the Second World War required increasing numbers of schools and other non-flying units, senior NCMs were commissioned and commanded many of these establishments. These newly commissioned officers filled major technical and developmental positions within the RCAF’s organization that were critical to operations.

When the RCAF began to expand in the mid-1930s and purchase more modern military aircraft, senior NCMs were the ones who ensured that the aircraft were built to strict specifications. They inspected the incoming materials for quality, provided the materials from RCAF stock to the manufacturer, ensured that the aircraft were constructed to the highest standards and helped instruct the maintainers who would be working on the aircraft at the squadrons destined to receive them. During the Second World War, they were responsible for signing off on aircraft that were assembled or repaired at repair depots, a practice that continues today, when a senior NCM signs off on an aircraft being serviceable prior to flight.

By the end of the First World War, the number of trades had increased tremendously to keep a modern air force operating. On April 1, 1924, the Canadian Air Force (CAF) had 32 trades, many of which had only one or two members.¹⁰ The numbers slowly increased as new technologies were introduced in the interwar period. During the Second World War, the number of trades grew dramatically due to the demands of a rapidly expanding service. There was also more specialization. Yet, after the war, trades were amalgamated, as the RCAF had to manage its size to meet new commitments. The NCMs in many trades had to learn new aspects of the general category of their trade and did so with success. In other trades, there was specialization on aircraft type, which led to retraining or for senior NCMs, learning on the job when a posting changed the type of aircraft on

which one of the aero-engine mechanics worked. This specialization and amalgamation of trades continued through the 1960s, especially with integration—the amalgamation of the three services and their break-down into separate commands in 1968.¹¹ Yet, while NCMs had to work under new conditions, in some cases in new environments, some of the factors that led to the formation of Air Command in 1975 were related to NCM standards. The changing nature of NCM trades was a continuing theme through the 1990s, as the Force Reduction Plan left all environments in the military short of personnel and required more reorganization of trades, a trend that has continued into the early part of the twenty-first century.

Technology has also affected the nature of maintenance. It was one thing to work on piston-driven engines and yet, within a few years in the 1950s, many of the maintainers had re-trained to work on jets. For some of the senior NCMs, as masters of the trades, this meant learning new skills and obtaining new knowledge to continue to be the leaders of the trades. The same changes occurred with the switches from analog to digital instruments and individual components to modular plug-and-play-type components. Administrative, aeromedical, air intelligence and mechanical trades, to name but a few, all adapted to new technologies, processes and procedures. Through it all, they have remained the backbone of the RCAF and the heart of Canada's Air Force culture.

Another area in which change evolved after the Second World War was international operations. These could be peacekeeping missions or humanitarian operations. In all of these, NCMs had to learn new skills to keep the aircraft flying in conditions to which there was no comparison back in Canada. The heat and blowing sands in the Sinai Peninsula during the first United Nations Emergency Force (UNEF) mission, 1956–1967, had no comparable locale in Canada, and yet, the NCMs adapted quickly and kept the aircraft flying in their crucial support of the mission. Adding to the challenge of these peacekeeping and humanitarian operations was that the men and, later, women who deployed on these operations did not normally originate with one unit; they actually came from RCAF squadrons and units across Canada. The senior NCMs, therefore, had the additional task of creating cohesive teams that would ensure that all safety requirements were met and all of the required tasks were completed.

The RCAF's training of its tradespeople is another topic that should not be forgotten, particularly since it benefitted the Canadian aviation industry. In the late 1920s, the RCAF began training "boys"¹² as riggers and fitters, as both the RCAF and industry needed these trades. Many of them who decided not to enlist in the RCAF, and many who had received some initial training, became civilian mechanics who helped the civilian pilots and small airlines of the time. It was no different 20 years later after the Second World War, when the recently released maintainers provided a boon to the resurgent Canadian aviation industry. This continued through the 1950s, with many maintainers releasing after their term of service and joining a civilian airline. This trend continues to this day.

The need for personnel was a driving force behind the Boys' Technical Training Plan of 1927–31. It was also a factor behind the Reserve Tradesmen Training Plan of the 1950s. The RCAF Auxiliary flying squadrons of the early 1950s offer an example of what happens when there are not enough maintenance personnel. Despite the efforts of the RCAF to keep aircraft maintainers in the Auxiliary squadrons, most did not stay very long. Although the RCAF wanted to equip the squadrons with the CF-100 Canuck, it could not be done, as there were not enough qualified maintenance personnel to keep these aircraft flying. By 1958, the flying squadrons had been re-roled from air defence to transport, while the number of squadrons was cut in half in 1964. Not having the necessary, trained maintenance personnel was a major factor in the Auxiliary's demise.

In a similar fashion, the Air Force has had to reframe its deployable capability since the Force Reduction Plan of the mid-1990s reduced the size of the Air Force and the Canadian Forces (CF) overall. With the high volume of international operations through the 1990s to today, the Air Force has changed its deployable structure to meet the changing nature of operations and make the best use of its NCMs.

Chapter 1, "Towards a Royal Canadian Air Force, 1914–1923," is an overview of how the trades evolved in the proto-air forces that existed during this time frame, their importance to training in Canada and the evolution of a part-time air force into the organization that became the RCAF. The chapter's main theme is that the NCMs of the period were of a varied-service background and were quite dedicated given the circumstances of the time. The leadership of the services in Canada recognized this value.

The interwar period is recounted in Chapter 2, "The Long Road to Independence and War." During this period, NCMs had perhaps their greatest impact on the RCAF, being involved in more aspects and at a higher level of the RCAF's operations than at any other time. They were, therefore, ideally suited for leadership when the RCAF began its major expansion starting in 1939.

While the RCAF may be best known for its achievements as the fourth-largest air force during the Second World War, the ground trades have had little of their story told. Chapter 3, "The Second World War," can only provide a glimpse of their activities and achievements as RCAF NCMs served in all theatres where the RCAF was present.

Chapter 4, "From the Largest Service to Nothing (From Hero to Zero)," describes the changes as the RCAF reduced in size, then became the largest service and, finally, disappeared as an organization. It was a period when deployed operations started with the peacekeeping mission in the Sinai, under UNEF 1 and have carried on from there. This period also saw "unification," where the three services merged and functional commands were created. With this, the RCAF disappeared and so did any vestiges of the Air Force as a unified organization.

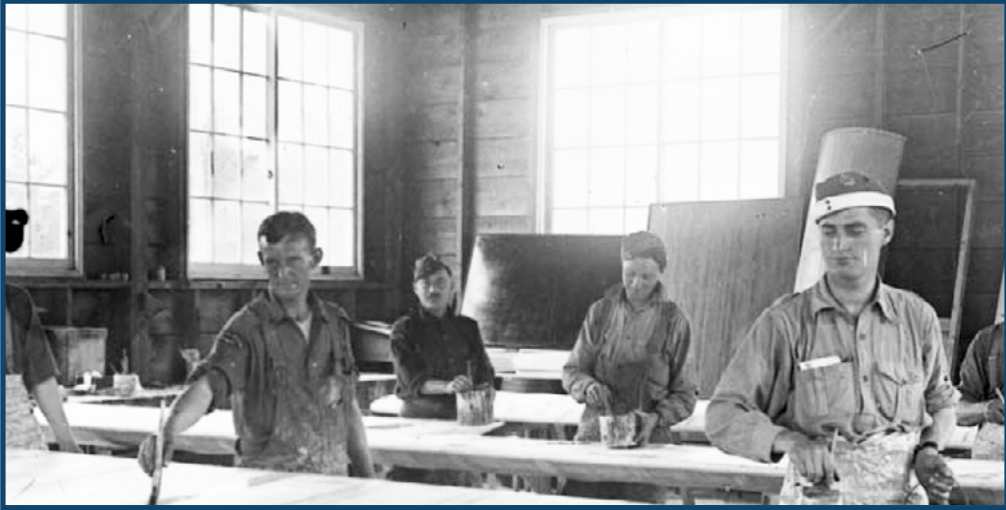
The problems caused by unification affected NCMs in Air Force trades, who were then posted across the CF. Worse yet, was the lack of any coordination on important tasks related to Air Force trades. In part, this was responsible for the formation of Air Command in 1975, thereby again creating a unified body to control air assets. Chapter 5, “The Air Force Resurgent,” brings us from the events of that period up to the present and how NCMs, while undergoing changes in overall strength and number of trades, have remained as important as ever.

This publication attempts to provide an overview of what NCMs have contributed to the RCAF and how the role of the NCM has changed—and often has not—throughout the Air Force’s history. This is a story that needs telling; the Air Force could not operate without the NCMs who have provided the support required to keep the aircrew and aircraft flying.

It does not go into detail, yet many of these topics are worthy of a major article or even a book in themselves, while some parts of the history, such as the influence on civil aviation, remain untouched. What the narrative does provide, however, is a small glimpse into the history of the thousands of men and women who contributed to Canada’s rich military-aviation history and heritage. Hopefully, it will serve to spark a greater understanding of and better appreciation for their efforts, while encouraging future historians and writers to delve deep into various untouched aspects of the history of NCMs, or those topics that have been far too briefly examined.



The RCAF Trumpet Band, 1929. Music and musicians formed an integral part of the RCAF from the start of the service. The RCAF had its official bands while stations often had their own unofficial ones.



Airmen cover wings with dope to give firmness to the material in the RFC-Canada dope shop at Camp Borden circa 1918. The use of dope continued until wings stopped being covered with fabric. While the dope itself was not hazardous, the process of creating some of the types of dope involved dangerous chemicals that posed hazards to human health.



The RFC-C aeroplane repair section at Camp Borden, 1917. Trainee pilots could be very tough on the Curtiss JN-4s. Here, aircraft are in various states of disassembly as they are repaired.

CHAPTER 1: TOWARDS A ROYAL CANADIAN AIR FORCE, 1914–1923

It was a long and storied road that brought about the formation of the RCAF on April 1, 1924. The journey began with the stillborn Canadian Aviation Corps of 1914, and started to take shape with the organization of the Royal Flying Corps – Canada (RFC-C) and men of the Canadian Expeditionary Force (CEF) transferring to the RFC. There were also the men who joined the RNAS. In 1918, the Government of Canada decided that a separate air service was required and authorized one in the United Kingdom (UK), the CAF as well as one in Canada for the Navy.¹³ These organizations were short-lived, albeit they led the way for the *Air Board* and the new CAF in Canada.

Throughout these endeavours, the recruiting, training and employment of men with skills and knowledge helped to keep these organizations running. It was not just mechanics and carpenters who were needed, but also clerks, draughtsmen, drivers and many other ground trades. Many of the men who served in the RFC, the RFC-C and the first CAF in England went on to become part of the backbone of the second CAF and, later, the RCAF. This chapter looks at the evolution of the Air Force prior to the RCAF and how the ground trades supported the operations of the various organizations.

CANADIAN AVIATION CORPS

The Canadian Aviation Corps (CAC) was Canada's first air force and consisted of two officers, Captain E. L. Janney and Lieutenant W. F. N. Sharpe; a mechanic, Staff Sergeant Harry Arthur Farr; and one airplane, a Burgess-Dunne floatplane. They made their way to England with the First Canadian Contingent, where the Burgess-Dunne rotted in the humid environment of the English autumn. Farr had enlisted in the CEF in Valcartier on September 23, 1915, with the 16th Battalion CEF and transferred to CAC after meeting Sharpe. With no airplane and no CAC, he was discharged in England on May 7, 1915. He would enlist as a pilot in the RFC in February 1917, but never fly in combat.¹⁴ Thus ended the career of Canada's first airman.

While the CAC was terminated and the CAF did not emerge until September 1918, this did not mean that Canadian men were not able to serve in an air force. In fact, members of the CEF were able to transfer to and serve in the RFC, both as pilots and as airmen in ground trades. By 1917, events would take place in Canada to generate the first, true military-aviation organization in Canada.

THE ROYAL FLYING CORPS – CANADA

The emergence of the RFC-C (later to become the Royal Air Force – Canada [RAF-C] when the RAF was formed on April 1, 1918) training scheme resulted from a series of meetings in late 1916 and early 1917. The first flying started on February 28, 1917, even while construction of facilities was still under way. Recruiting for both aircrew and ground trades was by then already well established.

Over the course of the training scheme, 7,463 men were recruited for the various trades that supported the RFC-C.¹⁵ Recruiting offices for trades, complete with testing facilities, opened in January 1917 in Toronto and Hamilton, but the latter soon closed down due to being unproductive. Candidates were also selected via correspondence. Later, recruiting of British subjects in the United States (US) produced some results.¹⁶ However, the majority of men who enlisted in the RFC-C were married men from Canada, enlisting despite knowing that the spousal benefits were initially lower than for men in the CEF.¹⁷

While the first, small cadre of instructors in both the mechanical trades and pilotage were brought over from Britain, the instructional roles were quickly being taken over by Canadians who had received their initial training in the RFC-C, so that soon it was Canadians who were conducting all of the training and performing the vast majority of the ground trades.¹⁸ These non-commissioned officer (NCO)¹⁹ instructors trained not only other airmen, but also the officers and observers in gunnery and engine mechanics, and they also handled other aspects of the training of these officer trades. These NCO instructors also trained Americans. The agreement by which the RFC-C deployed to the Fort Worth, Texas, area during the winter of 1917–18 also provided for the training of 2,000 American mechanics, both in Canada and the US. These mechanics would form the basis of the Aviation Section, American Signal Corps in France (the “Air Service, US Army,” after May 24, 1918).²⁰ By the end of the war, more than 2,500 American ground tradesmen had been trained by the RFC-C/RAF-C.²¹

The importance of the Canadian ground trades was recognized almost from the beginning of the training scheme’s operation. In June 1917, when the Canadian government was considering creating Canadian squadrons in England, it appeared likely that they would transfer a large portion of the RFC-C ground trades overseas to populate the squadrons. Not only did the director of the RFC-C, Brigadier Cuthbert G. Hoare (then a colonel), express concerns, but so did the Director General of National Service and the Imperial Munitions Board.²² The idea of forming Canadian squadrons did not come to fruition at that time and the threat passed.

A more serious threat occurred with the creation of the RAF in April 1918, when more than 1,600 tradesmen, over a quarter of the RAF-C's strength, decided to exercise the option of taking their release rather than joining the new force. A further 1,000 were expected to follow suit. Hoare, along with British and Canadian authorities, came up with a plan to discourage releases. At parades during the summer and autumn of 1918, groups of 20 men were released and immediately taken by the Canadian Provost Corps to enlistment centres for the CEF, there to be conscripted. Releases dwindled and the RAF-C was able to avert a potential manpower shortage.²³

By the time of the armistice, 6,158 warrant officers, NCOs and airmen were serving in the RAF-C. These men had helped train over 5,000 pilot and observer cadets, with another 800 still in the training system.²⁴ Without doubt, the airmen who provided the services that kept the training system operating were the backbone of the RFC-C/RAF-C. There can be no questioning the value of their efforts or their ingenuity in trying to exploit a means of obtaining a release and seeking more remunerative employment. For many of them, their skills would be of service in the RCAF after that organization was formed.

CANADIAN AIR FORCE IN ENGLAND

The first CAF was authorized in November 1918, with two squadrons in England. No. 1 was a fighter squadron equipped with Sopwith Dolphins; No. 2 was a bomber squadron flying de Havilland DH9s. The formation of these squadrons was the result of a lengthy process of discussions going back to 1916, in which the Canadian government finally saw the worth of having its own air force.

While the process of forming the two squadrons was being finalized, there was a need to staff them with Canadian ground crew. The RAF's Director of Manning sought out Canadian tradespeople in the RAF, eventually finding more than 150, although the number of Canadian tradespeople would undoubtedly have been larger simply because the RAF's personnel records did not record the nationalities of its personnel.²⁵

As the RAF was seeking Canadians within its ranks, by August, Canadian officers in the RAF had selected the 237 men they needed, finding them in Canadian depots in England. These men were members of the CEF with skills that the new CAF could use. The men were sent onwards to RAF Halton Park to train as mechanics and riggers, while a smaller number of them went to Uxbridge for armaments training. They initially suffered from low morale, as they were treated as RAF recruits, given RAF service numbers and spent longer than normal in training, while the RAF lost many of their personnel documents.²⁶

After these issues were straightened out, the CAF began flying training. However, the biggest obstacle to its continued existence was cost, something which was of primary concern to the Government of Canada. Despite gifts of aircraft, hangars and other equipment, the government

was not interested in a military air force but one that would adapt to the peacetime conditions of Canada. No. 1 Squadron was disbanded on January 28, 1920, and No. 2 Squadron on February 5.

AIR BOARD / CANADIAN AIR FORCE

While the CAF was conducting its training in England, Parliament was busy considering the future of aviation in Canada—in all of its aspects. On June 6, 1919, the bill creating the Air Board received royal assent, while on February 18, 1920, the Air Board's report on a proposed military-aviation service was adopted by an Order in Council. The report suggested that military aviation would be based on civil pilots who would upgrade their military skills on a periodic basis—for one month every two years. The Air Board itself included two concurrent flying operations—the Flying Operations Branch (FOB), which was civilian staffed, and the CAF.

Of the airmen in the FOB, mainly mechanics who had served during the First World War, virtually all enlisted in the CAF. The military aspect of their service would only come into play when they went to Camp Borden, ON, for their requisite military training of several weeks.²⁷ However, by 1921, it was recognized that temporary staff could not effectively maintain and overhaul the aircraft in use with the FOB and the CAF. In June 1921, this need for more permanent staff was brought up in the meeting of the Canadian Air Force Association at Camp Borden, where Wing Commander (W/C) J. S. Williams indicated that while the mechanics course was three-months long, it took three to six months to get a skilled worker to the level of an efficient air mechanic.²⁸ The gap in training had to be filled by the senior NCOs in the field.

At the same time, as the FOB began to operate, recruiting for the CAF also started. While 430 applications were received for cadet and airmen positions, the number of airmen ended up falling far short of the desired establishment of 3,905. Moreover, the majority of those who enlisted did not have prior service in the RAF (only 12 per cent did).²⁹ Thus, it was the responsibility of those who had the military-aviation experience to supervise and teach those who did not. A three-month course was hardly sufficient to provide the technical skills required to become proficient at the basic mechanic level for both fitters and riggers, so the NCOs had to provide constant supervision and training. While it was one thing to do this at Camp Borden or the FOB air stations, it was certainly another to do this on deployed operations within Canada, where the distance from support, the austere and even harsh living and operating conditions as well as the frailty of early equipment—especially the valve springs on the Liberty engines—made supervision and training a task for only the best NCOs.

The names in Table 1 are samples of the senior NCOs who enlisted in the CAF and went on to serve in the RCAF. What stands out is that the vast majority of them went on to serve the RCAF in leadership positions during the Second World War. When they enlisted in the CAF, they would likely not have had expectations of rising to such ranks and contributing to their country's wartime service as they did. In fact, service in the CAF was meagre—four weeks every two years.³⁰ These men therefore likely enlisted for the enjoyment and love of aviation.

Rank and Name	First World War Service	Trade	Notes
Sgt Duncan Black	CEF, RAF	Fitter	Comm'd May 1940, ret'd as a S/L
FS John Brims Boyd	CEF, CAF	Fitter	Comm'd Apr 1930, ret'd as a G/C
Sgt Maynard L. Colp	RFC-C	Rigger	Comm'd Mar 1939, ret'd as a G/C
Sgt Thomas Frederick Cooper	British Army, RAF	Fitter	RFC in Dec 1915, Comm'd May 1941, ret'd as a W/C
FS Roland George Ford	CEF, RAF, CAF	Carpenter	Comm'd April 1930, ret'd as a W/C
Sgt William Gorham	RFC-C	Carpenter	Ret'd as a WO 1
Sgt Amos Thomas Livingstone	RAF	Rigger	MiD, Comm'd March 1941, ret'd as a G/C
Sgt Leonard Herbert Perry	CEF, CAF	Driver, Motor Transport	MBE, ret'd as a WO 1
FS Anthony Augustine Rabnett	CEF, CAF	Rigger	MBE in 1935, Comm'd March 1939, ret'd as a G/C
Sgt Walter Staveley	CEF	Rigger	Comm'd Oct 1940, ret'd as a F/L
Note 1: Rank is that as of March 31, 1924. Note 2: Fitters worked on engines, riggers worked on airframes			

Table 1. Sampling of the senior NCOs in the CAF

In fiscal year (FY) 1922–23, training in the CAF ground to a virtual halt, although there were some army cooperation flights, exercises and photographic missions. A new government had been elected and it was busy trying to reorganize the military. It did not have time to push through Parliament the authorization for spending on training. The result for the military as a whole was that the Air Board was amalgamated with the Department of Militia and Defence as well as the Department of the Naval Service, which created the Department of National Defence effective January 1, 1923. Beginning in July 1922, airmen of the FOB began to put on the uniform of the CAF. The newly reorganized CAF had an establishment of 69 officers and 238 airmen, but for most of the first quarter of 1923, it had a strength of only 45 and 195. Of the latter, only 41 were at the rank of sergeant or higher, 12 of whom were in non-technical trades such as clerk.³¹

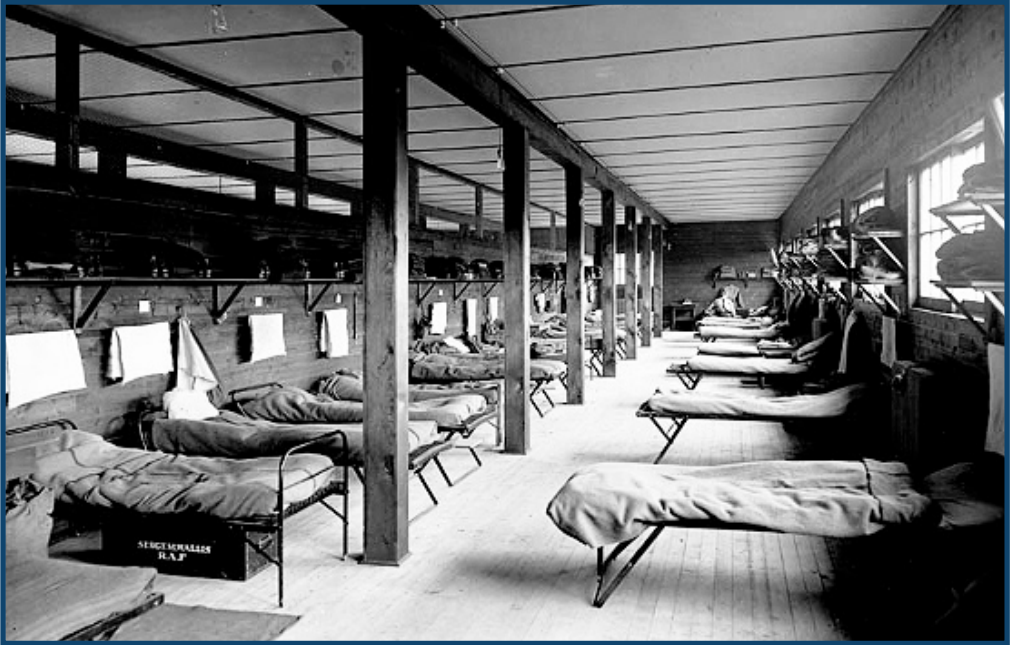
That there were any NCMs in the CAF was a testament to their dedication. For most of them, service was part-time; except for those employed at Camp Borden and a few at the headquarters (HQ) in Ottawa who were employed full-time, the rest of the NCM corps worked only during the flying season. At the same time, the economy was starting to boom and all across Canada small airlines were popping up, all of which required mechanics of many skill sets to keep the aircraft flying. One of the reasons for creating a full-time Air Force was that too many NCMs only worked during the flying season. Civilian employment was thus a better option.

Over the course of 1922–23, the government worked on the legislation and regulations required to create a full-time Air Force. The transition to the new RCAF was achieved by releasing all officers and airmen on March 31, 1924, and allowing them to re-enlist in the RCAF on April 1, but at a lower rate of pay. Most of the CAF airmen did so, with 189 re-enlisting on April 1 and an additional 9 doing so over the course of 1924. Nineteen men, including one sergeant, chose to find civilian employment.³²

CONCLUSION

There is no doubt that senior officers recognized the importance of the airmen in keeping the various organizations operating. Even with the RFC-C operating, Hoare was loath to let them go. Yet, during the period of the CAF, the part-time nature of their employment was a hindrance to the creation of an effective Air Force.

The airmen who enlisted in the RCAF on April 1, 1924, were from a broad range of military backgrounds: the CEF, CEF/RFC, CEF/CAF, RFC-C and even RFC/RAF. There was even one with civilian-aviation-industry experience. Thus, they created an atmosphere within their ranks that was quite different from that of the officers, who were virtually all Canadians with RAF experience. Far from being an elitist organization as the officers sometimes saw themselves, the senior NCOs created an atmosphere that combined the backgrounds and young traditions of their own prior services, at the same time melding new airmen into an Air Force whose very being and operations reflected the RCAF motto *Per Ardua Ad Astra* (through adversity to the stars), for there was much adversity in these early years. If nothing else, there was a can-do attitude of dedication, ingenuity and pride.



The sergeants' bunk room at Camp Borden, circa 1918. The facilities for the sergeants and warrant officers would be improved with the formation of the RCAF.



The RCAF sub-base at Cormorant Lake, MB, 1926. The few buildings at the base were used for administration and storage. There were few amenities so most of the men had to sleep in tents. Early RCAF operations in the field operated in such austere conditions, especially on the photographic detachments.

CHAPTER 2: THE LONG ROAD TO INDEPENDENCE AND WAR

The period between the First and Second World Wars was one of almost constant upheaval and change for the RCAF, in large part because of circumstances beyond its control: government priorities, economic conditions and international tensions. Throughout this period, the airmen who formed the core of the RCAF's operations changed with the times. Starting with fabric coverings over wooden airframes, aircraft began to have metal as well as fabric over wood and, finally, all-metal structures. There were also new specialties to learn—first parachutes and then, as the RCAF began to modernize, swivel mounts as well as turrets for the guns. As all of this was taking place, the RCAF was under the command of the Chief of the General Staff, as the head of the Canadian Militia was known. It would not be until November 1938 that the RCAF would become an independent organization. This chapter gives an overview of what the airmen of the period achieved and the conditions under which they operated and trained.

BACKGROUND

When the RCAF was created on April 1, 1924, it was recognition by the Canadian government that a full-time cadre of trained personnel was required to perform the flying operations for any government department that required these services. The organization consisted of a full-time component, the Permanent Active Air Force (PAAF, equivalent to today's Regular Force) with a limited establishment; the part-time Non-Permanent Active Air Force (NPAAF, today's Air Reserve or Auxiliary Force) with a more flexible establishment; and a reserve of officers who could be called out if required.³³

From 1924 to 1932, the RCAF was not really a military force except in the manner in which it was organized and operated as well as to whom it reported. While there were squadrons and wings from 1924 to 1927, the military training provided at Camp Borden and at these squadrons was a prelude to civilian operations known as Civil Government Air Operations (CGAO), with minor flying related to military activity, such as aerial spotting with the Militia and Navy. CGAO even had been conducted under the CAF; however, it was in 1927 that the RCAF was reorganized into four divisions: the military division of the RCAF, the CGAO, the Aeronautical Engineering Division and the Controller of Civil Aviation (CCA).

As the 1920s progressed, the number of hours devoted to CGAO increased. The RCAF's main role was to support the CGAO; hence, the hours flown under the RCAF banner were primarily for training pilots who would support the CGAO. The RCAF hours also included some aerial photography, forest-fire patrols and transport duties. As the RCAF also supported the Aeronautical Engineering Division and the CCA, there were some hours flown in support of these divisions. As early as 1925, the RCAF provided training to civilian pilots holding commercial licenses.³⁴ This only increased in subsequent years into the mid-1930s, with other courses for civilian pilots, such as advanced navigation, blind/instrument flying, flying-instructor training and other flying activities under the aegis of the CCA. Thus, the RCAF was an organization with little military activity and much civil flying.

Year	Hours Flown – CGAO	Hours Flown – RCAF
1925–26	2,440 hrs	2,672 hrs
1926–27	2,292 hrs	2,934 hrs
1927–28	3,471 hrs	4,303 hrs
1928–29	8,450 hrs	5,994 hrs
1929–30	12,256 hrs	10,537 hrs
1930–31	14,000 hrs	13,996 hrs
1931–32	11,185 hrs	19,172 hrs
Note 1: Most of the RCAF hours flown were for training. Note 2: RCAF hours flown for 1931–32 include 4,060 in support of training civilian pilots.		

Table 2. Hours for CGAO vice RCAF training and operations³⁵

CGAO consisted primarily of aerial photography, forest-fire patrols, transport of government officials and patrols with the Royal Canadian Mounted Police (RCMP). Transportation was the simplest of all operations, as the RCAF flew members of other government departments into remote locations to conduct visits (e.g., for treaty payments) or for the RCMP to visit remote detachments. These flights involved a pilot and, in case of problems, a mechanic. Starting in 1932, the RCAF flew anti-rum-smuggling patrols for the RCMP, with one detachment on the West Coast and three—later increased to four—on the East Coast. Forest-fire patrols consumed a large number of CGAO flying hours, as the RCAF flew patrols over the large expanses of Canada's boreal forest to look for fires. When a fire was spotted, the RCAF detachment would fly firefighters to the nearest lake, from which they would walk to the fire and combat the blaze. Each flight again involved a pilot and a mechanic.



Fokker Universal "HH" being towed by a tractor during the Hudson Strait expedition. In the cold weather the oil had to be drained from the aircraft's engine and then it and the engine reheated so that the engine would turn over. The tractor was kept in a partly heated shed.



Ground crew change an engine on a Vickers Viking flying boat G-CYEV at Victoria Beach, MB, 15 May 1924. Engine changes could be done without removing the wings, but the necessary equipment to do so in remoter locations did not exist. This type of operation was normal in the field. Reinstallation of the wings was a time consuming process, especially tensioning the rigging to its correct strength.

The largest operational activity was aerial photography, which helped to provide the first accurate maps of the northern parts of Canada's provinces. These photographic detachments normally had two aircraft (and two pilots) and were led by a pilot (an officer). There were four to six support personnel: riggers and fitters to keep the aircraft flying; photographers to preserve the undeveloped film in the non-temperature-controlled climate and develop the exposed photographic plates; and a cook.

Airmen were present on all of these operational flights, not just to take and develop the photos but also to repair the aircraft if they were forced to conduct an emergency landing. Very few of these flights actually experienced mechanical failure, which speaks to the quality of the maintenance being conducted by the mechanics in the field. The Liberty engines on the Vickers Viking were well known for breaking valve springs. Repairs, however, were not always conducted on the ground—they were sometimes made in the air. It was quite common for the mechanic on a flight to carry chewing gum, the main instrument for repairing a leaking fuel line. Thus, airmen on these flights were a necessity.³⁶

These early flights were not without risk, with airmen being killed or injured during operational flights. On July 11, 1927, a Viking carrying Pilot Officer (P/O) W. C. Weaver, Aircraftman, 1st class (AC1) J. T. Eardley and Mr. F. H. Wrong, a Dominion land surveyor, broke up in mid-air near Hilbre, Manitoba. In another instance, AC1 Arthur Warner lost a finger when he got his hand too close to the propeller while conducting an in-flight repair of an engine.³⁷

It was not just in the isolated areas of the Canadian Shield where airmen found themselves supporting operations, there was also the Far North. Over the winter of 1927–28, the RCAF set up three detachments along the edges of Hudson Strait, which leads into Hudson Bay. The Hudson Strait Expedition proved winter flying was possible but, more importantly, determined the ice patterns of the strait and charted the islands in the area, some of which were found to be great distances from their charted position—the charts being that problematic. Each detachment consisted of two officers (pilots) and four airmen at each site.³⁸ Supporting them were the Inuit with their knowledge of winter survival and local conditions. On each flight, one mechanic and one Inuit guide accompanied the pilot—the mechanic in case there was some mechanical incident that required the pilot to put the plane down and the Inuit guide if they needed to stay overnight, or longer away from base.

Until FY 1930–31, the RCAF budget had been growing each year to support CGAO flying, but due to economic necessity, the government reduced the RCAF's budget that year. The big shock came in February 1932, when the government announced that the RCAF's budget was being cut from \$5.4 million to \$1.7 million, with the head of the Militia, Major-General A. G. L. McNaughton, not being advised of the pending slash until it was actually announced.³⁹

This "Big Cut" of 1932 was not just in terms of budget but also in personnel, with 78 officers, 100 airmen and 110 civilians being released. The officers were all on the NPAAF establishment but the airmen were PAAF. The cuts had another result, in that nobody was recruited in FYs 1932–33

and 1933–34.⁴⁰ In terms of operations, the CGAO was not removed from the RCAF’s tasks, but its hours were greatly reduced. These hours then began to increase (as indicated in Table 3), although never again reaching their formerly high numbers or percentages. The loss of 100 airmen, although likely highly problematic for these men who were laid off at the height of the Depression, was offset by the reduction in flying hours.

Fiscal Year	Hours Flown – CGAO	Hours Flown – Operations	Hours Flown – Training
FY 1932–33	2,672 hrs	1,982 hrs	4,921 hrs
FY 1933–34	3,490 hrs	1,331 hrs	5,940 hrs
FY 1934–35	3,745 hrs	1,389 hrs	7,331 hrs
FY 1935–36	4,049 hrs	1,288 hrs	5,113 hrs
FY 1936–37	5,686 hrs	1,269 hrs	6,148 hrs

Table 3. Hours and minutes flown on various missions⁴¹

If there was one good thing to come out of the Big Cut, it was that this provided the impetus and capability for the RCAF leadership to refocus the air force on military operations. The first squadron formed was No. 10 (Army Co-operation) Squadron of the NPAAF at Toronto on 10 October 1932. Nos. 11 and 12 Squadrons at Vancouver and Winnipeg, both Army Co-operation squadrons, followed soon after. Their development and training proceeded slowly due to fiscal restraint. No. 4 (Flying Boat) Squadron was the first PAAF squadron to be formed (February 17, 1933) at Jericho Beach (Vancouver). This was followed by No. 5 (Flying Boat) Squadron on April 16, 1934, at Dartmouth, NS. While these two squadrons initially operated civilian pattern aircraft on CGAO and RCMP preventive (rum-running) patrols, this did not hinder them from conducting military training until they did receive military-pattern aircraft.

No. 2 (Army Co-operation) Squadron was formed with Atlas aircraft in April 1935, and No. 3 (Bomber) Squadron initially started with Armstrong Whitworth Siskin fighters before receiving Westland Wapiti bombers in June 1937. No. 6 (Torpedo Bomber) Squadron was formed in March 1936 and received its Blackburn Shark aircraft in January 1937. These three squadrons were able to operate as military units from the start. One thing not commonly recognized is that in each of these operational aircraft, the aircrew—save for the pilot—was composed of the RCAF’s maintainers, men who had taken specialty courses to provide them with the skills to help the pilot use the aircraft to fight. The RCAF’s airmen were not only preparing the aircraft for war, they were also training for war in the aircraft.

Perhaps the least known operation performed by RCAF airmen (and one of the more important) was that of inspecting materiel and supplies being made for or provided to the RCAF. Controlled through No. 1 Depot in Ottawa, the main inspection agents were warrant officers of the technical trades. The air inspection depots (AIDs), as they were known, operated across Canada from the RCAF's very beginning.⁴² The men of the AIDs were also responsible for inspecting service aircraft as well as civilian aircraft until enough qualified civilian inspectors became available sometime after 1933.⁴³

The abilities of the RCAF's airmen were already well recognized by its technical leaders. Flight Sergeant (FS) A. A. Rabnett was credited with being the expert on the shrinkage of wood, which he learned from observation while on CGAO at Station High River in 1922–23. This was no minor problem given Canadian winters, when the dry and the cold could cause the wood covering of an aircraft's fuselage to delaminate.⁴⁴ Warrant Officer, Class 1 (WO 1) Robert Ford, an original member of the CAF, was with the AID at Canadian Vickers from May 1927 until April 1934, was commissioned in April 1930 and became the first commanding officer (CO) of No. 12 Technical Detachment. That WO 1s and warrant officers, class 2 (WO 2s) would work independently at the technical detachments in places such as Montréal, Ottawa, Toronto, Winnipeg and Vancouver, or that they would be commissioned, was not only a sign that they could handle great responsibility but also of the confidence that was placed in them.⁴⁵ In fact, as the RCAF rapidly built up prior to the Second World War, most of the inspections of the aircraft it received as well as inspections of the parts that went into them and other aircraft were carried out by sergeants and warrants.

Clearly, the airmen of the RCAF were more than just a group who did their jobs in maintaining aircraft or supporting operations. They were aircrew, even if not so designated, and they were the ones who ensured that the RCAF's new aircraft and their parts were of high quality. The airmen of the interwar period also gained much valuable knowledge and skills in the training and operations of the RCAF, especially in the CGAO, so that when the RCAF began expanding in 1939, there was a well-trained group of knowledgeable and skilled technicians and leaders available to take charge. Questions remain, however, about how they got to this point.

BOYS' TECHNICAL TRAINING PLAN

As early as 1921 the RCAF recognized that it needed to recruit young men in order to provide personnel to be its mechanics, clerks and equipment assistants of the future.⁴⁶ However, any plan to implement a recruiting and training scheme was put on hold pending the availability of funds. It became evident there was a problem when the Air Board amalgamated with the CAF in 1922 and the service had difficulty finding enough qualified personnel. The idea was that youths would be selected on the basis of good education as well as "heritage" and receive a thorough education in air force trades and duties, after which they would serve their term in the air force. On return to civilian life their training and experience would ensure them ready employment at good wages.⁴⁷

On September 26, 1925, the Governor in Council approved a technical training scheme for boys who would be recruited to become qualified tradesmen. Technical schools in at least six Canadian cities would be asked to provide the training in repair and maintenance work on aircraft while the RCAF would provide the practical training. Each school would receive a \$100 grant for each student who completed the three-year training and enlisted in the RCAF. The boys would be enlisted in the NPAAF and receive free rations and quarters, medical and dental coverage as well as uniforms. They would be paid 60 cents a day if under 18 years of age and \$1.20 if above.⁴⁸

However, funds were again unavailable, so it was not until June 4, 1927, that 20 boys arrived at Camp Borden to begin a two-month training course during their summer vacation. Of these, 16 qualified to continue training the next year. By this time, the training plan had a second and almost equally important role. Aviation in Canada was slowly dying because there was not enough support to train the pilots and technicians required to keep the industry growing. Hence, the second role was to provide partially trained technicians to civilian industry. It was hoped that any airmen trained under the plan who did not enlist in the RCAF would join a civilian airline or flying club.⁴⁹

Over the course of the next four years, 110 young men enlisted in the programme, of whom 39 would enlist in the RCAF. Of these, 23 enlisted after their second summer of service while 16 enlisted after their first.⁵⁰ In 1932, the training scheme was halted because cutbacks in the RCAF budget did not allow for the programme to continue. Perhaps the most successful of the boys was Paul Elmer Sorensen, who joined the training plan in 1928 and, after his second summer, enlisted in the RCAF on September 8, 1929. He would go on to become one of the few sergeant pilots. As both a member of the Boys' Technical Training Plan and a sergeant pilot, Sorensen was in a very exclusive club. He would also demonstrate one of the risks of flying; in 1937, while conducting a transportation flight in the Northwest Territories, the Bellanca he was piloting was struck by lightning that flashed through the cockpit. While Sorensen felt some numbness in his hands, Corporal Simpson, who was flying with him, was unaffected.⁵¹

PERMANENT FORCE AB INITIO TRAINEES

Up to 1930, the RCAF only enlisted airmen in the technical trades who had experience. Despite the efforts of the Boys' Technical Training Plan, there were still not enough airmen to fill the needs in the technical trades. The solution was to start recruiting young men and train them in the skills the RCAF required. The first course started in September 1931 at Camp Borden,⁵² where initial training continued until the new station at Trenton, ON, opened. After basic trades training, the new airmen would go off to a squadron or repair depot for further training and employment.

SERGEANT PILOTS

In 1926, the RCAF found itself with unused training capacity and an increasing need for pilots. In the first instance, the only pilots the RCAF was training were officer corps trainees who

participated during the summer under the Provisional Pilot Officer (PPO) programme. In the second case, the CGAO was becoming larger. The PPO programme was not filling the need for pilots who met the increased flying requirements. The solution was to follow the lead of the RAF and train selected airmen to be pilots.

Starting in February 1927, six airmen began a three-month course to earn their wings, four of whom graduated and were promoted to sergeant. To be selected, an airman had to be of the rank of leading aircraftman, corporal or sergeant; unmarried and under the age of 25; and be recommended by their CO.⁵³ The initial programme ended with the graduating class of May 1931, as the programme was cut because of a lack of funds. By this time, 30 airmen had received their wings. The programme resumed in 1936, with a further 26 airmen graduating between May 1937 and September 1939.⁵⁴

The sergeant pilots were employed primarily on CGAO, although some were employed as, or would become, instructors.⁵⁵ For those on CGAO duties, they were often asked to operate in austere conditions, when leadership was a requirement and adaptability was a prerequisite. Their employment also lessened the need for officer pilots at a time when the RCAF could not increase its establishment and was in fact not recruiting.

In February 1939, three of the sergeant pilots were commissioned, with R. F. Gibb and F. J. Ewart (classes of 1928 and 1929 respectively) eventually rising to the rank of W/C. In November 1939, the 34 NCO pilots who were still serving in a flying capacity were also commissioned. The sergeant pilots made significant contributions to the RCAF's operations in the late 1920s through the 1930s. During the Second World War they were to again make an impact. For instance, Norville Everitt "Molly" Small went on to become one of the RCAF's experts in antisubmarine warfare, while Arthur Fleming became an expert in cold-weather flying.

THE NON-PERMANENT ACTIVE AIR FORCE

When the RCAF was created in 1924, a provision was made for a part-time force to be created. Planning for such a force was suggested in 1927, but it was surprisingly the Big Cut that brought the plans to fruition. The NPAAF was the equivalent of today's Air Reserve. The first three squadrons of a planned twelve were authorized in October 1932, with four squadrons each in the roles of fighter, bomber and army cooperation.⁵⁶

Each NPAAF squadron had a small PAAF detachment, which had an officer to serve as adjutant and pilot training instructor as well as a nucleus of airmen to serve in the orderly room, conduct aircraft maintenance and train the NPAAF airmen. The expectation was that it would take each squadron three years to begin operational training. The quality of the training provided would be checked by a travelling Central Trade Test Board.⁵⁷ Hence, the standards were the same as those of the PAAF.

In 1933, only a few officers were appointed to these three squadrons, as no funding was available; however, in 1934, recruiting of “other ranks” began in earnest, as did training. The NPAAF continued to expand so that by September 10, 1939, 12 squadrons had been formed and were in varying states of readiness when Canada declared war upon Nazi Germany. Although some NPAAF squadrons were not fully operational, the NPAAF constituted 12 of the 20 operational squadrons of the RCAF, and 25 per cent of the RCAF’s strength.⁵⁸

An important aspect of the NPAAF still relevant today is that many of its airmen transferred to the Regular Force. In some cases they remained airmen but, in others, their private pilot training paid off when they were accepted as pilots.⁵⁹ More importantly, when Canada went to war, the NPAAF airmen were to play a major role both in Canada and in England, especially during the Battle of Britain.

RECRUITING AND TERMS OF SERVICE

The *King’s Regulations and Orders for the RCAF* placed only a few restrictions on the enlistment of airmen. These were related to age, previous service, being a British subject (citizenship) and—for members of the NPAAF—height and body size.⁶⁰ On the question of citizenship, men who had not been born in the British Empire had to show that they had lived long enough in a nation of the British Empire that they had become naturalized, which in the case of Canada, required ten years’ residency. Previous service was only a restriction if an individual was still a member of the British Imperial Army Reserve or Royal Navy Reserve, or those who were dishonourably discharged. Even age was not a problem, as men under the age of 18 could enlist if they had the approval of a parent or guardian, while all others had to be between 18 and 45.⁶¹ All of this was pretty standard and would remain so through to the Second World War.

Initial terms of service were for three years, with the possibility of re-enlistment for further periods of three years thereafter. It was only when an individual reached the rank of flight sergeant or warrant officer in either the PAAF or the NPAAF that restrictions came into play. Warrant officers could only renew their service for a final three years once they reached age 55 and flight sergeants to 48, or for both ranks, 24 years of service, whichever came first.⁶²

One thing to which most airmen would aspire outside of their RCAF service would be to get married. However, the RCAF had some control over this too. Airmen had to seek the CO’s permission to get married and the brides had to provide letters of reference attesting to their good character before permission would be granted. One benefit that any airman would hope to receive was to be placed on the married establishment, which would mean an extra \$750 per year, housing in married quarters plus free rations and fuel for his vehicle. The wait could be up to two years.⁶³

During the interwar period, the RCAF continually sought airmen, as many personnel left after their initial three-year engagement or at the six-year mark. The RCAF also had to compete with the

many aviation companies present in Canada. While the Boys' Technical Training Plan yielded some airmen, it did not produce enough, with the result being the RCAF had to start recruiting untrained men and provide them with the necessary skills.⁶⁴ However, the RCAF could afford to be choosy. In the FY ending in March 1935, there were about 4,000 applications to all positions for officers and airmen both in the PAAF and NPAAF. In fact, 96 airmen were selected to fill vacancies in the PAAF establishment, while 306 enlisted in the NPAAF, which was now expanding with five squadrons formed.⁶⁵

The requirement for skilled personnel applied not only to mechanical skills, but also to leadership positions. In July 1927, the RCAF advertised in various newspapers the requirement for an experienced mess sergeant to operate the officers' mess at Camp Borden. The selected applicant would have to enlist in the RCAF.⁶⁶

As a result of its requirement for technical skills, which in effect was a higher-level education at that time, many visible minorities were unable to enlist because the education system and technical-skills training opportunities on aboriginal reserves and for many Black Canadians remained inferior to those for White Canadians. As a result, the RCAF remained primarily a Caucasian force. Visible minorities were certainly a rarity in the interwar RCAF, with only two Black Canadians having been identified. In 1936, Gerald Bell, possibly the first Black Canadian in the RCAF, enlisted with No. 19 (Bomber) Squadron in Hamilton, an NPAAF squadron. In May 1939, Eric Victor Watts enlisted in the PAAF in Calgary.⁶⁷

Contrary to some commonly held but unfounded beliefs, the RCAF did have French Canadians in its ranks, possibly up to 10 per cent. A review of the list of names detailed to CGAO in 1927 showed 16 of 183 airmen were of French-Canadian extraction.⁶⁸ This percentage was far higher than that for French-Canadian officers in the RCAF, where at best it appears to have been no more than 1 per cent through the 1920s and 1930s. One of the more prominent French-Canadian airmen of the 1930s was Joseph Carmel Jean-Baptiste Mirabelli, who enlisted as a "boy" on September 30, 1927. Serving as an aero-engine mechanic, he flew on photo operations as well as preventive coastal patrols for the RCMP until 1935. In 1936, he graduated as a sergeant pilot and went back to flying preventive patrols until selected to be a flying instructor in 1938. Commissioned in November 1939, he had a distinguished wartime service, retiring post-war as a wing commander.

TRADES IN THE RCAF

The trades reflected the simple nature of the aircraft but also showed a progression of experience and more specialized skills. Recruits would be enlisted in a trade at the Group C level and, as they gained experience, passed trade courses and exams and progressed in rank, they would move successively to Group B and then Group A (outlined at Table 4). For example, most riggers started as aircraft hands, who each were literally apprenticed to an airman in Group B until they too had

passed the trade tests for Group B to become qualified. As they rose in group level, the name of the trade also changed in some cases to reflect the specialization. By 1939, the entry level for airmen became “Standard,” which was the apprentice level.⁶⁹

In some cases, trades would go no higher than Group B, while others remained strictly as Standard. The highest rank achievable within a trade was often linked to the group, with the biggest exceptions being in the Standard trades. For example, as disciplinarian an airman could rise through the ranks up to warrant officer, class 1. This would progress through the Second World War, albeit with more trades added during the conflict and with some of the names changing.

However, the RCAF was nothing if not practical and considered all trades each year as part of its review of the RCAF establishment. In 1935, following the lead of the RAF, the RCAF’s senior air officer proposed eliminating the trade of parachute rigger and incorporating its qualifications into the trade of fabric worker. This was also not without precedent, as the RCAF had initially trained parachute riggers as a specialty. The proposal was not accepted at the time.⁷⁰



A lecture during the fitter's course, Camp Borden, circa 1932. The airmen instructors passed on not only knowledge about the functioning of aircraft engines but also lessons on field maintenance and repairs learned through experience.

Standard	Group C	Group B	Group A
Batman and Orderly	Aircraft Hand	Armourer	Acetylene Welder
Bugler	Despatch Rider	Carpenter	Armament Artificer
Disciplinarian	Driver M.T.	Clerk	Blacksmith
Guard & Watchman	Fitter's Assistant	Cook	Cabinet Maker
Labourer	Operator–Telephone Assistant	Fabric Worker	Carpenter (boat maker)
		Motor-boat Crew	Carpenter (air rigger)
		Motor Mechanic	Carpenter (propeller maker)
		Operator – Telephone	Coppersmith
		Rigger	Draughtsman
		Sheet Metal Worker	Electrician
		Storekeeper	Fitter (aero-engine)
		Tailor	Fitter (driver)
			Fitter (general)
			Fitter (radio telegraph)
			Instrument Maker and Repair
			Machinist
			Parachute Rigger
			Photographer
			Technical
Note: Trades in Group B and A all started in Group C but, for brevity, they have not been included.			

Table 4. RCAF trades and groups, 1927⁷¹

The RCAF also had specialist courses which would eventually become trades in their own right. Starting in 1935, the RCAF began to receive increased funding and purchased more modern aircraft. These aircraft had provision for a gunner, as No. 2 (Army Co-operation) Squadron operated the Armstrong Whitworth Atlas, No. 3 (Bomber) Squadron flew the Wapiti and No. 4 (Flying Boat)

Squadron patrolled in the Canadian Vickers Vedette. In 1933, the first eight NCOs took an air gunner course at Camp Borden. Further groups of six followed in 1935 and 1936.⁷² As the air gunner course was a specialty course, these gunners remained members of their trade but with the annotation “(air gunner).” This would change, in part, as the Second World War approached.

It appears that there were no more than 20 airmen who qualified as air gunners prior to the Second World War. One of the more distinguished of the air gunners was Ross Smither, who flew in the Battle of Britain with No. 1 (Fighter) Squadron of the RCAF and was killed in action on September 15, 1940. Smither was also nominated for and earned his wings as a sergeant pilot, graduating in September 1939.

TRAINING IN THE RCAF

One of the major reasons for creating a permanent air force was that airmen were not receiving enough training to make them operationally ready. From the small No. 1 Flying Training Station (FTS) at Camp Borden in 1923, the RCAF’s airmen training system would expand considerably by 1939. Camp Borden was the main training facility in the RCAF until Trenton began to take over in 1935, as several schools and flights began moving there. Training was also conducted in Vancouver, but this was related to RCAF commitments to training civilian pilots and the RCAF’s own programme to train pilots, including sergeant pilots, on flying boats and floatplanes.

Camp Borden was a bleak place, with the airmen’s quarters and most buildings covered with tar paper through to the mid-1930s. Even into that period, training equipment and facilities were holdovers from 1924, the RCAF not having the funds to upgrade the machinery and training aids. The workday started with a morning parade, both for airmen employed at the camp as well as students, and then everyone marched to the hangar line or school. Proceeding to and from lunch involved marching to and from the mess. As for the barracks, they held 30 to a room.⁷³

Keeping everybody in line was Sergeant Major, Class 1 Leonard John Dyte, the camp disciplinarian. The RCAF borrowed him from the Royal Canadian Regiment in 1924. In October 1929, he finally transferred to the RCAF. He was known for ensuring the smartness of the RCAF’s airmen and officers at Camp Borden, himself being an example of this. Woe betide any airmen who were not looking smart in dress and bearing when they left or entered the camp.⁷⁴

While the airmen had to exercise caution around the camp lest WO 1 Dyte became interested in their activities, in the classroom there was also a certain amount of caution to be exercised. While the RCAF had extended ab initio technical-trades’ training to ten months, there were no lesson plans to be had. The RAF trade training syllabus was followed, but instructors had to make up their own lessons. This was not as bad as it sounds, as what these instructors gained on operations provided a

great deal of practical experience beyond the theoretical that was taught.⁷⁵ The effectiveness of this approach could be seen in how well the aircraft were maintained as well as in the paucity of accidents related to maintenance issues. It was in this environment that all basic training for airmen as well as trades training and advanced technical training were initially held at Camp Borden.

With operational flying taking place from spring to autumn, winter was the time to provide a modicum of military activities into the service of all officers and airmen who had been employed in both CGAO and RCAF flying activities. Starting in the winter of 1924–25, refresher training was held at No. 1 FTS at Camp Borden and all stations, except for RCAF Station Dartmouth, NS, which closed for the winter. The subjects included Air Force law, discipline, air pilotage (navigation), airmanship, aeronautical engineering, interior economy, physical training and drill as well as other lessons and activities. This continued to be the pattern each winter through to at least 1935.⁷⁶

The RCAF also held specialist courses. Starting in 1926–27, No. 1 FTS began courses in parachutes which were attended by officers and airmen, a one-month NCO drill course and two one-month storekeeping courses attended by 31 airmen. Other courses were introduced as needs were determined, such as a more formal, combined course on air pilotage and photography held in 1930–31, which was attended by 22 officers and 8 airmen.⁷⁷ With the RCAF being as small as it was, officers and airmen attended the same courses for subjects and specialties that were common to both. Some courses, such as drill instructor, were regularly scheduled each year and attended by warrant officer, class 1s down to corporals.

With the refocusing of the RCAF into a military force after the Big Cut, the RCAF disbanded No. 1 FTS and formed four schools, all of which were located at Camp Borden. These were the Flying Training School, Army Co-operation School, Air Armament and Bombing School as well as the Technical Training School (TTS). Each of these schools trained airmen and officers.⁷⁸

As the RCAF began to expand, a second TTS was formed at Trenton in 1936. The amount of training for airmen also increased considerably. The TTS in Camp Borden taught an ab initio pilot course, armament instructor course, air gunner course and a storekeeper course, while No. 1 TTS in Trenton provided the technical training of all trades as well as seamanship and parachute courses.⁷⁹ Individual units also undertook small training courses with No. 1 Aircraft Depot in Ottawa holding an instrument-repair course for one student, a rigger course for three and a fitter course for two. No. 2 Aircraft Depot in Winnipeg held a welding course for one student.⁸⁰ Hereafter, the number of students being taught increased considerably, which was good training for the increase in airmen required for the Second World War and the British Commonwealth Air Training Plan (BCATP).

Not all training was conducted at RCAF schools and units. In 1925, Corporal A. Anderson accompanied Flying Officer A. Carter, MM, to the US Army Air Service Technical Training School in Illinois, where they took the parachute-rigger course. On their return, they conducted courses

at Camp Borden, Station High River and Station Vancouver, through which seven officers and nine airmen qualified as parachute riggers. Parachutes were subsequently obligatory in the RCAF, with some stations on occasion conducting their own parachute-rigger courses.⁸¹

Technical skills were improved at courses given by civilian-aviation, vehicle and motor firms. In 1935, airmen attended courses at Armstrong Siddeley Motors in Ottawa, the Ford Motor Company in Ottawa and Toronto as well as at Canadian Vickers and Fairchild Aircraft in Montréal and Longueuil, Quebec, respectively. These courses included instruction on engines in RCAF service, reconditioning of RCAF aircraft and helping build aircraft about to enter the RCAF.⁸² These outside courses were not exclusive to 1935 but were conducted throughout the latter 1930s. In this way, RCAF tradesmen became more knowledgeable and better able to pass along the skills and knowledge required for keeping their aircraft in top flying condition.

In October 1932, the first three NPAAF squadrons were authorized, leading to an additional aspect of training that occurred in 1933. The ground crew was made up of reservists, except for a small contingent of PAAF personnel who provided trades' training and administrative support. As with the PAAF, NPAAF tradesmen would take qualification exams to progress to higher ranks. The standards were the same as those for the PAAF. This arrangement had a considerable degree of success, as a majority of the NPAAF tradesmen progressed to the highest NCO ranks during the Second World War, providing the backbone for new squadrons and schools.

LEAVE AND DRESS OFF STATION

The terms of leave and passes for our RCAF predecessors were quite different than they are today. Leave for airmen was 28 calendar days a year, while for officers it was 42 days for those on flying duties and 30 days for those on ground duties; however, if the journey to visit family was more than 400 miles [644 kilometres], leave could be extended to 42 days. For those who were living in (which was everyone who was single), passes were required to leave the camp or station, although sergeants and warrant officers did not require one to remain out until midnight. On Sundays, all airmen had to attend a church service but did not have to attend services of any denomination other than their own.⁸³ The only exception to church parades was for those on duty. This was not as onerous as it sounds, as most RCAF stations did not have a regular chaplain, so church parades were not held every Sunday.

When duty took airmen outside the confines of the camp or station, they were not permitted to smoke in public. Airmen including and below the rank of sergeant had to be dressed in uniform at all times when in the camp or station, other than for recreation. Officers, warrants officers and flight sergeants could wear civilian dress when not on duty, if the CO gave permission. The CO's permission was also required for all ranks to wear civilian clothes while on leave. One accoutrement no longer seen is the "regulation cane," or swagger stick, which all airmen had to carry under their left arm when walking in or out of the station.⁸⁴

CONCLUSION

Many of the RCAF's policies and traditions in the interwar period are reflected in today's Air Force, yet there were policies that seem strange or even inappropriate in today's more libertarian social environment. If nothing else, we gain an appreciation for how devoted many of the airmen were to the RCAF. Those who remained with the service were often commissioned or rose to higher ranks, not only because of the Second World War, but also because of opportunities for leadership and development that the RCAF provided, especially in the 1930s.

Even CGAO presented opportunities for leadership and skills development. There were several important skills that arose out of these aerial photo operations and isolated locations. The first was an ability to lead, as isolation could easily lead to poor morale and conflicts between individuals. Secondly, there was the ability to improvise, make do and make pieces when the supply chain was many miles and days away. The members of these operations who remained in the RCAF at the start of the Second World War were important leaders in the Air Force's rapid expansion.

In many ways, the learning and application of skills and trades was similar to that which we undertake today. As new technology arose and old faded into the past, the airmen of the RCAF between the wars changed as well, adapting to the new conditions and, when the Second World War arose, being prepared to assume the new responsibilities thrust upon them.

There is little doubt that the airmen of the 1930s were the heart of operations. Climbing out of aircraft to fix a fault while in the air was hardly unique, yet it demonstrated the lengths to which the airmen on operations were willing to go. On photo detachments, they did everything but fly the airplanes and, even then, there were the sergeant pilots who did fly!



The advanced part of the riggers course involved taking apart and rebuilding static airframes. Here a staff sergeant supervises a group of trainees during the rebuilding process on an airframe at Camp Borden, circa 1932.

CHAPTER 3: THE SECOND WORLD WAR

The Second World War was a major catalyst of change for the airmen of the RCAF, as it was for the service as a whole. The fight was not just for those who flew in the airplanes, but also for the ground crews. There is no doubt that the airmen were seen by those who understood leadership as being just as much in the fight as the aircrew. In July 1942, Air Marshal Harold “Gus” Edwards paid tribute to the airmen in a radio address he called “They Toil Without Glory.” He was quite effusive about how ground crew were essential to the war effort, without whose contributions the war could not be won. “I would ask you to remember that an air force is a team—a team in which each section is interdependent on the other. ... They have a peculiar sense of possession. It is their aircraft—their pilot—their crew—their war—their victory.”⁸⁵

As with so many histories of squadrons, the everyday activities of the men and women who kept the aircraft flying will not be detailed in this chapter, although some of the citations for medals and awards the ground crew received will be noted to highlight the dedication demonstrated by so many, which can be considered as indicative of the multitude who did their job so well. Further, while aircrew started off as airmen, with many going on to become officers, this chapter will not look at aircrew. Most of this narrative will be directed towards the maintainers who kept the aircraft flying; however, the importance of the other trades cannot be overstated.

The Second World War was a period of great innovation. New trades were developed as new technologies were introduced, specialization became more prevalent and the importance of airmen increased as never before. Even into 1943, the RCAF operated aircraft that extensively employed fabric, such as the Wellington. By the end of 1945, the RCAF’s primary operational aircraft were all metal. This naturally had an effect upon the trade structure. At the same time, technological innovation produced large-scale changes. For instance, the development of radar led to air-to-air, air-to-ground and ground-to-air radar sets as well as new trades, such as radar mechanic, radar operator, fighter controller and air traffic controller. The RCAF also started the war with a force that consisted of 298 officers and 2,750 airmen against a limited establishment of 340 officers and 3,065 airmen in the PAAF as well as 112 officers and 901 airmen of the 189 officers and 1,246 airmen in the Auxiliary Active Air Force (AAAF) authorized.⁸⁶ The RCAF became the fourth-largest Allied air force at the end of the conflict, having put over 250,000 men and women into uniform.

At the start of the war, the Canadian government was concerned about several factors, including casualties (as experienced in the First World War), conscription and cost. Prime Minister William Lyon Mackenzie King, the consummate politician, hoped that a major effort such as the BCATP would satisfy Britain that Canada was doing its part in the war effort and placate those Canadians who wished to see Canada supporting Britain. This hope, however, was not to be. The RCAF was soon sent overseas. No. 110 Squadron arrived in England in February 1940 and No. 112 Squadron arrived in June, closely followed by No. 1 (Fighter) Squadron on June 20. Nos. 110 and 112 were there to support the 1st Canadian Division by providing air support to the Canadian Militia. No. 1 Squadron was to augment the British air defences, Canadian stinginess having suddenly disappeared and the Defence budget being considerably expanded.⁸⁷

PERSONNEL

On September 2, 1939, the PAAF and seven AAAF squadrons were mobilized. Plans were developed to expand the Air Force, both in squadrons and aircraft, thereby putting it on a more modern footing, as the RCAF had only 19 modern operational aircraft at the start of the war.⁸⁸ Plans were also being developed for what would become the BCATP. To achieve this level of operations and support, the RCAF had to expand rapidly. The question was where to find the expertise to run the procurement programmes and the schools of the BCATP as well as lead the home war squadrons and, soon thereafter, the squadrons overseas. The answer was that this was done primarily internally, although a few specialist officers were enlisted. Table 5 outlines just a few of the RCAF airmen pioneers who signed up on April 1, 1924, and to which ranks they rose during the course of the war. They may not have had the formal courses or university degrees, but they had the skills and knowledge obtained by years of practical experience to be put into leadership positions.



In Canada, ground crew were more often able to work on aircraft in hangars. Here members of No. 1 (Fighter) Squadron serve a Hawker Hurricane, No. 315, at Station Rockcliffe on 5 September 1939.

Rank and Name	Trade	Final Rank	Notes
AC2 Robert M. Brazil	Clerk/Admin O	F/L	WO 1 on 1 Apr 39, Comm'd 30 Aug 41
AC2 William Burr	Rigger	WO 1	WO 1 on 1 Nov 40
AC1 William Comrie	Storekeeper	WO 1	MBE, WO 1 on 1 Sep 39
AC1 Charles Cotton	Draughtsman / Aero Engineer	G/C	MiD; Ret'd 1936 as Sgt, reenlisted and Comm'd Oct 39
AC2 Frederic J. Ewart	Standard/Pilot	G/C	DFC; Hudson Strait Expedition, later a sergeant pilot
AC1 Lewis MacDonald	Photo Tech / Photo Officer	G/C	WO 2 on 1 Apr 39, Comm'd Jun 40
AC1 Hugh C. Semple	Rigger / Aero Engineer	S/L	Comm'd Mar 41; Hudson Strait Expedition
AC1 James Ware	Aircrafthand	WO 1	WO 1 on 1 Nov 40
AC1 Arthur H. Warner	Fitter (AE) / Aero Engineer	G/C	WO 1 on 1 Jul 40, Comm'd Mar 41, Hudson Strait Expedition

Table 5. Aircraftmen who enlisted on 1 April 1924 and rose to higher ranks

The men noted in Table 5 represent the tip of the iceberg. Many other pre-war airmen, both PAAF and AAAF, were quickly promoted and put into positions of responsibility as BCATP schools were opened and new squadrons formed. Many of the airmen who had served with No. 1 Squadron in the Battle of Britain were repatriated to bring their experience to Canadian units. Others helped form the nucleus of RCAF squadrons being created in the UK.⁸⁹

When war was declared, both the PAAF and AAAF began to recruit up to their war establishments. However, in September 1939, the “light went on” at RCAF HQ that all the newly recruited individuals would be entitled to benefits once the war was over. The Special Reserve (SR) was thus created as the component into which wartime volunteers would be enrolled, although some individuals were placed on the PAAF establishment because they had special skills the RCAF desired—these individuals being mainly officers. Promotions during the war were all “temporary.” The RCAF reserved the right to reduce both airmen and officers to their pre-war ranks once the war was over and did so for many of them.⁹⁰

Recruiting for ground crew, whether aircraft maintainers or support personnel, continued for most of the war. There was never a shortage of ground crew such as there was with aircrew, but the RCAF also took measures to ensure that its airmen were of the highest quality (see the “Training” section later in this chapter). However, by mid-June 1944, RCAF HQ realized that with the war apparently to be won in the near future and with the current strength being suitable to meet future needs, the recruiting of airmen was temporarily halted in June and finally ceased altogether in October.⁹¹

The RCAF also realized that French Canadians were an important resource. No. 4 Manning Depot was formed at Quebec City on September 4, 1940, set up in part to teach English to French speakers. In the summer of 1941, an increased effort began to recruit French Canadians employing

visits from French speakers. A separate training course for French-speaking mechanics was also created at Cartierville, Quebec.⁹² Overseas, 425 Squadron was formed as a French-Canadian squadron not only to enlist French-Canadian support for the war effort, but also to draw English and French Canada closer together.⁹³ Where it broke down for the airmen was in the posting system, which was controlled by the RAF. Many French-Canadian airmen serving in other units were not posted to 425 Squadron, as such internal moves were controlled by the RAF.⁹⁴ Thus 425 Squadron's servicing was not as French speaking as it could have been.⁹⁵

Visible minorities were, until March 31, 1942, prohibited from enlisting as officers in any RCAF component or as airmen in the Auxiliary and in the SR, although this was eased in October 1941 to allow them to serve in support trades. As it was, many RCAF recruiting officers apparently disagreed with these discriminatory policies and enlisted Black Canadians before the colour barrier was lifted.⁹⁶ Chinese Canadians had a harder time; none of them were able to enlist before the colour barrier disappeared. At least 60 Black men were able to serve as well as at least 75 Chinese Canadians (including 7 in the University Air Training Corps plan), with 27 from each ethnic group becoming aircrew.⁹⁷

TRAINING

Unlike the pre-war RCAF, training during the war quickly required a standardized curriculum with formal lessons plans. While the lack of lessons plans was adequate for a training system that trained small numbers and where personal experience was a substitute, formal lesson plans were required when the experienced instructors were posted to operational units.

Training also expanded with many new schools being added. Recruits were given basic training at one of the seven manning depots (five for men and two for women). Aircrew candidates then went to an initial training school while tradesmen went to a trade training school, of which there were many. For aircraft maintainers there was No. 1 TTS at St. Thomas, Ontario, while armourers went to the Air Armament School at Trenton. A special school was created for aircraft inspectors—the AID Inspectors School at Toronto. Radar brought about No. 1 School of Flying Control at Patricia Bay, British Columbia; No. 1 School of Fighter Control at Rockcliffe, Ontario; and No. 5 Radio School at Clinton, Ontario, where radar mechanics and operators were trained. There was also, among the schools, one for general trades—No. 1 Composite Training School at Station Trenton.

The RCAF also recognized that a higher level of education was required for its aircraft maintainers, which many otherwise-suitable candidates did not have. Rather than reject them, the RCAF enlisted them and sent them to take the required courses at selected universities as part of the War Emergency Training Plan. By September 1942, 1,557 aircrew, 1,335 aero-engine mechanics, 1,019 airframe mechanics, 572 wireless operator (ground) and 185 radio mechanics had participated in the War Emergency Training Plan—a total of 4,668 men. This training increased rapidly so that in FY 1942–43, a total of 25,329 airmen received this training.⁹⁸ In this way the RCAF ensured that



Armourers preparing to load practice bombs onto the wing racks of a Fairey Battle I aircraft at No. 1 Bombing and Gunnery School, Jarvis, ON, July 1941. The practice bombs allowed trainee bomb aimers to practise their aiming and bomb drops without the use of high explosives.

it had a large pool of educated personnel to provide the maintenance for its aircraft. Rejecting these potential maintainers would have left the RCAF considerably less capable of meeting its manpower requirements and its maintenance obligations.

TRADE GROUPS

The RCAF entered the war with a total of 24 trades, one of which was airman pilot.⁹⁹ By 1945, there were 102.¹⁰⁰ The RCAF's size, complexity of aircraft and new technologies pushed the requirements for new trades, as many trades became increasingly specialized. However, in some areas of personnel policy there was no need to change, so the RCAF maintained its policy of having four trade groups: standard as well as Groups A, B and C. In most trades, recruits started in the standard group and progressed to Group C, then B and finally A as they received training and passed exams, although not all trades had a Group A level.¹⁰¹

Some trades were formed out of the realization that existing practices were inadequate and greater specialization was needed. For example, the trade of armament artificer (pre-war) was split into armourer (bombs) and armourer (guns) by February 1940. Likewise, the trade of electrician, which had been declared obsolescent by April 1939, made a resurgence so that there were aircraft electricians and building electricians. In the most divergent specialization, the one clerk trade of July 1939 became 11 specialty clerk trades by December 1941.¹⁰²

RCAF airmen even became unofficial aircrew, with the result that a new hybrid trade was formed. As the twin-engine Consolidated Catalina and then the Consolidated Canso entered the RCAF's inventory, it was realized that someone was needed in the cockpit to monitor the engines and fuel consumption as well as assist the pilots. Initially, aero-engine mechanics, airframe mechanics and a few wireless mechanics were given first informal and then formal training beginning in November 1942 as flight engineers, later receiving their half-wings for this qualification. As the RCAF in the UK began to receive four-engine bombers, they had to accept RAF flight engineers, as there were few Canadian flight engineers, which meant that the Canadianization of aircrew was not working completely. As a result, the RCAF created the trade of flight engineer on 19 January 1944.¹⁰³

Even late in the war the RCAF created new trades, as it was realized that current practices were not sufficient to do the job effectively. For example, up to June 1944, messes and kitchens were staffed by general-duties personnel; however, this proved undesirable from the standpoint of cleanliness and efficiency. It was proposed and accepted at the Air Council that a new trade be created, that of steward.¹⁰⁴

Some trades were restricted to RCAF personnel serving with the RCAF or the RAF overseas, simply because of the situation. What started as a list of only three trades in April 1942—compass adjuster, permanent duty pilot and wireless operator (mechanic)—was increased to eleven on August 31, 1943, and included ground gunner and motorcyclist.¹⁰⁵ Ground gunners were tradesmen trained in the use of infantry weapons and tactics for the defence of airfields, and were usually members of the RAF Regiment. Motorcyclists were used a despatch riders.

One pull that was felt by the airmen in the RCAF was the call to remuster to aircrew. While there were airmen who wished to become aircrew and did so because of their own desire, the RCAF also called for volunteers to remuster. As the RCAF began to experience aircrew recruiting problems in 1943, a quota was set that 750 ground crew were to remuster each month. It was not just the wartime enlistees who felt the pull to fly, but also members of the pre-war PAAF and the AAAF. Also in 1943, just as the demands for Canadian flight engineers increased when the RCAF bomber squadrons in the UK converted to Handley Page Halifax and Avro Lancaster bombers, there was a call for remusters among ground crew in the UK.¹⁰⁶ These remusters voluntarily and knowingly placed themselves in harm's way through their transfer. As an example, FS Fernand St. Laurent and Sgt Donald Scott were remusters to flight engineers from airframe mechanic and aero-engineer mechanic respectively, and were serving with Flight Lieutenant (F/L) David Hornell on the sortie in which their aircraft sunk German U-boat U-1225 and were themselves shot down. Both lost their lives in the subsequent crash of the Canso and waiting for rescue.¹⁰⁷

MAINTENANCE

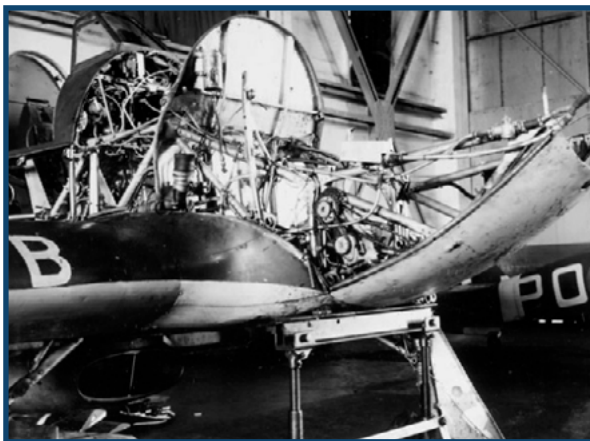
For the squadrons, schools and flights operating in Canada, the unit establishment included a maintenance section. The heaviest workload was likely on the maintainers working at the BCATP

schools—where aircraft were often used three times a day—and at the Service Flying Training Schools, where the aircraft had to withstand the rough handling of fledging pilots. For operational squadrons, especially the bomber reconnaissance ones, there was the additional pressure of knowing that the smallest mistake could result in an aircraft and crew being lost over the Atlantic or Pacific Ocean. That most BCATP accidents were attributable to pilot error, operational sorties and the weather speaks to the care that the maintainers took to ensure the serviceability of the aircraft for which they were responsible.¹⁰⁸

Although the aircraft maintainers who served first in Canada and then were posted overseas had experience, this provided little advantage in some ways when they arrived at operational units in the UK. Very few of the units in Canada flew aircraft that were used operationally overseas; hence, there was a learning curve as they discovered the intricacies of maintaining the new aircraft. What was of value was supervising other maintainers, knowing what to look for to find problems as well as preventive maintenance.

Whether in Canada or overseas, the maintenance sections were organized in a similar manner. Squadrons normally consisted of two or three flights, each with between four and six aircraft, depending on its operational role. This arrangement depended upon the time during the war and on the type of squadron. Each aircraft was under the care of a sergeant or acting sergeant (i.e., a corporal who could be paid or unpaid at the higher rank) who supervised five or more maintenance trades. Each flight was under the supervision of a flight sergeant.

For RCAF units overseas, the maintenance and support components of squadrons were initially part of the unit establishment; hence, the first three RCAF squadrons in the UK had a large establishment with over 300 airmen of all trades. However, by November 1941, the RAF had decided that the ground crews should be removed from the squadrons and formed into servicing echelons (SEs) that were now part of the station establishment. The idea of SEs began in Fighter Command. The rationale for this was that squadrons could become more mobile—they could be moved from base to base and receive servicing from the SE located at their new base. A squadron could thus move without taking its SE with them.



A squadron's maintainers normally had to work on the aircraft in the open, rain or shine. Maintenance in hangar was normally reserved for major work, as several squadrons had to share the facilities. Here, a 401 Squadron Hawker Hurricane is being worked upon in 1941.

Bomber Command was slower to accept the concept of SEs. It was only when Bomber Command introduced the “Base” concept in 1943 that the SEs began to be removed from squadrons. Initially, the maintainers who actually worked as a team on the aircraft remained as part of the squadrons, while services such as fuelling and armaments were used as base resources and were among the first transfers to the SEs in Bomber Command. However, by August 1, 1944, all trades were transferred to the establishment of the base, although each SE continued to service the aircraft of the squadron to which they had originally been attached.¹⁰⁹

WOMEN

Women were serving in the RCAF by late 1940—members of the Royal Canadian Army Medical Corps who had transferred to the newly formed RCAF Medical Branch. On July 2, 1941, the governor general, Lord Athlone, approved the formation of the Canadian Women’s Auxiliary Air Force (CWAAF) modelled upon the RAF’s Women’s Auxiliary Air Force.¹¹⁰ The CWAAF was a new component of the RCAF, along with PAAF, AAAP and SR. The name was changed to RCAF Women’s Division (WD) on February 3, 1942.¹¹¹

Initially, only 9 trades were open to women; however, as the women demonstrated their abilities, the RCAF recognized that the service would benefit if further trades were opened to women.¹¹² Eventually, the WDs could serve in 65 of the RCAF’s 102 trades, the main restriction being that they could not take part in combat trades, which eliminated them from being aircrew. The trade courses were initially segregated; however, by 1943 they were integrated. Similarly, women could not initially command or supervise men; however, this began to change as women displayed their competence and in some sections, such as orderly rooms, they were placed in charge of RCAF men and women members as well as civilians.

The arrival of the first WDs at many stations was heralded with some celebration. Women first went overseas in July 1942, most of them working as part of the RCAF Overseas HQ and later at 6 Group HQ. Being at HQ overseas did keep them away from threats; however, in Canada, at least 37 died, 7 of them in aircraft accidents during transportation flights and another during an orientation ride. The worst accident was when Liberator 11121 of No. 11 (Bomber Reconnaissance) Squadron crashed near Barkley Sound on July 13, 1945.¹¹³

The women experienced other restrictions. Their pay started at two-thirds of that of their male counterparts, although Air Vice-Marshal John Sully tried to get equal pay for the women. The government rejected this and as of July 1943, the women had to accept being paid 80 per cent of what men with the exact same rank and skills were being paid. One reason for Sully’s efforts for equal pay was that the RCAF soon found that the work the WDs performed was in many cases equal to or better than that of the men doing the same job. The quality of the women’s work can be seen in the commendations they received: 16 were made members of the Order of the British Empire,

38 received British Empire Medals (BEMs) and 27 received Mention in Despatches (MiD). Of the nursing sisters, 1 was made an officer of the Order of the British Empire; 2 received MiD; 15 were made Associates, Royal Red Cross; and 1 was Commended for Valuable Service.¹¹⁴

Although these were all for non-combat operations, the fact that these women were recognized speaks to their efforts and achievements. As an example from the citations, that for Airwoman, class 1 Audrey Anderson's BEM read: "This airwoman's devotion to duty surpasses by far the normal requirements. She is an outstanding airwoman and a clerk who is scrupulously accurate in her work, and fulfils all her duties in a highly satisfactory manner. She has set a fine example and is an inspiration to her fellow airwomen."¹¹⁵

Others were recognized for cool thinking under pressure, such as Leading Airwoman Doris Armitage, whose BEM reads, in part: "In addition, on the night of February 3rd, 1946, her quick thinking and fortitude during a fire in the unit Motor Transport Section was instrumental in preventing possible fatal injuries to a comrade and reducing property loss to a minimum."¹¹⁶

More than 17,000 women served in the RCAF during the war, including 260 from Newfoundland and 328 recruited overseas. At the end of the war, the RCAF tried to retain women in the service; however, the Army and Navy did not wish to do so, and the government went along with the majority decision. The last WD was demobilized in March 1947.



Equipment assistants at clothing stores, RCAF Station Rockcliffe, 31 October 1944.



Telephone room personnel, No. 1 Group Headquarters, EAC, St. John's, NL, 24 September 1942.



The RCAF Women's Division Precision Drill Team. The WD and the men's team displayed their skills across Canada in support of RCAF recruiting, Victory Loan campaigns and other public relations events. They performed over 15 minutes of drill without a word of command being spoken. The airwomen had to volunteer for this work, and remained in it for several months after the basic training period. Then they dispersed to the trades in which they enlisted. Note the swagger sticks. Whereas the men's drill teams used rifles, the women were only allowed to use swagger sticks.

OPERATIONS IN CANADA

Although the men and women who served overseas are the ones about whom most works on the Second World War are produced, there were actually far more members of the RCAF who served in Canada than overseas. Not only was there the huge aircrew production machine of the BCATP, there was the “Home War Establishment,” with squadrons defending Canada or providing aviation services to the RCAF and the government.

British Commonwealth Air Training Plan

The BCATP was a massive undertaking. At its peak in January 1944, it included 73 flying schools, 24 RAF schools operating in Canada as well as 184 supporting units and formations. Aircraft maintainers were needed not only for pilot training but also at wireless, navigation and bombing schools, which all operated aircraft. The BCATP would eventually train over 131,000 pilots, navigators and other aircrew, all of whom were trained in aircraft that were in constant use.

The maintainers were invariably kept busy at all of the schools. One pilot might sign out an aircraft in the morning, a second pilot might do the same in the afternoon and maybe even a third for night flying. In between sign-outs, the aircraft had to be refuelled and inspected. Newly minted pilots at the service flying-training schools found unique and interesting ways to damage aircraft, which the various maintainers then had to repair. For the more difficult jobs, the repair depots were called in to repair or salvage aircraft, often rebuilding them almost in their entirety. The BCATP schools served as an excellent development venue for the ground tradesmen who would be eventually posted to the UK, although many would go directly from the TTS to the UK.

With an organization as large as the BCATP, there was always room for improvements and innovation. There were airmen such as FS John Henri Lyon, who developed several training devices that were given widespread use. For his efforts he was awarded the BEM. There were also the many “suggestion awards,” a programme that continued after the war.¹¹⁷

Occasionally, an air of excitement permeated some of the schools. In July 1942, crews from No. 9 Bombing and Gunnery School at Mont-Joli, Quebec, took off to track down a reported U-boat, while in September, Nos. 31 and 36 Operational Training Units at Debert and Greenwood, NS, and Nos. 1 and 31 General Reconnaissance Schools at Summerside and Charlottetown, Prince Edward Island, were employed extensively by Eastern Air Command on antisubmarine patrols.¹¹⁸ Thereafter, these operational training units and general reconnaissance schools often flew armed during their training exercises, adding to the workload of the armourers but increasing the security of the Gulf of St. Lawrence.

Home War Establishment

The Home War Establishment (HWE) had almost as many squadrons in Canada as the RCAF had overseas. Not all of them were organized for combat or defence, as there were transport squadrons flying government and RCAF personnel across Canada, transporting mail between Canada and points overseas as well as ferrying aircraft within Canada. However, with a perceived threat on both coasts, the RCAF maintained continuous patrols against aircraft, submarines and warships.

The greatest threat was from submarines. This was proven by the Battle of the St. Lawrence in 1942, when U-boats operated in the Gulf, having been present off the East Coast from 1941 onwards. No relaxation could be afforded, as demonstrated by U-1232 sinking merchant vessels off Halifax in late December 1944 and early January 1945, and by the torpedoing of Her Majesty's Canadian Ship (HMCS) ESQUIMALT off Chebucto Head, NS, on April 16, 1945. Eastern Air Command's squadrons flew hundreds of thousands of hours on antisubmarine patrols and convoy protection flights, flying over 3,400 hours in April 1945 alone.

There were also similar patrols off the West Coast to seek out Japanese submarines such as I-26, whose gunfire attack on the Estevan Point lighthouse on Vancouver Island on June 20, 1942, made the threat even more real. While there were fighter patrols off both coasts, the German threat of an aircraft attack was more of a rumour than reality. However, the Japanese threat was more realistic, as there was a constant fear that the Imperial Japanese Navy would use its aircraft carriers to visit the West Coast to attack major cities or maybe even develop a base. This threat eventually diminished by mid-1944. In the end, the only significant enemy activity over or off Western Canada was the floating over of Japanese fire balloons in the winter of 1944–45, for which aircraft were sent to intercept.¹¹⁹ The maintainers at the West Coast fighter squadrons had real reason to be more attentive even so late in the war.

The biggest enemy on these operations was the weather, which could close in or stir up strong winds that prevented patrol aircraft from returning to base, although later in the war, the RCAF's long-range patrols could make it to Greenland, Iceland and—in some cases—to Northern Ireland. Operations in Canada were not without risk. Airmen were killed in accidents on the airfield, such as walking into a spinning propeller. Others died of natural causes, had tractors fall on them or were killed in train wrecks; however, the most frequent causes of death among RCAF airmen in Canada were traffic accidents. Airmen also perished in aircraft accidents, such as the crash of Consolidated Liberator 3701 from 10 (Bomber Reconnaissance) Squadron near St-Donat, Quebec, on October 19, 1943, in which 11 non-aircrew airmen perished. One of the largest single losses of airmen's lives occurred in Newfoundland, which at the time was considered an overseas posting because the colony was not yet part of Canada. On December 12, 1942, 16 airmen died in a fire at the Knights of Columbus Hostel in St. John's.¹²⁰



An RCAF marine craft and crew conduct a morning inspection of a Supermarine Stranraer flying boat while maintenance personnel prepare the 4 Squadron aircraft for the day's mission. The RCAF's marine fleet ranged from small rowboats to larger cargo craft.

One understated aspect of the HWE was the presence of RCAF Marine Squadrons on both coasts and on two of the Great Lakes. The RCAF had employed boat crews since 1924, using them for flying-boat operations to bring not only the crews to the aircraft anchored offshore but also the machine guns and ammunition for the air gunners, pigeons and other assorted mission requirements prior to and during the war. But the marine craft also performed duties as crash boats and helped recover wrecked aircraft. There were even armoured target boats designed to withstand the crash of 11-pound practice bombs onto their hulls when used by bombing and gunnery schools. Larger craft helped to move supplies to isolated RCAF stations on both coasts, and two—the *Beaver* and the *Eskimo*—helped to move No. 162 Squadron to Iceland. One craft, the *B.C. Star*, disappeared off the coast of Vancouver Island with the loss of all 16 RCAF hands.

Squadrons of the HWE did deploy outside what is now Canada. In January 1944, 162 Squadron began operations from Iceland at the request of the RAF in its operations against U-boats. The squadrons also sent a detachment to operate from Wick, Scotland, from 24 May to 7 August 1944. In the process, the squadron destroyed five U-boats, shared in the destruction of one and damaged one. Neither Reykjavik, Iceland, nor Wick are known for the quality of their weather at any time of the year when maintenance has to be done in the open air, so improvisation was a necessity, as Iceland was at the end of a long supply chain from Canada.

While the aircrew received the lion's share of recognition for carrying out the attacks on the U-boats, there was also recognition for the work of some of the ground crew. Sgt Alfred Russell received an MiD, presumably for his work with the Canso's radar system used in detecting the submarines.¹²¹

The importance of a hot meal to a squadron can be seen in the MiD awarded to FS Howard Mott of 162 Squadron: "This Non-Commissioned Officer has been employed as Chef since December 1943. He has shown great capacity for hard work and by his ceaseless endeavour and thought for the needs of others he has contributed in no small measure to the high standard of morale and well-being prevailing in this squadron."¹²²

RCAF HWE squadrons also took part in the Aleutian campaign, patrolling the coasts of British Columbia and Alaska. The campaign was initiated and the squadrons deployed with great rapidity. For example, when No. 8 Squadron deployed on June 2, 1942, it carried its ground crew and essential spares in two Supermarine Stranraer aircraft, eventually to arrive in the Alaskan communities of Yakutat and, later, Kodiak. This soon proved to be a problem when the squadron ran out of spark plugs which could only be obtained in Canada. The threat was certainly high, as the Japanese attacked Dutch Harbor, Alaska, on June 3 and 4. The Bristol Bolingbroke of No. 8 Squadron deployed with bomb shackles designed and made by maintainers at No. 3 Repair Depot in Vancouver; however, the bombs for which they were designed were not available in Alaska. Thus, No. 3 Repair Depot made new ones that reached the squadron on June 8.¹²³

At first, living conditions at the various bases consisted of tents and poor food availability; however, this improved for all of the detachments and main bases. At the Nome, Alaska, detachment of No. 8 Squadron, the new accommodations were three Quonset huts, which the RCAF members erected themselves. With the onset of winter, the detachment began operations from Elmendorf Air Base, Alaska, but had to move again as the conditions became too severe not only for maintenance but also for the aircraft to operate.¹²⁴

While these theatres and operations in Canada did present challenges and were the backbone of the defence of Canada and the preparation of aircrew for work at home and overseas, the enemy threat was miniscule compared to the many theatres in which RCAF personnel served overseas. Yet, there was still opportunity for bravery. One instance of dedication and heroism provides an example of what many airmen and airwomen would have done if presented the opportunity. FS Floyd Lummis, who enlisted in May 1938, was awarded a George Medal for his actions at Station Trenton in the early part of the war:

On December 22nd, 1939, Flight Sergeant Lummis was engaged in draining gasoline from an aircraft in a hangar at Central Flying School, Trenton. As a result of an electric light breaking in the container, the gasoline was ignited. Sergeant Lummis seized the flaming gasoline container and after two attempts, succeeded in rescuing it from the hangar. In doing so, he showed a total disregard for his personal safety, and great courage, as he was himself a mass of flames by this time. His bravery and devotion to duty, which rendered him unfit for duty for some months, was undoubtedly responsible for saving considerable valuable and essential equipment from destruction by fire.¹²⁵

OPERATIONS OVERSEAS

In 1941, ever-increasing numbers of Canadian airmen began to arrive in the UK (noted in Table 6). Rather than being allocated to some of the newly formed RCAF squadrons, they were considered to be part of a general pool of trades for distribution wherever they were most needed, with the result that the majority ended up in RAF squadrons. This created problems, such as the fact that RCAF Overseas HQ did not know where they were or what was happening to them and, of perhaps greater significance, that they were being treated by many RAF senior NCOs as “colonials” and inferiors. RAF officers and senior NCOs also considered the RCAF’s officer-man relationship to be too relaxed with not enough discipline. Perhaps worst of all, these RCAF airmen felt ignored by their own service and their own country.¹²⁶

Date	Aircrew	Ground Crew	Women’s Division*	Total
30 Sep 41	~4,500	~2,300	0	6,829
31 Mar 42	~9,200	7,482	0	16,623
25 Sep 42	10,360	10,038	42	20,440
26 Mar 43	14,997	16,699	123	31,819
30 Sep 43	19,646	22,508	546	42,700
31 Mar 44	22,728	26,054	1,040	49,822
25 Sep 44	28,215	31,510	1,364	61,089
31 Mar 45	22,246	34,256	1,365	57,867
* Includes officers and airwomen				

Table 6. RCAF personnel overseas

“Canadianization” has mainly been considered in terms of the RCAF’s efforts to have its squadrons staffed by Canadian aircrew; however, there was a second but no less important aspect—that of manning the support trades with Canadians. As new RCAF squadrons were formed in the UK, the ground crew were initially RAF. Even in September 1944, when 437 Squadron was formed, the ground crew were initially all RAF. The first draft of 23 RCAF ground crew arrived on September 27. On October 25, 116 airmen were posted in, followed by another 116 two days later. All were recent arrivals from Canada.¹²⁷ Initially, the RCAF had to fight, in part because of its own initial shortcomings, to have the airmen under its control and allocated to Canadian squadrons, but as noted with 437 Squadron, a smooth procedure was eventually implemented and, by 1944, the

Canadian SEs were over 95 per cent Canadian.¹²⁸ Still, many other RCAF ground crew served in RAF squadrons, as there were more Canadian airmen who were overseas than could be employed in RCAF squadrons.

However, before they faced the threat of RAF and RCAF bureaucracy overseas, Canadian airmen had to first face a far more dangerous threat—U-boats. The merchant ships in which RCAF members crossed the Atlantic had to run the gauntlet of these U-boats intent on sinking as much Allied shipping as possible. Until mid-1944, the U-boats were a considerable threat. While at least 37 officers died as the result of such sinkings, no airmen have been identified as being killed in merchant vessel sinkings. However, closer to home, 16 RCAF airmen, and one from the RAF, were killed when the *SS Caribou* was torpedoed in October 1942 while crossing to Newfoundland.¹²⁹

Fighter Squadrons

For a large part of the period leading up to D-Day, June 6, 1944, the Canadian fighter squadrons conducted regular raids against German targets in northern France, some protecting medium bombers while others conducted ground attacks against targets of opportunity. The ground crew operated outdoors, no matter how cold or wet it was, as hangar space was very limited. While there were a few blister hangars, they were a base resource to be used by all of the squadrons on a base. Even in 1942, there were periods when the pace of operations was quite hectic, with aircraft conducting three and sometimes more sweeps over the English Channel a day. On a return from a sweep, the ground crew would check an aircraft for battle damage and conduct any necessary repairs. The aircraft would be refuelled, re-armed and inspected, with quick turnaround times expected. These operations would be good practice for what was to come.

D-Day changed the nature of their operations and provided an increased operational tempo for the ground crew. The fighter-bomber squadrons of the 2nd Tactical Air Force were conducting many more ground interdiction missions, culminating in the Battle of Falaise Gap in mid-August 1944, when each squadron was flying 50 sorties or more a day in the effort to destroy escaping German Army equipment and personnel.¹³⁰ It got to the point where the armourers were simply loading the cannons and leaving the bombs on the ground, as the pilots wanted to turn around as quickly as possible so they could destroy more targets.¹³¹

That ground crew were working in conditions of unimproved airfields often covered with mud or water was noted with appreciation by many of the squadron war diarists for the operational squadrons. In February, these conditions were quite prevalent as the fighters supported the 1st Canadian Army during Operation (Op) VERITABLE, with the squadrons again flying 50 or more sorties a day. This was followed by Op CLARION.¹³² One threat that the ground crew faced as the squadrons and SEs moved forward was that of booby traps left behind by the fleeing Germans at the airfields that the Allied forces occupied as they advanced. Thankfully, nobody was killed.

Recognition of the abilities of RCAF maintainers in the fighter world was given sparingly in comparison to that of the fighter pilots and, in some cases, radar officers who met the enemy. Yet, there are some examples of how highly regarded they were and what they were able to achieve. The citation for FS Erskin Bradley's MiD states: "Flight Sergeant Bradley has been with No. 409 Squadron SE for two and a half years. During this time he has proved himself an outstanding technician, and has shown marked ability in training his personnel. It is believed that he has the highest record of serviceability of VHF Radio Telephony in No. 85 Group and previous to that in the Night Fighter Squadrons of Air Defence Great Britain."¹³³ Such efforts were not the exceptions.

There were also examples of heroism. Leading Aircraftman (LAC) Michael Ewasyshyn received an MiD for his prompt action in rescuing a pilot on March 3, 1944, whose clothes caught on fire when his aircraft crashed on takeoff. The original citation noted that he had saved for his country the services of a very able pilot. Again, this was not an isolated incident.¹³⁴ The ground crew literally threw themselves into harm's way to rescue aircrew. If nothing else, it demonstrated the link between those who flew and those who stayed on the ground.

While the ground crew at fighter squadrons had been close to the front lines when the Luftwaffe was conducting raids on airfields during the Battle of Britain and then smaller raids later, it was really only when the fighter squadrons moved to the continent after D-Day that they were at greater risk. In the most deadly attack, on October 12, 1944, five members of 6416 SE were killed when the Luftwaffe bombed the airfield at Grave, Netherlands. Three maintainers died on January 1, 1945, one from 6403 SE and two from 6414 SE during Op *Bodenplatte*, when the Luftwaffe launched a surprise raid on numerous Allied airfields on the continent. Other maintainers died during unfortunate accidents, such as servicing an aircraft when another aircraft crashed into it.

Bomber Command

As with the fighter squadrons, the ground crew of the RCAF's bomber squadrons did all their work outdoors, but they had more aircraft to repair for battle damage, two and later four times the number of engines to service and many more bombs to load. At first, the Canadian bomber squadrons had to operate obsolescent bombers that were in service at the time—Handley Page Hampden, Armstrong Whitworth Whitley and Vickers Wellington. These were in many ways similar to the types of aircraft on which RCAF senior maintainers had worked in Canada. However, as the RCAF transitioned to the Halifax and the Lancaster, there were growing pains, something which all Bomber Command squadrons experienced.

In May 1943, three RCAF bomber squadrons (Nos. 420, 424 and 425) formed as No. 331 Wing were sent to North Africa to support Allied troops in that theatre. On arrival in Tunisia, the Wing occupied two unprepared sites, having to set up everything required for two operational airfields



Aircrew and ground crew of 428 Squadron with Canadian built Avro Lancaster B.X KB760, NA-P “P for Peter” in 1944. The squadron was about to have its 2,000th sortie, an occasion that both aircrew and ground crew would celebrate.

from scratch, including roads, servicing areas, latrines and showers. This was done in temperatures approaching 53 degrees Celsius. When the rainy season did start, it did not do much to make living in tents any easier. The living conditions made diarrhoea, dysentery and malaria common, while the food provided was singular—bully beef—until collections were taken and food bought on the local market. Austerity was the name of the game. Sgt E. K. McLeod was recommended for a BEM for keeping the motor transport running by scrounging parts from derelict American, British and even Axis vehicles and making them fit the vehicles under his care. His BEM recommendation also noted the lack of drivers in his section, which caused everyone to be pushed to the limit (which they happily accepted), a testament to McLeod’s leadership.¹³⁵ Only the maintainers supporting fighter-bomber operations after D-Day and the transport squadrons in Burma (now Myanmar) faced similar situations.

Back in England, 6 Group was formed on 1 January 1943. Through much of that year it had the highest loss rate of any bomber group, which several studies attributed to a number of factors: poor communications on the part of Bomber Command in passing down critical survivability information; the inexperience of 6 Group’s staff and of the ground crew on the newer heavy bombers with which the group was being equipped; and the influx of ground crew from Canada who had no experience on these large, operational aircraft. The studies all concluded that the ground-crew factors would sort themselves out, which they did as early as January 1944.¹³⁶ Thereafter, 6 Group had one of, if not *the* lowest loss rate of any bomber group. No less an authority than John Fauquier advised RCAF Overseas HQ that “Canadian ground crew have been showing themselves to be unquestionably the best in the world.”¹³⁷

Two other prime considerations for the lower quality of maintenance at 6 Group are the facts of the remusters and the departure of 331 Wing to North Africa. The RCAF wanted only the highest-quality personnel for its aircrew selections, which would have meant choosing only the best from among the remusters candidates in Canada and England. With more than 9,000 remusters in 1943 alone, this drain of high-quality maintainers inevitably meant a reduction in the quality of maintenance. At the same time, the maintainers selected to serve with 331 Wing were hand-picked, removing more of the best. In effect, the RCAF created the factors that meant 6 Group would have maintenance issues.

One thing that should be noted is the level at which leadership was being exercised. Corporal Leonard Brame received an MiD not only for being in charge of a crew of riggers but also for his abilities and dedication.¹³⁸ In a similar vein, Sergeant Maurice Nichols received an MiD for his efforts in not only clearing a large backlog of unserviceable engines but in also reorganizing the section so that it had a higher output of rebuilt engines than it did previously.¹³⁹ With such dedication, it is hardly surprising that Air Commodore Edwards and W/C Fauquier spoke eloquently of the ground crew.

As with the fighter world, ground crew in 6 Group went to almost superhuman efforts to pull aircrew from wrecks and keep flames from creating greater damage. To note just two examples, in the early hours of June 28, 1944, Sergeant Loranger LaFleche of 9425 SE pulled unexploded ordnance from the wreck of two burning aircraft and assisted in removing two bombs that were quite hot from the fire. Similarly, Corporal Pierce W. Butler was servicing an aircraft when another crashed on top of it while taking off. Corporal Butler attempted to save a fellow corporal in the cockpit, staying until the flames drove him to jump from the cockpit escape hatch. He landed in burning debris and broke both heels. He then crawled through the flaming debris to escape the inferno. For his efforts he was awarded an MiD.¹⁴⁰

Transport Squadrons

In the transport squadrons, ground crew were more likely to get flying time. The three transport squadrons frequently conducted parachute drops of supplies, especially in Burma (now Myanmar). The kickers were mainly ground crew. This was not without its risks, as there were casualties when the Imperial Japanese Army Air Force made an appearance. For instance, on January 12, 1945, the Japanese attacked several 435 Squadron Douglas Dakotas, with two members of the ground crew serving as kickers being killed and one injured.¹⁴¹

In Southeast Asia, climate was the biggest factor or threat—very hot before the monsoon rains and then hot and humid when it was not raining during the four-month monsoon. Both 435 Squadron and 436 Squadron operated from unimproved airstrips. They too employed ingenuity in getting the work done. When 435 Squadron moved to Tulihal, India, in December 1944, the mechanics had to use coins and flashlights to remove the engine cowlings and makeshift tools to work on the engines, as arrangements had not been made to have their tools arrive with them. Both squadrons would suffer similar shortages at various times. This was trying, when each aircraft was normally flying more than 185 hours a month, which was above the rate that was considered “intensive” and meant for short durations only.¹⁴²



Canadian ground crew bomb-up a Lancaster, 1944. The hoist for the 4,000 lb blockbuster bomb has been removed and smaller bombs are being installed. By this time the aircraft would have been refuelled, armourers would have loaded the ammunition belts and checked the machine guns, the instrument makers would have checked all the instruments, the oxygen tanks would have been replaced with full ones and myriad other small tasks completed in preparation for the mission.

Operations in Southeast Asia were associated with the single greatest loss of airmen's lives in one event. It occurred on September 24, 1944, when a Dakota, en route to Karachi, in what is now Pakistan, got lost in bad weather and was shot down over Germany. The crew of three, plus seventeen RCAF airmen and three RAF airmen, were all killed. The airmen were presumably on their way to provide support to the two RCAF Dakota squadrons in Southeast Asia.

CONCLUSION

The RCAF entered the Second World War with a solid cadre of airmen. Their leadership and resourcefulness helped the RCAF develop into the much larger fighting and training force that it became. These airmen also passed along their knowledge to the next generation. As a result, as the RCAF expanded, so too did the level of excellence in maintaining the aircraft as well as providing support to the aircrews and ground crews. While only a few of the many thousands who served were given official recognition, the efficiency and effectiveness of the RCAF stand as tributes to the service of all airmen and airwomen. Edwards and Fauquier's belief in the outstanding qualities of RCAF ground crews was borne out by the achievements of airmen and airwomen in Canada and overseas.

There were also ample leadership skills among the airmen. Whether it was reorganizing sections to improve efficiency, leading through example or caring for their fellow ground crew and aircrew, airmen were able to keep the airplanes flying and do so in a more effective manner. There were also many examples of inventiveness. The supply system was not always able to provide what was needed on time, so maintainers took the initiative to make, adjust or scrounge what they needed to keep the airplanes flying.

The response to the voluntary remusters to aircrew demonstrated the willingness of the airmen to serve the RCAF and the war effort. Rather than maintain their relatively safe jobs supporting operations, they put themselves in harm's way flying in the operations. The RCAF's ground crews were not without threat, although they may not have been in harm's way in the same way as the aircrew were. German and Japanese attacks by air and sea put life and limb at risk, as did transportation accidents and wrecks on the airfield.

The introduction of women into the RCAF was certainly a game changer for equality in Canada. Women demonstrated that they could be just as good as any man. It would take a little longer before the Canadian government, the Canadian Army (CA) and the Royal Canadian Navy (RCN) would accept the value of what the women had demonstrated during the war. While French Canadians did not get the predominantly French-speaking unit that the RCAF sought, their participation in the RCAF likely helped dispel some of the myths about the lack of desire to serve that had originated from bigotry during and after the First World War. Likewise, the visible minorities who served led the way for a much greater acceptance after the war.

As the RCAF transformed itself from a wartime to a peacetime footing and then to one of being prepared for hostilities during the Cold War, the airmen of the RCAF who transitioned with the Air Force provided a solid backbone. The RCAF may have lost men with experience after the war, but those who remained were equal to the task of maintaining a high level of excellence.

CHAPTER 4: FROM THE LARGEST SERVICE TO NOTHING (FROM HERO TO ZERO)

The period 1946 to 1975 was one of incredible change for the RCAF, which emerged from the Second World War with an effective strength of approximately 12,500 personnel. Commencing in 1948, driven by rising tensions between Western nations and the Soviet Block, the CF grew to more than 55,000 Regular Force members, making it—for a short period—the largest of the nation’s military services. The period also began with austerity in the expectation of a lessened requirement for the military after the war, but became one of more generous spending on the military; then, in the late 1950s, began a period of slow cutbacks and rationalization. However, on February 1, 1968, the RCAF disappeared as an organization, as unification¹⁴³ either created separate commands from RCAF formations or removed them to either the Army, Navy or other new commands.¹⁴⁴

This was a period with one focus—the Cold War. In the realm of air defence, this required the formation of No. 1 Air Division in Europe and new RCAF stations in Canada as well as the construction of radar stations across Canada’s North. Maritime aircraft patrolled for Soviet submarines while transport squadrons provided support to all three services, not only in logistical roles but also in training for combat in Canada and Europe. A new training plan was developed in Canada for North Atlantic Treaty Organization (NATO) aircrew, which rejuvenated many wartime training facilities.

Many older roles remained, such as the mapping of Canada, which brought with it the installation of long-range navigation (LORAN) sites. Canada’s North took on a new importance with the possibility of a Soviet bomber threat coming across the North Pole. The RCAF took on a new role developing many of the sites that would provide warnings, weather updates and even airfields for use in the event of war. The rise of trans-Atlantic flights also brought the need for search and rescue, while international organizations created new roles like peacekeeping. Larger, more capable transport aircraft also meant that the RCAF could provide much greater support to domestic operations (e.g., flooding situations) and could send support to international ones.¹⁴⁵

The post-war period through to the mid-1970s was one of countering threats and developing capabilities. With so much going on, this chapter provides only an overview of how the airmen and airwomen of the RCAF were involved.

REGULAR FORCE

The Cold War brought increased challenges to the Regular Force. Starting in October 1951, the RCAF built up its squadrons in Europe to meet NATO commitments and for the threat posed by the Cold War and the Warsaw Pact. First equipped with the North American F-86 Sabre, a daytime fighter, No. 1 Air Division would, by the mid-1950s, include the Avro CF-100 Canuck, arguably the best all-weather fighter of the period. In Canada, the Regular Force would begin to build up its air defence capability both with squadrons and radar stations. The increasing Soviet air threat led to the formation of the North American Air Defence Command (NORAD) on September 12, 1957. With NATO and NORAD commitments, the aircraft had to be at a high operational level; this included regular exercises and inspections. The support for the aircraft and the aircrew was therefore of primary importance as well.

One of the more interesting points about the Regular Force is the rapidity of its expansion (as noted in Table 7), not just with squadrons but also transport, helicopter airlift as well as search and rescue units. The increase in personnel was reflective of the increase in the RCAF's fleet of aircraft, as different aircraft types were purchased to provide new capabilities. New squadrons meant maintenance supervisors became much more important, as they guided the development of new maintainers to ensure they did their jobs properly. To provide for the necessary maintainers, administrative and logistical support, air traffic control as well as the myriad tasks required of an organization of this size, the schools had to be expanded. This placed an increasing burden on the requirement for experienced instructors. The problem with a rapid expansion was that there was a huge potential for accidents to happen and administrative problems to arise, but the wartime experience of its personnel served to inculcate the new recruits into a tradition that kept the RCAF as one of the premier air forces of the post-war era.

Year	Regular Force		Auxiliary
	Squadrons	Units	Squadrons
1946	5	1	7
1947	7	5	8
1948	7	4	10
1949	9	4	10
1950	9	4	11
1951	14	4	12
1952	18	4	12

Year	Regular Force		Auxiliary
	Squadrons	Units	Squadrons
1953	23	5	12
1954	29	7	12
1955	29	7	12
1956	29	8	11
1957	29	8	11
1958	29	6	11
1959	29	5	11
1960	29	4	11
1961	29	4	11
1962	26	4	11
1963	26	4	11
1964	25	1	6
1965	25	1	6
1966	25	1	6
1967	25	1	6

Table 7. Squadrons and units of the RCAF expansion

Starting in the October 1950 issue of the *Roundel*, the Air Force highlighted suggestions from its members that provided improvements ranging from dress issues to improved maintenance procedures and regulations as well as from new tools to safety equipment. Even the ever-present government forms, the bane of military paperwork, were improved to make them easier to use and less prone to errors. While most of the suggestions were made by sergeants and flight sergeants in the first two years, even leading aircraftmen provided input,¹⁴⁶ as they and corporals would be frequently recognized in years thereafter for their suggestions.

In the realm of aviation safety, such ready examples were not so prevalent in the 1950s. The RCAF's Accident Investigation Branch's magazine, *Flight Comment*,¹⁴⁷ in the "Good Show" section, initially highlighted the actions of pilots in handling dangerous situations; however, by the 1960s, it was highlighting outstanding maintenance work. There are many examples of leading aircraftmen going above and beyond what would be expected of that rank and experience to track down problems that could have been easily overlooked.

The post-war RCAF also faced another factor that it had not dealt with in pre-war and wartime service: the expansion of the RCAF and the building of new bases and stations meant that consideration had to be given to providing services for dependants in these new, often isolated locations. Permanent married quarters (PMQ), schools, stores and community facilities all had to be built. There was an

almost constant shortage of military housing throughout this period, so much so that even into the 1970s, the military had to build new PMQ at bases and radar stations to meet the demand.¹⁴⁸

When the RCAF began to build up its forces in Europe, one of the issues was whether to move families with the members. The RCAF's concern was what to do with them if the threat of war increased or actually did occur. Considerable thought went into evacuation planning for dependants.¹⁴⁹ Schooling in Europe also was an issue, solved by bringing qualified teachers from Canada to teach dependant children.¹⁵⁰

Isolation, especially at the many radar stations of the Mid-Canada Line, meant that the military community had to provide greater entertainment and recreation for itself; thus, activities such as hobby clubs, winter carnivals, sports days as well as intra- and inter-base sports became very important. While officers may have been nominally in charge of these activities and events, it was the "other ranks" that provided the backbone for them. Spouses also increased in importance as they became part of the military package.

NCMs were even more involved in flying operations than before the start of the Cold War. Mapping and reconnaissance missions in the Arctic often flew with a mechanic on board in case an engine failed. They were needed often and were able to fix problems on the spot, allowing the missions to continue. The RCAF Service Police developed aircraft security officers for VIP and



No. 6 Operational Training Unit baseball team, Comox, British Columbia, 30 January 1945.

other significant missions. Search-and-rescue squadrons and units would take NCMs into the air as extra eyes during searches. Some of these new trades and qualifications were predominantly or entirely staffed by NCMs. A flight-steward trade was developed when trans-Atlantic flights began to be common, while loadmasters became necessary when the cargo-carrying capacity of the RCAF's transports necessitated a specialty trade in packing, loading and securing cargo and ensuring it conformed to an aircraft's centre of gravity. These missions were not without casualties. Loadmasters, for example, lost NCMs in flying accidents and operations.

The build-up of the RCAF in the 1950s brought with it issues beyond simply deciding upon the type of aircraft to purchase and how many squadrons, schools and stations were required. The support of RCAF personnel, such as bringing dependants to Europe and planning for isolation, cost time and money and required continual planning as well as consideration. But implementing these considerations made for a happier and, thus, more effective group of airmen and airwomen.

AUXILIARY

The role of the RCAF Auxiliary was to augment the Regular Force in times of crisis, but it operated almost as a separate air force. At its peak, the Auxiliary had 12 flying squadrons, 18 medical units, 14 aircraft control and warning (AC&W) squadrons (radar), 8 technical training units, 4 intelligence units, 1 radar and communications unit as well as a number of HQs to coordinate these units. The operational units trained regularly with their Regular Force counterparts; the flying squadrons were the most active up to the mid-1950s and the AC&W squadrons from 1954 onwards. Because of issues with maintenance support for aircraft, the flying squadrons went from being among the RCAF's front-line fighters in Air Defence Command to being given new roles in 1958 in transport and national survival. In 1964, there were major cuts, with five flying squadrons being disbanded, so that there were only six remaining. As for the AC&W squadrons, they were disbanded in 1961, when the Semi-Automatic Ground Environment (SAGE) system was introduced to support the radar system surveilling North America.¹⁵¹

The biggest problem for the Auxiliary flying squadrons was that they could not recruit and retain enough maintainers. Given that the RCAF wished to provide the squadrons with Avro CF-100 aircraft in the early 1950s and provided six with Canadair Sabre Mk V aircraft in the 1956–58 period, the level of maintenance required was high and quite technical. It was the Regular Force maintainers who kept the squadrons flying. Despite the efforts of the RCAF leadership to maintain a front-line role for the squadrons, no solution worked and the squadrons were given a new role in 1958 that required less technological skill.¹⁵²

In contrast, those who trained at the AC&W squadrons proved to be quite effective in their roles of surveilling the skies when they trained or exercised with their Regular Force counterparts.

In some cases they even took over the role entirely for brief periods of time at some Regular Force radar squadrons. With the exception of the technical training units, the other Auxiliary units were disbanded by 1964, as they were simply not required in their role of augmenting the RCAF.

PERSONNEL

During the Second World War, all promotions were temporary. When the RCAF began restructuring after the war, those airmen who wished to remain could apply to do so, but there were several implications. The many officers, warrant officers and sergeants reverted to their pre-war ranks. However, as the RCAF began to expand in 1950 and accept new recruits, these airmen began to climb back up in rank, often at a very fast pace. Another issue was that many airmen had remustered from ground crew to aircrew during the war. At the end of the war, the RCAF found itself with more pilots than were needed. Rather than simply discharge these remusters, they allowed them to revert to their former trades, thereby retaining men who had ample experience and had served the country well during the war.¹⁵³

After the war, the RCAF's initial terms of service were for periods of three or five years, after which any re-engagement was for five years.¹⁵⁴ However, when women were admitted into the service, the terms were changed. Initial terms of service were still three or five years but, thereafter, re-engagement was based on gender and previous engagement length. An airwoman on completion of any term of service could choose for a re-engagement of two or five years; an airman completing a three-year engagement could choose between a two- or five-year re-engagement, while an airman who had completed five years could only serve again on a five-year term. By 1964, the terms had changed again for airmen, with all re-engagements being for five years. Things were much more straightforward in the Auxiliary, where it was continually a three-year term for both genders for initial and subsequent service.¹⁵⁵

On entering service, all airmen and airwomen were normally given the rank of aircraftman/aircraftwoman, 2nd class (AC2/AW2). Promotion to AC1 was based on six months' service since enlistment and satisfactory proficiency in their duties. Promotion to LAC / leading aircraftwoman (LAW) was based on twelve months' service as an AC1/AW1 and proficiency. It was the same for the Auxiliary, except that an individual needed to have 25 days and 50 days of paid service in the two periods.¹⁵⁶ Promotion thereafter would be based on trade progression, which involved a written trade exam and a practical assessment.¹⁵⁷

Throughout most of the period prior to unification, airmen and airwomen constituted about 80 per cent of the RCAF's strength. Table 8 highlights the size and make-up of the service.

Year (31 March)	Regular Force			Auxiliary		
	Officers	Airmen	Airwomen	Officers	Airmen	Airwomen
1947	2,140	10,487				
1948	2,076	9,941				
1949	2,701	11,851				
1950	3,143	14,131				
1951	4,357	18,002	(May)			(Sep)
1952	6,820	23,569	2,222	1,325	3,149	336
1953	7,829	29,321	3,031	1,647	3,615	612
1954	7,948	34,306	2,990	1,807	3,046	587
1955	8,491	37,758	2,719	1,908	2,830	649
1956	9,080	37,704	2,604	1,937	2,958	627
1957	9,427	38,150	2,450	2,007	2,677	549
1958	9,534	38,959	2,462	1,848	2,423	479
1959	9,549	38,971	2,421	1,618	2,142	354
1960	9,458	38,954	2,530	1,455	2,029	308
1961	9,367	38,580	2,624	1,180	1,722	228
1962	9,471	40,392	2,502	914	1,257	227
1963	9,337	40,353	1,678	830	1,156	237
1964	9,589	40,062	999	588	925	99
1965	8,656	38,167	577	295	472	41
1966	8,420	35,568	408	291	507	41
1967	8,180	35,395	504	279	528	37

Table 8. Strength of the RCAF¹⁵⁸

Throughout this period, the RCAF was an organization that operated in English. There appeared to be little interest in having a bilingual service, as in 1948, when the Army proposed having English officers learn French, the RCAF and RCN decided to consult their staffs. However, the Army ultimately opted to provide English-language training to its unilingual French personnel, and the RCAF continued to be English-oriented, partly because of the belief that by international convention, air operations had to be in English.¹⁵⁹ Of course, this did not take into account that most ground crew and support trades would not be communicating over the air.

In 1951, only 16.3 per cent of airmen spoke French.¹⁶⁰ The RCAF continued its trend started during the war of providing its French personnel with English-language training, through a School of English that first operated at Station Trenton but moved to Station St. Jean, Quebec, in April 1951. In the Auxiliary, French-speaking instructors were brought into training units to assist French speakers who had trouble with the lessons in English.¹⁶¹ Research conducted in the mid-1950s demonstrated that the high failure rate of French-speaking airmen was because of being marginalized during their trade courses; they were expected to speak only English as a means of better integrating and, when they did not, many English speakers shunned them.¹⁶² French-speaking airmen recruits were thus at a disadvantage on three levels: 1) converting from civilian to military, 2) learning to speak English and 3) being marginalized because they would not or could not always speak English outside of the classroom.

However, by the mid-1960s, a movement was under way politically to make the services bilingual. The Royal Commission on Bilingualism and Biculturalism made far-reaching recommendations that included creating French language units (FLUs) and training in either language. While there were excuses among some English-speaking senior officers, others supported the idea, including the Chief of the Defence Staff, General Jean-Victor Allard. On August 15, 1968, 433 Squadron was reformed as 433e Escadrille tactique de combat, likely the first Air Force-related FLU, while in June 1969, the Airmens Selection Unit in St. Jean was rerolled and renamed as l'École technique des Forces canadiennes, providing technical training to French-speaking servicemen.¹⁶³

As the RCAF entered the 1950s, the regulations allowing the enlistment of visible minorities had been changed, as had the attitude of the recruiting officers as well. Asian and Black Canadians were able to enlist in all trades and occupations. If there was one issue that blotted the record of the RCAF, it was that for the first part of the 1950s, the organization still did some reviewing of the personnel files of visible minorities to ensure that they would fit into the RCAF. The RCAF recognized itself to be a "White" culture and wished to ensure that any visible minorities who wanted to enlist were capable of functioning in this environment.¹⁶⁴ However, by the latter part of the decade it appears that this process of RCAF HQ reviewing the personnel files was eliminated and that visible minorities were accepted for who they were as Canadians.

After the Second World War, the RCAF wanted to retain women but only in the Auxiliary; however, as the Army and the RCN did not want any women, the government decided that all women in service should be released. But, with the expansion of the RCAF, there was a desire within the air force to enlist women again, and this gained the approval of the government in March 1951. The other two services followed later, with establishments for women set at 90 in the Army (Reserve), 400 in the RCN and 4,000 in the RCAF.¹⁶⁵ Recruiting began in May 1951, with 28 trades being open to women.¹⁶⁶ The peak strength of women in the RCAF Regular Force reached 3,133 in July 1953, and then gradually reduced. Among the issues in retaining women was that they felt they were not being gainfully employed, were not kept busy enough and were being treated more gently than their male counterparts, when what they wanted was to be treated equally.¹⁶⁷



In the United Kingdom, members of the Women's Division served at RCAF Headquarters, 6 (RCAF) Group Headquarters and the Base Headquarters within 6 (RCAF) Group. It was not uncommon for them to be photographed alongside the bombers of the Group, often with the aircrew or ground crew.

By 1963, recruiting of women for the RCAF was halted, by which time there were only about 1,700 serving in 13 trades, none of which directly related to aircraft operations.¹⁶⁸ In 1966, the Defence Council took the step of decreeing that women would be retained in military service with recruiting beginning again in January 1967. In 1971, two of the most severe restrictions on women's enlistment were removed—that married women could not enlist, and if they married while in the service, they had to resign.¹⁶⁹ At the same time, trades began to be opened up to women, including by 1971, aero-engine technician, airframe technician, metals technician, air traffic control assistant and military police.¹⁷⁰ By the end of 1975, 63 of 99 trades in the CF were open to women, although not all had recruited women into them. Some of the additional air force trades were radar technician, air traffic controller, air defence technician, avionics technician and safety system technician.¹⁷¹

One major event was the deployment of women to UNEF II (Op DANACA), a peacekeeping mission in 1975. Most of the 364 women who served in UNEF II were in support trades such as administrative clerk, financial clerk and supply technician; however, one was a metal technician and, while by 1975 there was no Air Force as an organization, there were a number of women from air bases and units, suggesting that this was an Air Force contribution.¹⁷²

TRADES AND TRAINING

At the end of the war, the RCAF made adjustments to its trade structure so that by 1949, there were 84 trades. Eleven trades were directly related to the servicing of aircraft; however, there were also medical trades, transport, clerical, building trades, mess trades, marine trades as well as communications and radar.¹⁷³ Technology changed rapidly during the war and would continue to do so in the post-war period. As early as 1949, the RCAF was examining whether the trade structure needed to be changed. In the end, the biggest change was that air engine (AE) mechanics and airframe (AF) technicians were to become more specialized on the engines and aircraft on which they normally worked.¹⁷⁴ With the large number of aircraft entering RCAF service, this change made sense because it allowed specialization. Some changes due to technology were not so good. When the SAGE system was introduced into the NORAD radar station system, it reduced the need to fully man all of the radar sites. As a result, all of the Auxiliary's AC&W squadrons were disbanded by December 1961; its personnel, many of whom were women, were released.

Throughout the period to integration, the RCAF was creating and disbanding schools for trades training. The main ones were No. 2 Technical Training School (2 TTS) at Camp Borden, where the aircraft maintenance trades were taught, and No. 1 Technical Training School (1 TTS) at Aylmer, Ontario, which taught most of the other trades. The pace of training was such that by 1958, 2 TTS was overwhelmed, with the solution being to disband the school and allocate its trades training to three other schools, thus better using Camp Borden's resources.¹⁷⁵

Following on from the 1950 decision to specialize the AE and AF trades, mobile training centres were created to provide the specialized training on several types of aircraft. These became Field Technical Training Units (FTTUs), effective August 1, 1953, at eight locations.¹⁷⁶ There were initially eight FTTUs that provided training on the Sabre, Canadair T-33, CF-100 and Fairchild C-119. When the Canadair Argus and Canadair CF-104 entered service, two additional FTTUs were formed while the initial FTTUs changed their training as other aircraft entered service. Some even began to become the training centres for their respective commands and even other commands operating the same aircraft.¹⁷⁷ As bases closed in the 1960s, some FTTUs were disbanded while others disappeared with integration. For instance, No. 4 FTTU was incorporated into the new 426 Transport Training Squadron.¹⁷⁸ Others became lodger units at newly formed bases such as 3 FTTU, which became part of Canadian Forces Base (CFB) Bagotville.

The Auxiliary also had its own technical training units that provided the trades training for Auxiliary flying squadrons in aircraft maintenance and in general administrative trades. There were eight of them, collocated with the Auxiliary squadrons. While there were individuals who served for longer periods with the Auxiliary flying squadrons after taking their training at the technical training units and some who enlisted in the Regular Force, the biggest problem the Auxiliary flying squadrons faced was that most ground crew did not remain with the squadron long enough to become effective tradesmen, thereby reducing the effectiveness of the squadrons.¹⁷⁹

OPERATIONS

As the 1950s began, the RCAF was planning for several major contingencies. There was the real possibility of air attacks against North America and Europe; potential for a Soviet lodgement in North America as well as the preparation for defence against the ever-increasing Soviet submarine threat. However, in 1950, the nature of the threats became more real when the Korean War started and there were fears that this was only a diversion to what would be the real conflict—a Soviet invasion of Western Europe.

The RCAF's main effort in the Korean War was the employment of 426 Squadron flying personnel and supplies to Japan in Op HAWK. Beginning in July 1950 and continuing to May 25, 1954, after more than 34,000 flying hours, more than 13,300 personnel and 7,000,000 pounds [3,175,000 kg] of freight were airlifted across the Pacific. Maintenance detachments were formed in Alaska as well as Haneda, Japan, and—when the southern route back to Canada was operating—one at Honolulu, Hawaii. Initially, the squadron maintained one flight a day but after February 1951, it was seventeen a month.¹⁸⁰



A C-119 Flying Boxcar at RCAF Detachment Resolute Bay is loaded with cargo for transmission to Isachsen and the Joint Arctic Weather Station there. The air movements personnel were responsible not just for preparing and loading the cargo, but ensuring that everything required was sent to the correct weather station. Additional resupply missions were not normally undertaken.

Over the course of the operation, it was not just the aircrew who rotated through the positions in the squadron and its detachments but also the maintenance personnel. This allowed the RCAF to give a broader range of transport-squadron personnel the experience of a major airlift operation and would stand the RCAF in good stead for events in the near future, including the regular supply of the Air Division as well as operations in Canada's North.

At the same time, the RCAF began forming additional flying squadrons. Some of them were stationed in Europe and equipped with F-86 Sabres as part of the newly established No. 1 Air Division. Other squadrons, equipped primarily with CF-100 Canucks, would remain in Canada on air defence duties. With the constant threat of a Soviet attack, training was conducted on an almost daily basis.¹⁸¹ In Europe, the threat was even closer while Warsaw Pact exercises in Czechoslovakia and East Germany were within minutes of being able to attack the RCAF bases. There was, therefore, a greater sense of urgency in ensuring that aircraft were ready for operations and that all sections of the wings that directly supported operations were at a high state of readiness. "Snowballs," as the wing recalls were known, happened with some frequency to ensure that everyone was ready at a moment's notice to return to their place of work while the highest state of serviceability was the desired goal.

In Canada, air defence was equally important but with a lesser immediacy to the threat, as there was time to prepare for any Soviet air attack over the polar region. Exercises were frequent for both fighter and radar squadrons, while training flights were a daily occurrence to ensure a high state of readiness. In their exercises with the United States Air Force, the RCAF fighter squadrons proved that they had quality pilots and that they also had quality support staff to keep those pilots in the air. Equally important, though, were the fighter-control operators at the radar stations who vectored the CF-100 pilots onto the targets; without the skill of these airmen and airwomen, the CF-100 pilots would not have been able to conduct an effective attack on the "enemy" bomber.¹⁸²

The biggest test of the air defence system came in October 1962. During the Cuban Missile Crisis, the fighter and radar squadrons in Canada were raised to Defence Ready Condition (DEFCON) 3. This meant that CF-100s were constantly flying patrols or were on standby.¹⁸³ For the maintainers and other support staff, this meant extra hours ensuring that the aircrew were ready and serviceability of the aircraft was as close to 100 per cent as possible.

One often-forgotten aspect of air defence is that Canada had nuclear weapons starting in 1964. The nuclear warheads belonged to the Americans and they controlled them on Canadian bases and stations; however, the delivery systems were the RCAF's. The RCAF had 56 Bomarc missiles in two squadrons in Canada, Genie missiles to equip the McDonnell CF-101 Voodoos and 3 types of nuclear weapons for the Canadair CF-104s in Germany. This meant extra protection by the RCAF Service Police for the facilities holding the weapons, while the armourers became proficient through the use of dummy weapons in the loading and downloading of the missiles and bombs for the CF-101s and CF-104s.¹⁸⁴ This proficiency had to be maintained annually or the squadron



Military Police performed the vital task of keeping facilities secure. Here the Military Police staff the checkpoint at the North Portal of the North Bay underground NORAD facility, 1966.

would have lost the ability to handle these weapons. In 1972, the government had nuclear devices for the Boeing Bomarc, and CF-104s returned to the US, while the Genies for the CF-101s were only returned in 1984, ending the Air Force's nuclear capability.

The RCAF started the post-war period with only one long-range patrol aircraft—the Lancaster. It was augmented by the Lockheed Neptune and, in 1958, the Argus. The emerging Soviet submarine threat created the need for ever-improving aircraft, antisubmarine technologies and airborne sensor operators. The combination of the technology developed and installed in the Argus and the quality of the sensor operators made the RCAF possibly the best antisubmarine prosecutors in the world. However, ground crew played a major role in operations, as aircraft had to be kept ready in case a Soviet submarine was detected and had to be kept under surveillance. At the same time, keeping the ageing Lancasters flying required considerable skill.

As with the fighter squadrons, the Cuban Missile Crisis was the biggest challenge faced by the maritime patrol squadrons on the East Coast. Their patrolling continued for over three weeks, during which the training for a wartime footing was put to use, as RCAF Argus were tracking Soviet submarines.¹⁸⁵ Even an ageing Lancaster was put to use to conduct surveillance of the Soviet “fishing” fleet off the coast of Labrador.¹⁸⁶

The most varied operations were in the transport world, where the squadrons provided support to all three services as well as other government departments. There were almost daily sorties across Canada, into the US and, for 426 Squadron, sometimes around the world. Exercises with the Army included transporting the members to the exercise area, then conducting paratroop drops as well as supply drops by parachute. Aircraft were flying up to six missions a day, with some at night, which meant ground crew were busy, even more so due to the lack of personnel.¹⁸⁷ There were also regular supply runs to northern outposts, Ops RESUPPLY and BOXTOP as well as exercises—often on a monthly basis—that kept the maintainers and air movement personnel busy.

These deployed operations often had 100 or more airmen, led by a flight sergeant and could involve a dozen or more aircraft. Their role to keep the aircraft operational often meant long hours, such as for cycling the aircraft through the hangars to ensure they were de-iced when freezing rain hit Churchill, Manitoba.¹⁸⁸ Operations were not just in Canada but also in Europe: Op RHUMBA QUEEN, at the start of 1955, moved No. 1 Fighter Wing from North Luffenham, UK, to Marville, France, with the ground crew being noted for excellence and extra effort.¹⁸⁹ When an unserviceability meant an aircraft could not be flown from its home station, the maintainers went for a trip, often having to change engines or perform other work in harsh conditions, such as cold—often extreme—or rain, or in places where they enjoyed the attentions of mosquitoes and blackflies.¹⁹⁰



Maintenance on a 413 Squadron Catalina. The work had to be done outdoors in the heat and humidity of the Indian Ocean climate.

It was not just the aircraft maintainers who were kept busy, the personnel at the air movements units had to do the loading and securing, which was not always instantly successful because of the nature of the load. Helicopters and bulldozers were among the larger objects that made it into the back of the C-119 Flying Boxcars and Lockheed Hercules.

Nowhere was the effort of transport squadrons better exemplified than with the ramp-up of UNEF II (Op DANACA). After using almost all of its resources to bring home the Canadian Airborne Regiment from the USA on November 9, 1974, Air Transport Command (ATC) began a massive airlift of men and equipment to Cairo. Crews and aircraft were flying around the clock over 28 days, and the strain of this pace began to tell on the aircraft, with repair crews having to deploy even to Cairo. At CFB Lahr alone, the CFB Trenton detachment of technicians fixed 289 major unserviceabilities and completed two engine changes in the 28 days of the airlift. In the end, 1,128 men and 1,360 tonnes of equipment were moved, with crews going over their flying limits and aircraft skipping scheduled inspections. All of them were kept flying by the work of the technicians, air movements, food services and other support personnel.¹⁹¹

PEACEKEEPING

All of these high-paced and detached operations were good preparation for the ground crew of the RCAF in support of United Nations (UN) operations. In fact, of Canada's first 12 missions, the RCAF was involved in 10. The Air Force's participation in peacekeeping started in 1954, when it began to fly the Canadian members of the International Commission on Security and Cooperation into Indochina, resupply them and rotate personnel several times a year.

The first big challenge came in November 1956, when the RCAF launched a massive airlift operation, Op READY LIFT, to transport not only Canadian troops to Egypt but also those of other nations in support of UNEF. Operating out of Italy, the Flying Boxcars used on this operation ranged across parts of Europe to bring UN contingents to Egypt. Originally, supplies and personnel were only expected to be required for 30 days, but, of course, this turned out to be a much longer operation.¹⁹² And shortly thereafter, the RCAF began in-theatre operations in support of UNEF. No. 115 Air Transport Unit (ATU) provided UNEF's sole airlift capability and performed with such effectiveness that in subsequent operations the UN asked Canada for RCAF air support.

While the personnel for Flying Boxcar operations—No. 114 ATU operating from Pisa, Italy—originated primarily from 435 and 436 Squadrons, those for No. 115 ATU came from across the RCAF. The big squadrons—the 400 series—did not provide the personnel; it was the smaller composite and rescue units that did. This mix of personnel from across the RCAF not only performed in an outstanding manner, it also set the precedent for future RCAF operations in which personnel were tasked from across the RCAF rather than from only one wing.

Other missions followed, including the United Nations Operation in the Congo (ONUC) [1960–64], which began with an RCAF airlift of Canadian personnel, and continued with the RCAF providing the air staff for the UN operation. In September 1961, the RCAF's ONUC contribution was expanded to include two Boxcars and support personnel as well as 12 air control technicians to control UN fighter operations. The size of the detachments varied, with only 11 (including 8 airmen) with the United Nations Security Force (UNSF), to more than 50 with the United Nations Yemen Observer Mission (UNYOM) and United Nations India-Pakistan Observer Mission (UNIPOM). In some cases, such as the UNSF and UNYOM, the RCAF constituted the entirety of the Canadian participation (more listed in Table 9).

Mission	Location	Start	End	Type
International Commission on Security and Cooperation (ICSC)	Indochina	10 Aug 54	15 Jun 74	Resupply and ROTO
UN Truce Supervisory Organization (UNTSO)	Middle East	Nil	Nil	Nil
UN Emergency Force (UNEF)	Egypt	6 Nov 56	31 May 67	In-mission air support
UN Observer Group in Lebanon (UNOGIL)	Lebanon	Nil	Nil	Nil
UN Operation in the Congo (ONUC)	Congo	28 Jul 60	30 Jun 64	In-mission air support
UN Security Force (UNSF)	New Guinea	1 Oct 62	30 Apr 63	In-mission air support
UN Yemen Observer Mission (UNYOM)	Yemen	20 Jun 63	4 Sep 64	In-mission air support
UN Forces in Cyprus (UNFICYP)	Cyprus	13 Mar 64	ongoing	Resupply and ROTO
UN Military Observer Group India-Pakistan (UNMOGIP)	India/Pakistan	1 Jul 50–Jun 64	Nov 85 1 Apr 75	Resupply and ROTO In-mission air support
UN India-Pakistan Observer Mission (UNIPOM)	India/Pakistan	26 Sep 65	15 Mar 66	In-mission air support

Table 9. Canadian peacekeeping missions / RCAF participation

All of these early Air Force operations were ad hoc. Aircrew were taken from smaller RCAF units such as small rescue and communications flights, while the ground crew came from across Canada. Administrative support personnel were also few in number, composed mainly of administration and pay clerks. (Exceptions to this were Op HAWK and Op READY LIFT, where the aircrew and ground crew came mostly from the same station.) The first time the mission personnel came together was on arrival in theatre. This did not matter so much when there was time to organize the unit, but was later an issue when the speed of operational readiness declaration was of the essence.

These first missions and even many into the 1980s were staffed on a minimal basis, requiring some personnel to take on tasks for which they had no formal training. Many also operated in the most basic conditions. For instance, the RCAF mission in support of the UNSF in West New Guinea had 11 personnel, including pilots, to operate and support the two de Havilland Otter aircraft. The NCMs consisted of one sergeant, two corporals and five leading aircraftmen, all of various trades. They operated in one of the hottest and most humid climates in the world, and were often outdoors to maintain the aircraft. Because of the poor food being delivered, each NCM lost between four and five kilograms of weight in the first month alone. Operationally, one of the NCMs would fly along as crew on each mission in case there was a need to conduct repairs, which there often was.¹⁹³

Other things that all of these operations had in common were that the airmen supporting the flights worked under very tough conditions and did so without the support they could have expected in Canada. Heat and humidity were issues, as were the many exotic diseases that could be caught. These missions were often at the end of a long supply chain, requiring improvisation when parts were not available. Then there were human-originated threats, such as road accidents and mines. The Caribou operating in UNYOM was struck by bullets, while Buffalo 461 was shot down while flying for UNEF II on August 9, 1974.

Although they possessed fewer human threats, the humanitarian operations in Africa and South America (noted in Table 10) were still hazardous. For the ground crew, these missions were just as hazardous as the peacekeeping missions, with heat, humidity and disease as well as some locations having dangerous fauna (e.g., poisonous snakes and spiders) and others having dust and sandstorms. In Peru, there was the added discomfort of working at high altitude.

Location	Operation Name	Start Date	End Date	Cause
Chile	Nil	26 May 60	12 Jun 60	Earthquake
Zambia	Op NIMBLE	22 Dec 65	30 Apr 66	Oil embargo
Nigeria	Op BLUENOSE	12 Oct 68	15 Dec 68	Famine (war)

Location	Operation Name	Start Date	End Date	Cause
Peru	Nil	6 Jun 70	14 Jul 70	Earthquake
Niger, Nigeria	Op FOODLIFT AFRICA	1 Jul 73	12 Aug 73	Famine (drought)

Table 10. Air force humanitarian airlift operations with detachments

UNIFICATION

Unification became effective on February 1, 1968; the three services amalgamated along functional lines and then disappeared. Five new commands (Air Defence Command, Maritime Command, Mobile Command, Transport Command, Training Command) and one formation (Canadian Forces Europe) operated what used to be RCAF resources.

By the fall of 1971, new green service uniforms had been issued to everyone, and as of December 31 of that year, the old service uniforms were no longer allowed.¹⁹⁴ Even before the disappearance of the RCAF as a service, some of its identity was disappearing. The members of the marine sections, operating the crash boats at RCAF stations across Canada, were replaced in 1966 with members of the RCN. There were even more unlikely bedfellows when the new Training Command was formed, largely from the RCAF's Training Command. For instance, the Aircraft Trade School was reformed, and by including six other RCAF schools and some Army training, it became the Canadian Forces School of Aerospace and Ordnance Engineering.¹⁹⁵

With five different commands operating aircraft that had previously been under one service, there were bound to be problems. For instance, there was a lack of a maintenance policy. When the Boeing CC-137 was introduced in 1970, engine maintenance and avionics were not properly defined, which resulted in personnel not going on required courses and procurement of tools and test equipment being delayed. Even worse were the problems with the de Havilland CC-115 Buffalo phase-in, when the only qualified technicians were scattered between the four bases operating the aircraft.¹⁹⁶

In the discussions that led to the formation of Air Command in 1975, many commentators mentioned issues such as safety (including flight safety), training standards and engineering support, areas in which the airmen and airwomen were central.¹⁹⁷ The Director of Flight Safety had his concerns and noted problems with getting all five commands to use the same safety parameters. Safety affected not just aircrew but ground crew as well. Another issue was that of mutual support. The best example of this was during the deployment of troops for Op DANACA when ATC was overtasked, including its maintenance personnel. With no overarching coordinator of air resources, ATC could gain no support from other commands. Furthermore, the release rates were increasing because personnel were being pushed too hard within ATC and Air Defence Command.¹⁹⁸

As humanitarian and peacekeeping operations were primarily undertaken with transport aircraft, the lack of support to ATC was of considerable concern to air-minded senior officers and generals. Luckily, only one new peacekeeping operation was conducted before the formation of Air Command (as outlined in Table 11). Although UNEF II and United Nations Disengagement Observer Force (UNDOF) were two separate UN missions, Canada treated them as one, giving the same operation name and sharing the resources between the two. Canada again found itself flying in the Sinai from its old base at El Arish and into the Golan Heights of Syria. The personnel on the ground again experienced the joys of hot days in the summer and cold nights in the winter, not to mention the dust storms. While the threat of attack when in the air had always been possible for NCMs while on peacekeeping operations, it became real on August 9, 1975, when Buffalo 461 was brought down by Syrian surface-to-air missiles. Among the nine killed were flight engineer Master Corporal Ron Spencer and Corporal Bruce Springer, the loadmaster.¹⁹⁹

Operation Name	Area	Dates	Mission Type
Op DANACA (UNEF II)	Egypt	10 Nov 73 – 31 Oct 79	In-mission air support
Op DANACA (UNDOF)	Syria	3 Jun 74 – 24 Mar 06 3 Jun 74 – 31 Oct 79	In-mission air support
Note: The dates of 3 Jun 74 – 31 Oct 79 for UNDOF are for the Air Force in-mission support.			

Table 11. Peacekeeping operations between integration and formation of Air Command

CONCLUSION

After the Second World War, the RCAF was an evolving organization. This evolution covered the spectrum from personnel policies to operations. The post-war RCAF was staffed initially by wartime veterans but transitioned into a force that met the new realities of the Cold War as well as a changed Canada and world. The RCAF also went from being the largest of the three services to existing only in disparate formations.

Thus, between 1946 and 1968, the men and women who supported RCAF operations had gone from being part of a cohesive organization to operating under several commands that were in virtual isolation despite what was supposed to be a unified force. They had proven their value in domestic and international operations in preparing for war or supporting peace. The fact that the RCAF was highly regarded not just by its allies but also the UN speaks volumes. This was not only a tribute to the quality of the officers but also to the men and women who served operationally, provided the training and supported the operations.

In this post-war period, the RCAF made a considerable and expensive effort to provide improved facilities for the airmen and airwomen as well as their families. Recognition was given to the fact that improving such facilities made for a happier force. It may also have reflected the outlook of the senior leaders of the time. This was a time when the terms of service allowed the RCAF to have a high turnover rate. Asian Canadians and Black Canadians were welcomed but were expected to adapt to an overwhelmingly White environment. Likewise, French-speaking members had to adapt to an English environment, while women were welcomed initially but were not properly administered.

Operationally, there was a new emphasis on the Arctic, while NATO and NORAD commitments were seen as the front line of defence. Keeping the units supporting NATO and NORAD at their peak effectiveness was a primary objective, and this meant keeping the NCMs at their peak as well. Peacekeeping brought its own challenges, as ad hoc units were created and new situations encountered. Successful teams and operations in these circumstances depended in large part upon the professionalism of the personnel involved.

Perhaps no bigger statement can be found about the importance of NCMs during this period than in the formation of Air Command. Among the factors that helped justify the formation of the command was the lack of coordinated training, support and effective employment of NCMs during emergencies.



In the SAGE “Blue Room” in the NORAD underground complex at CFB North Bay, America and Canadian technicians monitor the airways over North America in 1972.

CHAPTER 5: THE AIR FORCE RESURGENT

On April 1, 1975, Air Command became the newest command in the CF. It was not, however, formed on the basis of fixing existing problems but on the basis of saving money and making the best use of personnel. Air Command's eventual command of all air assets and training was a slow process, with control remaining in Maritime Command and Mobile Command for Air Force assets supporting them. Each of the commands was a force generator, with operational command of domestic and international missions residing with National Defence Headquarters, Deputy Chief of the Defence Staff, J3 and later various organizations effecting this control, such as Canada Command, Canadian Expeditionary Force Command and, now, Canadian Joint Operations Command.

While the new command was busy with human resources and organizational issues, it also had to continue or, in some cases, start the planning for the replacement of the Argus, Labrador, Sea King, Starfighter and Voodoo. The Lockheed CP-140 Aurora and McDonnell Douglas CF-18 were to be purchased; however, before a replacement was delivered for the Sikorsky CH-124 Sea King, the contract was cancelled at significant cost.²⁰⁰ Other major replacement projects were to suffer significant issues since then.

Leading up to the cancellation of the Sea King replacement, an event unfolded that changed the nature of the international power structure. On November 9, 1989, the Berlin Wall was removed as a restriction between the people of East and West Berlin. Over several years, democratic governments emerged in many former Warsaw Pact countries, and in a process that lasted from August to December 1991, the many republics within the Soviet Union seceded and became individual nations. The planned re-equipping of the CF that was started in the 1980s was virtually cancelled as the emphasis was placed on domestic well-being and cutting the national debt. Calls were made in some quarters for a "peace dividend," as the expectation was that, with the Cold War over, military forces were longer required.

The CF was pulled out of Europe and Regular Force personnel were cut back from nearly 90,000 in the early 1990s to nearer 60,000, while some bases were closed in a cost-saving effort. The Air Force was cut by 48 per cent to about 14,500 Regular Force personnel. Air Command was required to restructure its organization to meet the changing budgetary reality and government directives.²⁰¹ Some capabilities were lost, such as the medium-lift capability when the Boeing CH-147 Chinooks

were retired, while others were reduced. In the face of restraint, the operational pace of the Air Force, as well as the CF as a whole, increased considerably as small conflicts broke out globally and only a few appeared ready to find resolution.

The September 11, 2001, attacks on the US as well as the subsequent conflict in Afghanistan and against global terrorism in general were to again change the nature of the Air Force's activities. Almost all capabilities were employed in the campaign against terrorism, as the initial response was known. In the face of this pace of operations in support of Op APOLLO, domestic operations and commitments as well as other contingency operations, it should be no surprise that the Chief of the Air Staff of the time indicated that "the air force is 'beyond the point where even constant dedication is sufficient to sustain the capabilities needed to meet assigned Defence tasks,' [and the Air Force] 'remains fragile due to chronic underfunding and asymmetric cuts to personnel. Our Wings and Squadrons are too hollow to sustain the current tempo of operations.'²⁰² Yet, the men and women of the Air Force did pull the organization through what seemed a dark period.

There was, however, some light on the horizon. Some deficiencies among ageing fleets were corrected as new aircraft and new technologies were purchased. The value of the Air Force in combat operations was noted in the recommendations of the Manley Report, which highlighted the need for a medium-lift capability, bringing the return of the Chinook, and for remotely piloted aircraft, the former reducing the need for soldiers to put themselves in harm's way through ground transport and the latter improving information gathering.²⁰³ Most of Canada's ageing Hercules fleet was replaced by the CC-130J, and the addition of five Boeing CC-177 Globemaster transport aircraft gave the RCAF strategic and tactical airlift capabilities that have been put to good use for Canada and its allies.



Royal Canadian Air Force Traffic Technicians deployed on Operation GLOBE 20-02 move pallets of COVID-19 related humanitarian and medical supplies to a CC-177 Globemaster during maintenance day at Panama Pacifico International Airport in Panama City on July 25, 2020.

RESTRUCTURING WITHIN AIR COMMAND

Since the formation of Air Command, several points related to tradition have been raised. One point to note is that with the formation of Air Command, the new organization brought the former air assets of the CA and the RCN under its command. Today's RCAF thus has become the successor and standard bearer of the traditions of the air components of these two services. The introduction of distinctive environmental uniforms in 1984 also had an effect on Air Force trades. While the traditional air-related trades regained their old uniforms, a few new trades started wearing Air Force blue. At the same time, it became easier to identify those men and women with an Air Force affiliation.

On August 25, 2011, it was announced that the RCAF would return.²⁰⁴ New rank insignia and buttons were introduced in September 2014, and the rank of aviator replaced that of private.²⁰⁵ On the organizational side, Air Command had to consider the means of resolving problems related to the base concept, including command and control; operations and the support gap; and inappropriate roles as a result of downsizing. An initial solution was the abolition of group HQs within Air Command and the establishment of 1 Canadian Air Division as an operational HQ in June 1997.²⁰⁶ At the same time, in response to lessons learned during the first Gulf War and peace-support missions like Op PIVOT as well as from budgetary restraint in 1997, the Air Force formed the Contingency Capability concept; however, as this framework and associated units consisted of only five areas of expertise, the Air Force Support Capability began organizing in 2001. The Air Force Expeditionary Capability Project followed in the early 2010s.²⁰⁷ The scale of deployments in which the air force found itself, coupled with changing technology, fewer personnel and limited budgets required these actions in the 1990s and 2000s. As a result of these changes, new units were formed, such as the airfield engineering squadrons and airfield security squadrons that have been reshaped since, and later more new units such as the mission-support squadrons and air expeditionary squadrons were authorized. All of the changes affected how and how many of the support trades deploy.

In 1987, the Defence White Paper introduced the concept of "Total Force," whereby units in all three services would consist of a combination of Regular Force and Reserve Force personnel. This was further refined in the 1994 White Paper. The once distant relationship between the RCAF Auxiliary, its ground trades and the RCAF was now strengthened. However, even before Total Force was conceived, air force squadrons had used the concept in the form of "twinning" in which Air Reserve squadrons used the equipment of Regular Force units when it was not in use.²⁰⁸

To further integrate the Regular Force and the Reserve, in 1975, the first Air Reserve Augmentation Flight (ARAF) was formed at CFB Moose Jaw, Saskatchewan, providing reservists who could augment the Regular Force units and sections on the base. The concept spread to other Air Force-oriented bases across Canada and even to Canadian Forces Europe in Germany. The ARAFs could recruit and—through the Air Reserve—train new recruits, or accept personnel through component transfers from the Regular Force. Air Reserve tradespersons have now become an integral part of any RCAF operation, supporting deployed operations or backfilling positions at wings in Canada. This ARAF initiative has

also allowed civilians the opportunity to become tradespersons in the Air Force on a part-time basis, although one problem is that not all major centres in Canada have an ARAF nearby. It has also allowed Regular Force personnel to continue to serve after they retire, thus retaining expertise and experience.

The end result is that now there are three “reserve-heavy” Air Reserve squadrons: 402 Squadron supports the Canadian Forces Air Navigation School, while 400 Squadron and 438 Squadron provide tactical helicopter support. At wings and other units, the tradespersons of the Air Reserve work alongside their Regular Force counterparts in what would be the modern equivalent of the considerations the RCAF’s leaders had in the early 1950s.²⁰⁹

Another form of integration was that of women and visible minorities in the air force. While the three services had eliminated enlistment barriers for visible minorities and were employing women by the early 1950s, this did not mean there were no issues. Women were not being properly employed, and along with visible minorities, they were not employed in numbers representative of the Canadian population. In 1986, the government passed the Employment Equity Act; however, the RCMP, the CF as well as several other federal agencies were excluded. This was changed in 1995, when the amended Act received assent.²¹⁰

One result of this was that, whereas in the 1950s, women and visible minorities were expected to fit into the culture of the three services, the employment model was turned on its head so that CF culture made the accommodations. While the CF was given exemptions on achieving the same standards of employment as the Public Service, a report in 2001 indicated that the military had not been able to achieve half of its own goal for women and visible minorities and that women were leaving the military at a rate of up to three times higher than their male counterparts.²¹¹

Prior to the formation of Air Command, not all Air Force trades were open to women. In some cases, a belief that the nature of the work required strength suggested that women were unsuited. However, this was found not to be the case, as evidenced by the opening of the traffic technician trade to women in 1976.²¹² In June 1978, Air Command announced that it was removing all restrictions on the employment of women.²¹³

The far greater challenge to Air Force trades came with the government-mandated cutbacks of the 1990s, which led to the amalgamation of many of the 500-series trades. The specialization that had evolved in the 1950s reverted to one of tradespersons becoming generalists at the lower ranks and more specialized as they progressed. By mid-1995, the military occupation code 500-series trades had gone through a major restructuring, which redefined the roles of numerous occupations. Thirteen of these 500-series trades were amalgamated into three that worked on aircraft—aviation technician, avionics technician and aircraft structure technician.²¹⁴

While women were then able to serve in all Air Force-related trades, another challenge to the number of maintenance trades arose in the late 1990s. With the need to find economies, some

programmes were found to be less expensive when done by civilian companies. For instance, since 2000, basic pilot training has been done through the NATO Flying Training in Canada programme, which provides the aircraft as well as the maintenance for these planes.²¹⁵ Maintenance and, in some cases, logistics have now become part of the contract when purchases are made, such as with the Israeli Aircraft Industry CU170 Heron and the new fixed-wing search-and-rescue aircraft.²¹⁶

OPERATIONS

Through most of the 1970s and into the 1980s, Air Command's operations were aimed at preparing for any possible Warsaw Pact actions against NATO or NORAD members. Hunting for submarines, preparing for the air defence of North America and Europe as well as preparing to transport the CA, these were the primary activities. Ground personnel provided support to 116 ATU, which was operating in support of UNEF and UNDOF. There were many individual humanitarian flights to deliver aid and donated goods to countries around the world, but these did not involve the ground trades on the missions.

The 1990s saw the start of an increased pace of operations that has continued ever since, not only for patrolling Canada's airspace and maritime space during domestic events, but also for conducting operations in support of Canadians during and after natural disasters. The focus of this section is, however, on deployed international operations. Because of the sheer number of humanitarian operations, only international contingency operations are mentioned, as they require Government of Canada authorization and cover a broad spectrum of what the men and women of the Air Force have achieved. As the military provides the visible and physical parts of Canada's commitment to allies, international organizations and other nations, the work of Canada's airmen and airwomen has an important part to play in Canada's foreign policy.

All capabilities of the Air Force have been involved in international operations, which included combat, peace support and humanitarian assistance (outlined in Table 12). Some were large-scale operations, such as Op APOLLO, but even the small ones were significant, such as the air-to-air refuelling capability provided during Ops DETERMINATION and IMPACT.²¹⁷ These operations are almost all of those in which the CF has participated. Even for the ones not on the list, the Air Force provided transportation support in most cases. The table also shows that there was considerable overlap in operations, stretching the Air Force's resources and the work of the NCMs as they supported or participated in these missions.

Another notable point about Air Force operations is that rotations have been based on 60-day deployments since the 1990s. This has allowed reservists to more readily deploy and has also benefitted Regular Force personnel, who can more readily undertake career courses and spend less time away from home, thus improving the quality of their home life.

Mission	Op Area	Dates*	Type
Op FRICTION	Persian Gulf	10 Aug 90 – 16 Apr 91	Combat
Op ASSIST	Northern Iraq	19 Apr – 8 Jun 91	Food lift
Op FLAG	Persian Gulf	22 Apr – 27 Jun 91	Embargo
Op PRESERVE	Ethiopia	Aug – Dec 91	Famine relief
Op MARITIME GUARD	Mediterranean	22 Nov 92 – 15 Jun 93	Embargo
Op AIRBRIDGE	Bosnia	4 Mar 94 – 9 Jan 96	Sarajevo airlift
Op RELIEF	Somalia	18 Aug 92 – 28 Feb 93	Famine relief
Op SUDAN	Sudan	16 Mar – 19 Apr 93	Famine relief
Op SHARPGUARD	Mediterranean	8 Jun 93 – 16 Jun 96	Embargo
Op FORWARD ACTION	Caribbean	18 Oct 93 – 29 Sep 94	Embargo
Op SCOTCH	Rwanda	9 Apr – 1 Oct 94	Humanitarian relief
Op PIVOT	Haiti	Mar 95 – 15 Apr 96	Peacekeeping
Op TRANQUILITY	Persian Gulf	10 Jul – 1 Oct 95	Embargo
Op STANDARD	Haiti	15 Apr 96 – 30 Sep 96	Peacekeeping
Op STABLE	Haiti	1 Oct 96 – 31 Jul 97	Peacekeeping
Op ASSURANCE	Rwanda/Zaire	2 Nov – 31 Dec 96	Humanitarian/DART
Op PALLADIUM	Bosnia	12 Dec 96 – 2 Dec 04	Peacekeeping
Op BISON	Bosnia	19 Mar 97 – 28 Jun 98	Airlift coordination
Op PREVENTION	Persian Gulf	3 Apr – 9 Jul 97	Embargo
Op MIRADOR	Bosnia	14 Aug – 20 Nov 97	Enforce no-fly zone
Op DETERMINATION	Iraq	10 Feb – 16 Jun 98	Refuelling
Op SARNO	Italy	13 May – 21 Jun 98	Mudslide aid
Op ECHO	Bosnia	20 Jun 98 – 22 Mar 99	Enforce no-fly zone
Op MERCATOR	Persian Gulf	1 Aug – 26 Oct 98	Embargo
Op CENTRAL	Honduras	6 Nov – 23 Dec 98	Humanitarian/DART
Op GUARANTOR	Bosnia	11 Dec 98 – 24 Mar 99	Airlift preparation
Op ECHO	Yugoslavia	23 Mar – 20 Jun 99	Combat
Op ECHO	Bosnia	21 Jun 99 – 21 Dec 00	Enforce no-fly zone
Op AUGMENTATION	Persian Gulf	18 Jun – 16 Dec 99	Embargo
Op TOUCAN	East Timor	20 Sep 99 – 23 Feb 00	Airlift
Op REPTILE	Sierra Leone	Canadian dates 6 Nov 99 – 31 Jul 05 Air Force dates 20 May 05 – 15 Jun 05	MAMS
Op ARTISAN	Albania	1 Aug 00 – 14 Nov 01	Airfield repairs
Op AUGMENTATION	Persian Gulf	18 Jan 99 – 14 Sep 01	Embargo
Op APOLLO	Afghanistan / Arabian Gulf	7 Oct 01 – 1 Nov 03	Combat
Op ATHENA	Afghanistan / Arabian Gulf	14 May 03 – 18 Oct 05	Combat

Mission	Op Area	Dates*	Type
Op ALTAIR	Arabian Gulf	31 Oct 03 – 24 Oct 08	Leadership interdiction
Op PRINCIPAL	Haiti	28 Feb – 3 Mar 04	Non-combatant evacuation
Op ARCHER	Afghanistan / Arabian Gulf	7 Oct 04 – 31 Jul 06	Combat
Op LION	Lebanon	14 Jul – 3 Sep 06	Non-combatant evacuation
Op ATHENA	Afghanistan / Arabian Gulf	31 Jul 06 – 26 Apr 11	Combat
Op UNIFY	United States	31 Aug – 14 Sep 08	SAR support
Op SAIPH	Western Indian Ocean	25 Oct 09 – 31 May 12	Anti-piracy
Op HESTIA	Haiti	10 Jan – 1 Apr 10	Humanitarian/DART
Op MOBILE	Mediterranean	25 Feb – 8 Mar 11	Non-combatant evacuation
Op MOBILE	Mediterranean	7 Mar – 31 Mar 11	Embargo
Op MOBILE	Mediterranean	25 Mar – 31 Oct 11	Combat
Op IGNITION	Iceland	28 Mar – 7 May 11	NATO air policing
Op JAGUAR	Jamaica	2 Aug – 15 Nov 11	SAR support
Op IGNITION	Iceland	15 Mar – 15 Apr 13	NATO air policing
Op RENAISSANCE	Philippines	11 Nov – 15 Dec 13	Humanitarian/DART
Op IMPACT	Iraq/Syria	22 Aug 14 – ongoing	Combat
*Dates based on period of CF participation, which in some cases is shorter for the Air Force			

Table 12. Selected operations with deployed air force participation²¹⁸

The Air Force has participated in a large variety of exercises and operations in Canada and abroad. Some were routinely scheduled while others were contingency. Internationally, the Air Force supported a variety of commitments, from NORAD and NATO, to domestic. Many missions were small ones (e.g., dropping off supplies to a foreign nation), while others were much larger and involved all Air Force capabilities.

Something not evident in Table 12 is that all capabilities of the RCAF have been deployed, not just aircraft but also capabilities such as airfield engineers, air movements and communications. Airfield engineers have deployed not only as part of a larger air force deployment, such as Op PIVOT, but also on their own, as with Op TEMPEST, Op SARNO and Op ARTISAN. The mobile air movements sections (MAMS) were also active, providing important support during a period of violence in Op REPTILE in May 2000, during Op BISON and in most relief operations. These contributions were important not only to the Canadian Forces operations but also to the broader peace-support and humanitarian-support mandates.



An aviation technician performs general maintenance on a CP-140 Aurora engine in Kuwait during Operation IMPACT on April 4, 2016.

One aspect of change from the peacekeeping missions of the 1950s through the 1970s has been the deployment of maintenance personnel from the base that provided the mission aircraft. During the first Gulf War of 1990–91, the technical support for the mission originated with the personnel from each deployed squadron and—later—wing, rotating in turn. This continued with Op ECHO in 1999. However, other aspects of mission support were generated from across the Air Force, creating deficiencies in operations, such as unclear command and control as well as a lack of deployable equipment.²¹⁹

In 2000, the Air Force Support Capability (AFSC) project was initiated. Four areas of mission support were identified: logistics, airfield engineering, communications and information services. Military policing was included later. The AFSC became one of two tactically self-sufficient units (TSSUs), organized at each wing as a mission-support unit. The other TSSU included aircraft, crews, integral maintenance as well as command and control (including intelligence) as part of the operational-support unit. The mission-support concept was first deployed in June 2006 to Camp Mirage.²²⁰ This allowed improved use of the Air Force's NCMs and provided them with better capabilities to work as a team from their arrival in theatre. The ad hoc nature of the peacekeeping operations of the 1950s to the 1980s had thus ended.

New technology has also had considerable impact on the maintenance and operational sides of Air Force operations. For instance, when the Auroras received new thermo-optical cameras in early 2006, it increased the capability of the aircraft and they became in demand for counter-narcotics operations in the Caribbean and eastern Pacific. The result was Op CARIBBE and its patrols, which

meant deployed operations for maintenance personnel and some support personnel. The ability of the Auroras to capture images on the ground led to their use over land in Afghanistan and Libya (Op MOBILE) as well as in the operations against the Islamic State of Iraq and the Levant (Op IMPACT).²²¹ The ability of the ground crews to maintain and keep the aircraft serviceable, and more importantly, to keep the communications and sensing equipment operating, was critical to the utility of the aircraft and Canada's contribution to these efforts.

These operations demonstrated many important points about the abilities of the Air Force's support personnel. When a conflict arises, speed can be of the essence to provide a response that demonstrates resistance against aggression or support for UN resolutions. One of the advantages of air power is its ability to deploy quickly. For operations such as FRICTION and APOLLO the Air Force was the first of the Canadian services to arrive, but this was not without effort spent in preparation. Exercises such as the PROUD MANTA series for the Auroras helped develop the skills needed to deploy quickly, while the many individual humanitarian flights as well as peace support and humanitarian operations allowed the air movements squadrons to perfect the loading of transport aircraft. As the saying goes, "practice makes perfect."

Rapidly and unpredictably arising combat operations can cause confusion; however, training and the determination to succeed can overcome such obstacles. Illustrative of this was the Kosovo air campaign (Op ECHO). It started on March 24, 1999, just as the rotational transition was occurring, yet operational activity carried on without impairment. When the Canadian government increased the number of CF-18s in theatre but did not similarly increase the number of support personnel, this also did not result in any slowdown in operations.²²² In fact, as the air war intensified and the number of sorties per day increased, the number of personnel increased only marginally, yet the serviceability rate remained very high.²²³

New technologies and equipment can also be rapidly procured during the ramp-up to an operation. This can lead to problems if the equipment is not installed properly or the technology is not completely mastered by the maintenance crews. The ability of the Air Force's support personnel was demonstrated at the start of Op FRICTION, when 11 major systems were upgraded on the Sea King—five for the new surface-surveillance role, including a forward-looking infrared camera, and six for self-defence. What would normally have taken 18 months to approve, install and test was done in eight days.²²⁴ As a result, the Canadian Sea Kings were likely the most capable of the coalition helicopters in the Persian Gulf.

In some of the operations, the Canadians played a major role in providing aid and support, such as to Op AIRBRIDGE and, more significantly, to Op SCOTCH, in which the lone Canadian Hercules was, for a period, the only aircraft flying into Kigali, Rwanda, during the fighting around that city.²²⁵ In these operations, the Canadians were certainly punching above their weight. In many peace-support operations, the Canadians have been the only or one of the prime contributors of

air support. During Ops PIVOT, STANDARD and STABLE, the Air Force provided the mission's helicopter capability as it did for four years in Op CALUMET in the Sinai. Keeping the helicopters operational could be especially important in areas where there was a constant threat of renewed fighting or insurgency, such as Kosovo during Op KINETIC. The Kosovo Rotary Wing Aviation Unit was heavily relied upon not just in rural but also in urban operations by other member nations. Keeping the aircraft's sensors operational also played an important role in brigade-level information gathering operations, important for managing any potential conflicts.²²⁶

At the same time, the helicopter detachments on Her Majesty's Canadian Ships greatly increased the ships' abilities to determine what was happening in the maritime area around them. The helicopters extended the eyes of the ships beyond the range of the ships' own sensors. These operations brought with them their own issues, as the maintainers had to keep the aircraft flying despite being at the end of a long supply chain and often operating in hot and humid conditions. The deployments of Op APOLLO highlighted these issues. Yet, it was not often that the helicopters were not flying.

Canada's contributions have not only been to the creation of the conditions for peace but also to sanctions enforcement and interdiction operations. The latter have included operations to detect drug trafficking, illegal driftnet fishnets, piracy and leadership interdictions, and they have taken Air Force personnel around the world in support of operations authorized by various international organizations and agreements. As these deployments have to be self-reliant, the maintenance personnel have become proficient at bringing along the parts they need or may need to keep the Auroras and Sea Kings operational, especially given space considerations.²²⁷

Many of these ops also required the acquisition of new technological skills, such as the countermeasures suites newly acquired for Op AIRBRIDGE, which were also used on Op SCOTCH. While training in Canada provides some measure of competence, deploying to hot, humid locations provides a whole new challenge as the climate affects the equipment. The countermeasures suites were an important part of each sortie, given that in AIRBRIDGE, other supply aircraft had been shot at or shot down, while in Rwanda, the missile attack that brought down the aircraft and killed the president was the trigger for the genocide.

The skills of Canadian technicians are well known and oft appreciated. The pages of Flight Comment are filled with write-ups of airmen and airwomen who went above the standard and found problems or solutions. When the Kosovo bombing campaign was at risk of running short of the latest-generation smart bombs, it was a Canadian weapons technician who tactfully showed the United States Air Force how older bombs could be salvaged through the manual entry of guidance codes, thereby allowing the campaign to continue.²²⁸ When both engines of HMCS HALIFAX's Sea King broke down during Op SHARPGUARD, it was a corporal at 12 Air Maintenance Squadron who had the solution that saved not only about \$78,000 but also prevented two weeks' down time.²²⁹

Maintenance in the Persian Gulf region was made more difficult by the local climate, especially the temperature and humidity (e.g., for Op FRICTION and Afghanistan). Aircraft engines could easily come close to overheating, requiring that special care be taken in their inspection after a mission or in their maintenance. Such was the problem with a Sea King during Op FRICTION, when one engine shut down and the other was within 0.6 degrees Celsius of a full emergency shutdown.²³⁰

Conducting maintenance on a flight deck of a ship or the apron of an airfield when it is very hot and humid is a test of endurance and concentration. Even more interesting is conducting the periodic inspections. At the rate at which aircraft are flown during operations, the time devoted to these inspections can be and often has been rapidly consumed on many occasions. While fixed-wing aircraft were rotated back to Canada during these operations, the venerable Sea King was not so easily replaced. Op FRICTION provides the example of how these periodic inspections were performed in the hot space of the hangar aboard HMCS PROTECTEUR, allowing operations to continue unabated.²³¹ Such efforts continued in more recent operations, with the hangars of the frigates serving as the overheated workspaces.

It has not just been about getting the job done but also about helping in a broader sense. Air Force personnel have contributed to the communities to which they have deployed, such as in Haiti for Op PIVOT. During the mission they not only rebuilt a whole school in the hamlet of Obléon but also made many improvements to an orphanage, installed gabions to control erosion at St. Marc and provided English lessons.²³²



Members of HMCS ATHABASKAN air detachment perform maintenance checks on the CH-124 Sea King helicopter's rotor blades during Operation CARIBBE on May 4, 2015.

CONCLUSION

Since the formation of Air Command, the Air Force has seen a resurgence even though the period has seen much turmoil both politically and financially. There is once again an identifiable Air Force carrying on the traditions not just of the RCAF, but also the air elements of the RCN and the CA. The creativeness required to keep the RCAF operational in the 1920s and especially the 1930s, during the financial restraint of the Depression, can in some ways be mirrored by the efforts of the men and women of the Air Force since the end of the Cold War. Their diligence, attention to detail, skills and knowledge have kept the aircraft flying, even in the toughest conditions—mentally, physically and fiscally.

The increased pace of operations that started in the early 1990s has been met with professionalism and dedication as each new challenge was encountered, whether a new type of operation or equipment, a rapid deployment or any other situation. The challenges faced today may be different from those faced by the RCAF's early pioneers; however, there is no doubt that today's men and women are worthy successors in carrying on the traditions of a capable, competent and respected Air Force.



Corporal Nejanthan Jeganathan, a Traffic Technician with the Royal Canadian Air Force deployed on Operation GLOBE 20-02 (right), sorts out paperwork with an official from the Organization Mondiale de la Salud at La Aurora International Airport in Guatemala City during the seventh and last strategic airlift of Operation GLOBE 20-02 on July 31, 2020.

CONCLUSION

The contributions made to the Air Force by NCMs have long been neglected, other than through peripheral mentions in other works. Even the foregoing narrative has omitted much in the way that NCMs have contributed to the success of the Air Force, its organization and its operations. There is more that can be told about operations in the Aleutians and the Arctic, or about contributions to the operations of the many HQs. There is also more that could be said about the contributions of women, Indigenous peoples and visible minorities to the NCM story. Likewise, the focus of this tome has been on those who maintained the aircraft, which is to the detriment of those who provided the many other avenues of support. All of these groups and the individuals within them have continued to make the Air Force the organization that it is. There is simply not enough room to cover all of these aspects in a proper manner.

The history of NCMs is also one that has been omitted to date; the trades and their evolution, terms of service, growing and changing areas of responsibility are all worthy of note. Due to space limitations, these have not been covered as much as they could be. The technicians have grown from their days of working with simple technology to now using advanced technologies that their predecessors could never have imagined. Clerks have gone from using paper-based accounting and reporting systems to integrated software-based systems that perform multiple functions. These are but two of the alterations across the Air Force that can be touched upon to show how the story of its NCMs has changed, sometimes within the service of one generation of them.

The history of NCMs is broad and interesting, of service in peace and war, with parallels between the 1920s and the more modern era. Their essential role was recognized even during the First World War, when the RAF-C used trickery to keep them servicing the aircraft. The formation of Air Command was in part the result of NCMs not being properly trained and effectively utilized. The efforts to keep the airplanes flying and the personnel paid and supplied in the 1920s and 1930s continue to this day. NCMs have always gone the extra mile to keep the RCAF operational.

Even from this brief examination of NCMs in the various periods of military aviation in Canada, there are a number of recurring themes that can be seen. Some of them follow here, although there are more that can be raised. The first is that NCMs were never “stuck to the ground”; they were part of the aircrew from the earliest days. This started in the interwar period when mechanics and photographers were in the aircraft conducting repairs in flight, taking pictures and assisting with other operational tasks. During the Second World War they were kickers, while a few served as non-aircrew flight engineers. Post-Second World War, new trades were required for tasks that had arisen during and after the war. Loadmasters and flight stewards were among those who took to the air, while mechanics still went along on many missions, especially to the Arctic. Search-and-rescue missions require additional sets of eyes, which were provided by non-aircrew NCMs.

The knowledge and skills displayed by NCMs during the early years of the RCAF have not diminished. During the interwar period, the photographic detachments and other flights operated at the end of a long supply chain. When the materials or parts required were not available, they would improvise, and the operations would only be temporarily halted—if at all. This continued during peacekeeping operations in which the supply chains were several days long at best. While today's technologies hardly allow for this type of ad hoc maintenance and repair, the fact that NCMs could find ways to improve guided munitions and conduct quick repairs at sea shows that nothing has been lost in their knowledge and skills in the intervening years.

The RCAF's NCMs have shown an aptitude for flexibility, a key feature of any support operation, especially on deployed operations where the support staff may be small or otherwise limited in size. The ability to conduct another duty outside of one's normal trade has been a characteristic of deployed operations. When trades were amalgamated in the 1950s and again in the 1990s, the NCMs readily picked up the required skills. Likewise, when new technologies were introduced, the NCMs involved could be counted upon to make maximum use of them operationally, no matter how foreign they were at the time.

Another characteristic or theme throughout the history of the RCAF has been the professionalism of its NCM cadre. They have been able to keep the aircraft flying and supporting the missions in all circumstances and situations. The fact that a group of RCAF NCMs—never having served together before—could be organized into a single unit to work their wonders speaks to their professionalism. This happened in the interwar period with the photographic detachments and later with peacekeeping operations. In the latter case it led to the RCAF being called upon for many further UN operations, which emphasizes the depth of their professionalism.

A further observation about NCMs throughout the RCAF's history relates to their leadership. The interwar warrant officers carried great responsibility on their shoulders, whether for maintenance, training and mission success or the construction and quality of new aircraft in Canada. This carried over into the Second World War and remains present today. Whether during peacekeeping, domestic operations or even routine day-to-day activities, the leadership provided as NCMs advanced in rank was necessary in providing required support to make each mission and operation successful.

Another point to mention is that the NCMs who served in the RCAF Auxiliary and those who served or are serving in today's Air Reserve have brought many benefits to the service. In the interwar period, they could be found across Canada, representing the RCAF in many communities, thereby raising the visibility of the Air Force. During the Second World War, they could be found throughout the RCAF in Canada and overseas, forming the cadre around which many squadrons and schools were shaped and operated. By the end of the war, many had reached the highest ranks among NCMs, while others became officers and even aircrew to meet the RCAF's needs.

The NCMs of the post-war RCAF Auxiliary had a daunting task, trying to maintain highly technical skills in a part-time service. Unfortunately, it was the RCAF's failure to understand the issue more than the NCMs' abilities that caused the Auxiliary to have its problems. The introduction of the ARAFs in 1975 provided new opportunities, as did Total Force. More and more, the Air Reserve NCMs became important and integral parts of RCAF operations at home and abroad.

There is so much more NCM history that could be subjected to study; unfortunately, this narrative does not have the space available to cover it. The training system is a worthy topic about which little has been written. It has been both separate from and integrated with that of the officers, but where and when? What schools were there and who was running them? More importantly, was there something about the schools that instilled the professionalism and dedication that we have seen in NCMs?

Personnel policies are another area that could be studied. The terms of service today are very different from those of 75 or even 60 years ago. Why were there three-, four- and five-year plans for male NCMs in the 1950s but only three-year plans for women? What were swagger sticks and what were the dress codes for leaving the station?

The trades in the RCAF have not been static. There was increased specialization during the Second World War, followed by amalgamations in the early 1950s as well as the 1990s. Why did these events occur? How have new technologies impacted RCAF trades and trade specifications in terms of how quickly changes were made? And how did these changes themselves come to be considered and approved?

Another area that could be explored is operations, including UN, domestic and humanitarian airlift. NCMs' contributions are part of the overall picture of these operations, yet few worthy histories exist about them or of the RCAF's participation. Whether operating in austere conditions such as the hot sands of the Middle East and North Africa, the heat and humidity aboard one of Her Majesty's Canadian Ships in the Indian Ocean or in the cold of an Arctic winter, each of these operations provides a snapshot of how NCMs have contributed to the success of the RCAF and why it has been considered by the UN as its air service provider of choice for an extended period of time.

The impacts of women and visible minorities also need to be considered. With the UN calling for greater numbers of female peacekeepers, this is an area that deserves attention. Visible minorities have also been of benefit to the RCAF and Canada, not just through their work contributions but also by being individuals to whom the locals could relate during peacekeeping missions. They also provided cultural and linguistic knowledge in support of the operations. The story of women and visible minorities needs to be better represented in the RCAF's history.

Even leadership is a topic that needs to be further explored. Peacekeeping operations introduced a new type of mission, one in which men and women were often brought together in theatre for the first time. The many NCMs who have been commissioned because of their leadership abilities should

not be overlooked. During the Second World War, they were essential to the RCAF's expansion and professionalism. Then there is the role of the base/station/wing chief warrant officer; how has it changed and why? How has this impacted the RCAF? Was there anything in the RCAF's training or selection of senior NCMs that developed chief warrant officers into effective leaders? These are all questions that could provide insight into how the RCAF has been successful.

There is a lot of history still to be written about the NCMs in the RCAF, both from the past but also in the future. Their stories will likely be even more interesting and important than what has been written to date.



Corporal Martin Prince, aviation technician with 425 Tactical Fighter Squadron, CFB Bagotville, performs maintenance on a CF-188 Hornet during Operation REASSURANCE at Mihail Kogalniceanu air base in Romania, September 26, 2018.

ABBREVIATIONS

AAAF	Auxiliary Active Air Force
AC1	aircraftman, 1st class
AC2	aircraftman, 2nd class
AC&W	aircraft control and warning
Admin O	administrative officer
AE	air engine
AF	airframe
AFSC	Air Force Support Concept
AID	air inspection depot
ARAF	Air Reserve Augmentation Flight
ATC	Air Transport Command
ATU	air transport unit
AW2	aircraftwoman, 2nd class
BCATP	British Commonwealth Air Training Plan
BEM	British Empire Medal
CA	Canadian Army
CAC	Canadian Aviation Corps
CAF	Canadian Air Force
CCA	Controller of Civil Aviation
CEF	Canadian Expeditionary Force
CF	Canadian Forces
CFB	Canadian Forces Base
CGAO	Civil Government Air Operations
CO	commanding officer
Comm'd	commissioned
CWAAF	Canadian Women's Auxiliary Air Force
DART	Disaster Assistance Response Team
DHH	Director of History and Heritage
DND	Department of National Defence
DOE	Director of Organization and Establishment
EAC	Eastern Air Command
F/L	flight lieutenant
FOB	Flying Operations Branch
FS	flight sergeant
FTS	Flying Training Station
FTTU	Field Technical Training Unit
FY	fiscal year
G/C	group captain
HQ	headquarters
HWE	Home War Establishment
LAC	leading aircraftman
LAC	Library and Archives Canada
LAW	leading aircraftwoman
MAMS	mobile air movements section
MBE	Member of the Order of the British Empire
MiD	Mention in Despatches

MM	Military Medal
M.T.	Motor Transport
NCM	non-commissioned member
NCO	non-commissioned officer
NPAAF	Non-Permanent Active Air Force
Op	operation
PAAF	Permanent Active Air Force
PF	Permanent Force
P/O	pilot officer
RAF	Royal Air Force
RAF-C	Royal Air Force – Canada
RCAF	Royal Canadian Air Force
RCN	Royal Canadian Navy
ret'd	retired
RFC	Royal Flying Corps
RFC-C	Royal Flying Corps – Canada
RNAS	Royal Naval Air Service
ROTO	rotation
SAGE	Semi-Automatic Ground Environment
SE	servicing echelon
Sgt	sergeant
S/L	squadron leader
SR	Special Reserve
TTS	Technical Training School
UNDOF	United Nations Disengagement Observer Force
UNEF	United Nations Emergency Force
UNIPOM	United Nations India-Pakistan Observer Mission
UNSF	United Nations Security Force
UNYOM	United Nations Yemen Observer Mission
W/C	wing commander
WD	Women's Division
WO 1	warrant officer, class 1
WO 2	warrant officer, class 2

ENDNOTES

1. On December 17, 1903, Orville and Wilbur Wright made the first controlled and powered flight of a heavier-than-air craft at Kill Devil Hills, near Kitty Hawk, North Carolina. The flight only lasted 12 seconds, but three other flights that day were progressively longer, the final one lasting 59 seconds. As aircraft became more capable, the ideas of some military visionaries started to become realities.

2. Throughout this work, the term “maintainers” will be used to describe the personnel who maintained and repaired the aircraft. This started as a few trades but was quickly increased to include instrument makers, coppersmiths, electricians and others that directly worked on and in the aircraft.

3. Fitters were the equivalent of aero-engine mechanics, while riggers were air frame mechanics.

4. One need only look at the media releases from RCAF Public Affairs during the Second World War, in which aircrew dominate the number of releases. *Hometowners* were press releases prepared about individuals for consumption by the media in the individual’s hometown. They were brief mentions of what the member did, with a few words coming from each individual.

5. “Popular Military History Books,” Government of Canada, modified May 17, 2018, <https://www.canada.ca/en/department-national-defence/services/military-history/history-heritage/official-military-history-lineages/official-histories/book-1944-rcaf-4-years.html>.

6. “Popular Military History Books,” Government of Canada.

7. “Where Aviation Precedes Navigation,” *Calgary Daily Herald*, November 24, 1928, 1.

8. Fred H. Hitchins, *Air Board, Canadian Air Force and Royal Canadian Air Force* (Ottawa: Canadian War Museum, National Museum of Man, National Museums of Canada, 1972), 125.

9. Much of Canada remained unmapped before these mapping operations. Accurate maps were required for the construction of canals, railways and roads as well as for the extraction of natural resources and for accurate navigation both over land and the Arctic Archipelago. Many government departments were interested in the results.

10. Hitchins, *Air Board, Canadian Air Force and Royal Canadian Air Force*, 454–55.

11. Integration was a process that led to unification. The three services had been involved in integrating many of their common trades and services before 1964. This continued through to February 1, 1968, when the three services were unified under the banner of the Canadian Forces.

12. “Boy” was both a rank and a question of age in the RCAF. Young men under the age of 18 were referred to officially as boys, and they needed their parents’ permission to enlist. For those under 18, their rank would be “boy” instead of aircraftman.

13. The Royal Canadian Naval Air Service will not be discussed in this chapter, as it only recruited officers and no airmen. Hence, the organization did not have an effect upon the RCAF’s ground trades.

14. Janney was struck-off strength of the CEF on January 23, 1915, and returned to Canada. Sharpe died in an aircraft training accident on February 4, 1915. S. F. Wise, *Canadian Airmen and the First World War: The Official History of the Royal Canadian Air Force, Volume I* (Toronto: University of Toronto Press-

Department of National Defence-Supply and Services Canada, 1980), 26–29; and Hugh Halliday, “A High Flyer Indeed: Air Force, Part 4,” *Legion: Canada’s Military History Magazine*, July 1, 2004, <https://legionmagazine.com/en/2004/07/a-high-flyer-indeed/>. Halliday notes that Janney would go on to have a long career as a confidence man and unsuccessful entrepreneur.

15. Samuel Kostenuk and John Griffin, *RCAF: Squadron Histories and Aircraft* (Toronto and Sarasota: Samuel Stevens Hackert & Co., 1977), 2.

16. Alan Sullivan, *Aviation in Canada: 1917–1918* (Toronto: Rous and Mann Co., 1919), 141–142, 147.

17. The pay rate for men in the RFC-C was 15 cents higher than for similarly skilled labour on the civilian market. The Canadian Patriotic Fund provided spouses and children of CEF members with allowances of \$20 per spouse and \$5 per child, later extending these allowances to the RFC-C. Sullivan, *Aviation in Canada: 1917–1918*, 143–44.

18. Sullivan, *Aviation in Canada: 1917–1918*, 180; and Wise, *Canadian Airmen and the First World War*, 113.

19. This publication will use the term “NCO,” as that was the authorized designation of the time.

20. Sullivan, *Aviation in Canada: 1917–1918*, 233. For more on the development of this arrangement with the US, see Wise, *Canadian Airmen and the First World War*, 91–93.

21. Wise, *Canadian Airmen and the First World War*, 95. On April 1, 1918, the RFC merged with the RNAS to become the RAF. The RFC-C thus became the RAF-C.

22. Wise, *Canadian Airmen and the First World War*, 586.

23. Sullivan, *Aviation in Canada: 1917–1918*, 144–45; and Wise, *Canadian Airmen and the First World War*, 81, 108–09, 114. The “manpower” situation was mitigated by the fact that women were also employed from the outset, although mainly in clerical positions in the headquarters and in the paymaster service. But, as labour became short in 1918, the roles in which women could serve were expanded. Over 600 worked at the RAF-C camps as mechanics as well as another 135 at each repair depot in various technical trades. They also did most of the driving for the organization. In all, almost 1,200 women served, albeit not as military members of the RFC-C.

24. Wise, *Canadian Airmen and the First World War*, 114.

25. Wise, *Canadian Airmen and the First World War*, 609.

26. Wise, *Canadian Airmen and the First World War*, 609–10. The result was not just low morale but also several refusals to work in January 1919. See also Rachel Lea Heide, “After the Emergency: Demobilization Strikes, Political Statements, and the Moral Economy in Canada’s Air Forces, 1919–1946,” in ed. Howard G. Coombs, *The Insubordinate and the Noncompliant: Case Studies of Canadian Mutiny and Disobedience, 1920 to Present* (Kingston and Toronto: Canadian Defence Academy Press-Dundurn Group, 2007), 179–83.

27. Hitchins, *Air Board, Canadian Air Force and Royal Canadian Air Force*, 56, 92.

28. Hitchins, *Air Board*, 25.

29. Canada, Directorate of History and Heritage (DHH), 181.009 (D6780), Minutes of *Air Board Meeting No. 1*, June 21, 1920, 8, item 92; and Hitchins, *Air Board*, 25. In all, 1,350 airmen sent in their

applications by the end of 1921. The establishment of 3,905 included 200 cadets. There were over 930 applications for the officer positions. One factor that may have affected recruiting was that the CAF paid less than the FOB for the same job.

30. Hitchins, *Air Board, Canadian Air Force and Royal Canadian Air Force*, 18.

31. Canada, Department of National Defence (DND), *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1923 (Militia Service)* [Ottawa: F. A. Acland, Printer to the King's Most Excellent Majesty, 1923], 37–39; and Hitchins, *Air Board*, 92–93, 100–102. The programme to find skilled recruits was noted as being one of training boys who would, hopefully, enlist in the RCAF. This programme would not come to fruition for another five years.

32. Hitchins, *Air Board, Canadian Air Force and Royal Canadian Air Force*, 411–18.

33. The term “Reserve Force” would apply if it were used in comparison to the modern situation; however, in the 1920s and 1930s, “reserve force” meant those officers and airmen who were trained, no longer serving but ready to be called up, much as the supplementary reserve is today.

34. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1926 (Militia and Air Services)* [Ottawa: F. A. Acland, Printer to the King's Most Excellent Majesty, 1926], 52.

35. The table is based on the flying hours provided in the annual reports of DND for FYs 1924–25 to 1931–32. For example see Canada, Department of National Defence, *Report of the Department of National Defence for the Year Ending March 31, 1925 (Militia and Air Services)* [Ottawa: F. A. Acland, Printer to the King's Most Excellent Majesty, 1925], 53–54.

36. For more information on these photographic operations, see S. Bernard Shaw, *Photographing Canada from Flying Canoes* (Burnstown, ON: General Store Publishing House, 2001). The best overview of RCAF operations in the interwar period remains W. A. B. Douglas, *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force, Volume II* (Ottawa and Toronto: University of Toronto Press and Supply and Services Canada, 1986).

37. Hitchins, *Air Board*, 187; and DHH, Biographical File, A. H. Warner.

38. Canada, DHH, 73/1018, T. A. Lawrence, *Report to the Director Civil Government Air Operations, Department of National Defence, on the Hudson Strait Expedition, 1927–28*. Besides the RCAF personnel, there were an officer and three “other ranks” of the Royal Canadian Signal Corps, three RCMP constables and 19 civilians.

39. Until November 1938, the RCAF reported to the Chief of the General Staff (head of the Militia). It should be noted that the term Militia referred both to the full-time and part-time components of the land forces. Only in 1942 would Canada's land forces be called the Canadian Army, with the part-time forces being referred to as the Militia. McNaughton was a strong supporter of the RCAF and was shocked to learn of the cut.

40. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1934* (Ottawa: J. O. Patenaude, Printer to the King's Most Excellent Majesty, 1934), 76.

41. Based on the annual reports of DND for the FYs ending 1932–33 to 1936–37. See for example, Canada, DND, *Report of the Department of National Defence Canada for the Fiscal Year Ending March 31, 1933 (Part I Militia and Air Services)* [Ottawa: J. O. Patenaude, Printer to the King's Most Excellent Majesty, 1934], 45.

42. Canada, DND, *Report of the Department of National Defence Canada for the Fiscal Year Ending March 31, 1925*, 53. E. W. Stedman, *From Boxkite to Jet* (Gatineau, QC: Canadian Museum of History, 1972), 63, notes that the Aircraft Inspection Department was formed at Camp Borden later in January 1922.

43. Canada, DND, *Report of the Department of National Defence Canada for the Fiscal Year Ending March 31, 1933*, 49; and Canada, DND, Air Force Administrative Order A43/1, "Resident Inspectors," November 15, 1933. The role of civilian aircraft inspection likely transferred to the Department of Transport after it was formed in 1935.

44. Stedman, *From Boxkite to Jet*, 280, 288.

45. Stedman, *From Boxkite to Jet*, 165–66. No. 2 Repair Depot in Winnipeg would join No. 1 Depot in Ottawa in 1936, with No. 3 Repair Depot in Vancouver to follow in March 1939.

46. Equipment assistants today are supply technicians.

47. Hitchins, *Air Board*, 25 and 101; and Canada, DND, *Report of the Department of National Defence Canada for the Fiscal Year Ending March 31, 1924* (Ottawa: F. A. Acland, 1924), 51. The RCAF did not define what "heritage" meant, but given the concepts of the time, it most likely referred to social status and background.

48. Canada, DHH, 181.006 (D68), Boys' Technical Training Plan, which includes the order in council and its annexes describing the terms of the training plan. Although the training was supposed to last three summers, students could take an RCAF entry test at an earlier date based on technical knowledge and thus enlist in the PAAF. The Governor in Council consists of the prime minister and cabinet.

49. Hitchins, *Air Board*, 184; Canada, DND, *Report of the DND 1928-29*, 41; and Mathias Joost, "The RCAF and the Civilian Flying Clubs," *Journal of the Canadian Aviation Historical Society* 48, no. 2 (Summer 2010), 52.

50. This author's list shows that there was double counting in DHH, 181.006 (D68), Boys' Technical Training, when the students returned for their second year of training.

51. Sorensen would continue to serve until 1962, retiring as a wing commander. During the Second World War, he was awarded an Air Force Cross (AFC) for his work in training the personnel of No. 9 (Bomber Reconnaissance) Squadron. His AFC citation and his pre-war places of duty can be found on the RCAF Association website "Search Awards" page: <https://www.rcfassociation.ca/heritage/search-awards/>.

52. Canada, DHH, RCAF Weekly Orders, Part 2, No. 1, August 29, 1931, and No. 74, September 5, 1931.

53. Canada, *The King's Regulations and Orders for the RCAF, 1924*, updated to 1936 (Ottawa: J. O. Patenaude, 1939), section 307.

54. See the Reports of the DND for the appropriate years for the list of graduates. A good overview of the programme is given in Hugh Halliday, "The NCO Pilots: Air Force, Part 11," *Legion: Canada's Military History Magazine*, September 1, 2005, <https://legionmagazine.com/en/2005/09/the-nco-pilots>. Details on some of the sergeant pilots' activities in aerial photography can be found in S. Bernard Shaw, *Photographing Canada from Flying Canoes* (Burnstown, ON: General Store Publishing, 2001).

55. For instance, Sergeant Pilot E. F. O'Connor was training at the Flying Instructors School at Trenton when he died in a collision in the fog in October 1937. "3 R.C.A.F. Men Dead In Crash," *Montreal Gazette*, October 19, 1937, 1. Later, Sergeant Pilot Joseph Carmel Jean-Baptiste Mirabelli would become a flying instructor.

56. Canada, DHH, 74/272, Memorandum from Group Captain J. S. Scott, Director, RCAF, to Major General J. H. MacBrien, Chief of the General Staff, January 18, 1927, 3; and DHH, 76/46, Peace Organization and Establishment. The first three squadrons were No. 10 in Toronto, No. 11 in Vancouver and No. 12 in Winnipeg, all of which were to be in the army-cooperation role.

57. Hitchins, *Air Board*, 306. In 1935, the NPAAF flew 2,171 hours with Nos. 10, 11 and 12 Squadrons attending their first summer camps at Camp Borden, Sea Island and Shilo respectively.

58. Mathias Joost, *McNaughton's Air Force: The Creation of the First Non-Permanent Active Air Force Squadrons, 1931–1933* (Masters of Arts dissertation, Royal Military College, 2008), 5.

59. One who became a pilot was P/O Charles Raymond Tufford, who enlisted in No. 19 (Bomber) Squadron as a rigger and was appointed to a short-service commission in the RAF in October 1938. See the RCAF Association “Search Awards” web page: <https://www.rcfafassociation.ca/heritage/search-awards/>. It was not unusual for pilots in Canada to join the RAF, as the RCAF was accepting so few.

60. No documentation has been found to explain why there were restrictions on size for the NPAAF airmen, but not the PAAF.

61. Canada, *King's Regulations and Orders*, sections 263–271 and 275A. The height and body size restrictions for NPAAF airmen were a minimum 5 feet, 4 inches [1.62 m] and a chest measurement of 34 inches [86 cm]. Interestingly, there appears to have been no stated requirements for PAAF airmen.

62. Canada, *King's Regulations and Orders*, section 271E.

63. Brigadier-General H. Sutherland (Retired), “Saturday's Children,” *Camp Borden: Birthplace of the RCAF, 1917–1999*, ed. Normand Marion (Borden, ON: 16 Wing, 1999), 51. There were married establishments for the various ranks so that, for example, if a corporal was promoted to sergeant, he would often have to wait until there was a vacancy in the sergeants' married establishment before he could move up from the corporals' married establishment.

64. As an example, seven June 1937 graduates of the Ottawa Technical School enlisted in the RCAF. “Tech School Graduates Join Canadian Air Force,” *Evening Citizen*, Ottawa, June 7, 1937, 5.

65. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1935* (Ottawa: J. O. Patenaude, Printer to the King's Most Excellent Majesty, 1935), 72–73. Because the NPAAF squadrons were being slowly formed, once a cadre of airmen was available, more rapid recruitment and training could begin, hence the large enlistment numbers in 1934–35. While there were a large number of NPAAF enlistments, by the end of the fiscal year the airmen strength was only 269, indicating that many of those who had enlisted were rejected or had failed their courses.

66. “Mess Sergeant,” Help Wanted advertisements, *Evening Citizen* (Ottawa), July 11, 1927, 6.

67. The author is aware of one Black Canadian who served as a pilot in the RFC/RAF, a second who was accepted for pilot training in the RAF in 1918 but did not continue for medical reasons as well as another who served as an airman in the CAF in England. The only restriction on PAAF enlistment was that one had to be a British subject. Both Bell and Watts would go on to have distinguished careers in the RCAF during and after the Second World War. The restrictions placed on NPAAF enlistment for being White only and British subjects were issued as Order in Council P.C. 233 of January 31, 1939, promulgated in Air Force General Order No. 3/1939, January 31, 1939.

68. RCAF Weekly Order, 9 July 1927, Serial 28, Part 2. There is a great deal of validity to this sample, as almost half of RCAF airmen were employed on CGAO in 1927. It is recognized that some surnames were those of individuals who had French backgrounds but were no longer French speakers, while it is known that some French speakers anglicized their surnames on enlistment. The routine orders for the RCAF reveal many other airmen with French surnames in this period who were not attached to the CGAO.

69. See Canada, DHH, "Remustering, Reclassification and Promotion," Air Force Administrative Orders A.44/2, April 29, 1939, Table A.

70. Canada, DHH, 181.006 (D375), Letter, 898-1-61, September 12, 1935, Air Commodore G. M. Croil, Senior Air Officer (SAO), to Commanding Officer RCAF Station Camp Borden; and letter, 902-26-1, September 13, 1937, Group Captain L. S. Breadner, Air Staff Officer, to Air Commodore G. M. Croil, SAO. Canada, DND, "Remustering, Reclassification and Promotion," shows the trade as finally being eliminated as obsolete! The fact that the RCAF was following the RAF lead was not unusual. A liaison officer in London would receive RAF publications and directions, which were then sent to Canada for review. The RCAF normally followed RAF practices, as it was the goal of the RCAF to be interoperable with the RAF.

71. Table 4 is based on one of the earliest noted listings of RCAF trades and groupings. It is found in Flight Lieutenant T. A. Lawrence, *Report of the Hudson Strait Expedition*, DHH, 73/1018. By 1927, the RCAF had had the opportunity to determine what trades were required for a full-time Air Force; hence, a list from 1927 holds greater validity than one from 1924.

72. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1934*, 80, 82; Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1936* (Ottawa: J. O. Patenaude, Printer to the King's Most Excellent Majesty, 1936), 60–61, 69; and Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1937* (Ottawa: J. O. Patenaude, Printer to the King's Most Excellent Majesty, 1937), 74, 100.

73. Brigadier-General H. Sutherland (Retired), "Saturday's Children"; and Wing Commander William Skelding (Retired), "Prewar Technical Education," in *Camp Borden: Birthplace of the RCAF, 1917–1999*, ed. Normand Marion (Borden, ON: 16 Wing, 1999), 49, 71–72.

74. Examples of WO 1 Dyte's activities can be found in Sutherland, "Saturday's Children," 49; J. Douglas Harvey, ed., "Struts and Castor Oil," in *Laughter-Silvered Wings: Remembering the Air Force II*, (Toronto: McClelland and Stewart, 1985), 17–18; "Dyte Retiring," *Ottawa Journal*, September 1, 1943, 9; and "Flight-Lieut. Leonard J. Dyte Gains Fame Through C.N.E. Guard," *Barrie Examiner*, September 26, 1940, 1, 8. Leonard Dyte retired in 1943 as a squadron leader. It should be noted that sergeant major, class 1 refers to an appointment which was held by someone whose rank was warrant officer, class 1.

75. See Skelding, "Prewar Technical Education," 72–73, for his experiences as a leading aircraftman instructor in 1937.

76. See the RCAF section of each annual *Report of the Department of National Defence for FYs 1925 to 1936*.

77. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1927 (Militia and Air Services)* (Ottawa: F. A. Acland, Printer to the King's Most Excellent Majesty, 1927), 44; and Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1931 (Militia and Air Services)* (Ottawa: F. A. Acland, Printer to the King's Most Excellent Majesty, 1931), 43.

78. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1933*, 42.

79. Seamanship courses were required, as the RCAF operated numerous small boats to support flying boat operations. These ranged from rowboats to small motorized boats.

80. Canada, DND, Report of the Department of National Defence for the Fiscal Year Ending March 31, 1937, 74–76.

81. Hitchins, *Air Board*, 146; and Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1926*, 49–52. Station High River held two courses for the RCAF, while Camp Borden held one in 1926–27. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1927*, 41–44. Subsequent courses were held at Camp Borden.

82. Canada, DND, *Report of the Department of National Defence for the Fiscal Year Ending March 31, 1936*, 70. The reconditioning was on Siskin aircraft and the construction was of the Fairchild Super 71 and the Northrup Nomad.

83. Canada, *King's Regulations and Orders*, sections 1311a, 1275a, 1323 and 1333.

84. Canada, *King's Regulations and Orders*, sections 1691, 1694, 1713 and 1714. For more on the use of the swagger sticks, see Mathias Joost, “Walking with a Swagger ... Stick,” *Air Force Magazine* 42, no. 1 (June 2018): 29–33.

85. Suzanne K. Edwards, *Gus: From Trapper Boy to Air Marshal* (Renfrew: General Store Publishing, 2007), 212–16.

86. Hitchins, *Air Board*, 380; and Douglas, *Creation of a National Air Force*, 343. The NPAAF was renamed the Auxiliary Active Air Force on December 1, 1938. The latter publication indicates a total of 4,153 officers and airmen, which is only slightly higher than Hitchins' figure of 4,061. The difference could be a matter of the day on which the strength numbers were taken. The figure of roughly 4,100 could be compared to an authorized establishment of 7,259 for both components. The strength was lower than the establishment figure, as the RCAF did not have the funding to afford a strength equal to its establishment. A third set of figures, which agree with Hitchins' numbers, can be found in J. M. Hitsman, *Manpower Problems of the Royal Canadian Air Force During the Second World War: Historical Section, Army Headquarters Report No. 67* (Ottawa: DND, January 15, 1954), 4, https://publications.gc.ca/collections/collection_2016/mdn-dnd/D63-5-67-1954-eng.pdf.

87. Charles P. Stacey, *Arms, Men and Governments: The War Policies of Canada, 1939–1945* (Ottawa: Queen's Printer for Canada, 1970), 11, 20, 29–30, 32. Both Nos. 110 and 112 Squadrons were AAAF and both were reinforced by PAAF personnel. No. 1 Squadron was reinforced by AAAF personnel; hence, both components were active in England from an early period of the war.

88. Most of the RCAF's aircraft were obsolete at the start of the war or were converted civilian models. The only truly modern aircraft was the Hawker Hurricane. Although technically modern, the Fairey Battle demonstrated its shortcomings in the Battle of France in May 1940.

89. Mathias Joost, “The Unsung Heroes: The Ground Crew of No. 1 (RCAF) Squadron,” *The Royal Canadian Air Force Journal* 4, no. 2 (Spring 2015), 96–97.

90. These reductions are exactly what was done, although for most airmen and officers, their reductions were not to their pre-war rank. Many of these airmen would, as part of the interim Air Force, be promoted often with some rapidity, as the RCAF began to put itself on a post-war establishment. These promotions often took them back to their wartime rank.

91. Hitsman, *Manpower Problems of the Royal Canadian Air Force*, 24. There were a few minor exceptions for required trades, such as wireless operator / air gunners.

92. The Manning Depot was also to serve as the depot for the Province of Quebec and had to teach French speakers how to operate in English not only for the courses they would take but, perhaps more importantly, “to enable them to be absorbed into the R.A.F.,” which operated in English. Organization Order No. 52, 1226-25-1, 21 August 1940; and Hitsman, *Manpower Problems of the RCAF*, 12, 15.

93. Brereton Greenhous et al., *The Crucible of War, 1939-1945: The Official History of the Royal Canadian Air Force, Volume III* (Ottawa and Toronto: Department of National Defence and Supply and Services and University of Toronto Press, 1994), 624.

94. RCAF servicing echelons (SEs), which provided the maintenance support to RCAF squadrons, would put in a request to the RAF Records Office for specific numbers of men at a specified rank and trade. The Records Office would provide men from the pool and not start transfers from other SEs. In other cases, ground crew newly arrived from Canada would be put into the SE that required them, no matter their language. To see how French Canadians were serving in SEs other than those from 425 Squadron, one need only look at the names of airmen from SEs awarded British Empire Medals or Mention in Despatches (MiD).

95. Whether the RCAF’s efforts to improve recruiting among French-speaking Canadians worked is unknown. The most reliable figure available is that as of 12 June 1942, there were 1,041 enlisted as aircrew, 2,402 in mechanical trades and a further 1,582 plus 85 airwomen in general duties, the total being 5,110. These figures apply to those from Quebec only; hence, the number of French Canadians was undoubtedly higher given enlistment from the other provinces. At the same time, there had been 7,403 English speakers enlisted in Quebec, including 867 Americans. DHH, 181.009 (D6771).

96. At least 10 Black Canadians were able to enlist prior to the colour barrier being lifted. Author’s list of Black Canadians in the RCAF. The story of the racist enlistment policies can be found in Mathias Joost, “Racism and Enlistment: The Second World War Policies of the Royal Canadian Air Force,” *Canadian Military History*, 21, no. 1 (Winter 2012), 17–34.

97. Statistics based on author’s compilation. Some of the Black men who enlisted were from the Caribbean, and there was one from the United States. The latter went on to become a Tuskegee airman. The Tuskegee airmen were African American pilots and airmen of the United States Army Air Forces (USAAF). Prior to 1941, African Americans were the subject of racial discrimination when they attempted to enlist in the USAAF. A segregated training centre was formed at Tuskegee, Alabama, where African American pilots and airmen were trained. They would form the 99th Pursuit Squadron (later the 99th Fighter Squadron) and the 332nd Fighter Group composed of the 100th, 301st and 302nd Fighter Squadrons. The 99th Fighter Squadron would fly its first operations from North Africa on June 2, 1943, while the 332nd Fighter Group would fly its first on February 5, 1944, from Italy. The 99th Fighter Squadron would become part of the 332nd Fighter Group.

98. Hitsman, *Manpower Problems of the RCAF*, 16–17.

99. Canada, DHH, “Remustering, Reclassification and Promotion,” Air Force Administrative Order A.44/2, September 1, 1939, Table A. The same table issued on April 29, 1939, had 22 trades, with 4 trades having been eliminated, including electrician and parachute rigger.

100. It should be noted that besides the 102, the RCAF also accepted airmen into non-approved trades (not found in A.44/2) such as butcher. For instance, Corporal Arthur Boyes was remustered to butcher after pigeon loftsmen were no longer required in the UK.

101. For instance, fabric workers, meteorologists and tailors only went to Group B. See Canada, DHH, “Remustering, Reclassification and Promotion,” Air Force Administrative Orders A.44/2, Table A, for the wartime period.

102. Canada, DHH, “Remustering, Reclassification and Promotion,” Air Force Administrative Order A.44/2, Table A. See appropriate amendment dates.

103. Canadianization was the process of having RCAF squadrons staffed by RCAF members. This was part of the BCATP Agreement. Canada, Library and Archives Canada (LAC), Record Group 24, Series E-1-b, Volume 3306, File 281-3-3, Volume 1, 1019-1-83 (Air Member for Personnel), January 3, 1944, Air Vice-Marshal Sully to Air Marshal Leckie. A more detailed explanation of the origins of the trade appears in the unpublished briefing note by Major Mathias Joost, *Flight Engineer Origin*, DHH, October 6, 2014.

104. Canada, DHH, Minutes of Air Council Meeting of June 6, 1944, 96/24, Box 9, File 4, item 115.

105. Canada, DHH, “Remustering, Reclassification and Promotion,” Air Force Administrative Order A.44/2, April 30, 1942, and August 31, 1943, Table B.

106. In August 1943, the quota was increased to 1,000 ground crew remusters per month. Overall, 6,192 ground crew remustered to aircrew in 1943. This pressure was reduced in April 1944, when it was discovered that there was a surplus of aircrew in England and in the training system. Hitsman, *Manpower Problems of the RCAF*, 19–20; and Greenhous et al., *The Crucible of War*, 96.

107. Both St. Laurent and Scott were awarded MiD. For a summary of their service records and the citations for the MiD, see the RCAF Association website and search for their names at: <https://www.rcfassociation.ca/heritage/search-awards/>.

108. The determination of accident attribution was made by reviewing over 300 accident reports at random.

109. Greenhous et al., *The Crucible of War*, 764. The creation of SEs meant that squadrons were then composed strictly of aircrew and a small administrative section, normally an adjutant (officer) and six to eight support personnel (airmen).

110. The RCAF was the first of the three services to employ women. The fact that women were serving in the Air Force put pressure on the other two services to follow suit. For an overview of women in the Canadian forces through the 20th century, see Barbara Dundas, *A History of Women in the Canadian Military* (Montréal: Art Global, 2000). Another very useful history of the RCAF WD in the Second World War is Mary Ziegler, *We Serve that Men May Fly: The Story of the Women's Division, Royal Canadian Air Force* (Hamilton: RCAF [WD] Association, 1973).

111. The name was changed to reflect the fact that the women were in fact full members of the RCAF, not part members as the term “Auxiliary” in the CWAAF name might have suggested. They were subject to the same regulations and restrictions as the men, although for disciplinary matters they were subject to WD officers. The organization was referred to as the “WD,” while the female personnel were “WDs.”

112. The first nine were general and stenographic clerks, cooks, transport drivers, equipment assistants, fabric workers, hospital assistants, telephone operators and standard duties (general duties and mess women). Some sources list eight trades; however, to the RCAF, the general clerks and stenographic clerks were two different trades.

113. The 37 include all those who died while on active service, which did not end until 1947. One of the seven air-crash casualties was a nursing sister. The crash of the Liberator killed three members of the WD, including LAW Margaret Mann, whose brother also died in the crash. For the list of WD casualties to July 10, 1945, see Canada, DHH, 181.005 (D1999), Memo to Aircraft Maintenance Support Officer, July 10, 1945.

114. Among the officers of the WD, 16 were appointed to be members of the Order of the British Empire and 23 received MiD. For the airwomen, they ranged in rank from airwoman class 1 to flight sergeant. Canada, DHH, 181.009 (D1999), "Decorations Won By Women, Second World War."

115. For a summary of Anderson's service and the citation, see the Royal Canadian Air Force Association "Search Awards" web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

116. For a summary of Armitage's service and the citation, see the Royal Canadian Air Force Association "Search Awards" web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

117. FS Lyon was a member of No. 10 Bombing and Gunnery School. Among his inventions were: a turret training device that projected several aircraft images on to a wall for trainees to follow with their sights; a hits recorder and fire interrupter for turret training; and a computer for camera guns, which indicated the correct point of aim on film for assessment purposes. Suggestion awards were formal recognition of an individual's ideas that helped to improve the operations of the RCAF in some way. For a summary of FS Lyon's service and the BEM citation, search for his name in the RCAF Association "Search Awards" web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

118. Douglas, *Creation of a National Air Force*, 500, 502, 505.

119. Japanese planners had made a major mistake. The balloons were hoped to create massive forest fires; however, they were sent over during the rainy season on the west coast of North America. For a description of these activities, see Mathias Joost, "Western Air Command and the Japanese Balloon Campaign," *Canadian Military Journal* 6, no. 3 (Summer 2005): 59–68.

120. The sinking of the SS *Caribou* also resulted in the loss of 16 airmen. One of the airmen who survived the sinking, AC1 Frank Burton, was to perish in the hostel fire, which claimed the lives of 99 military and civilian personnel. In April 1943, the MV *Amerika* was torpedoed with the loss of 37 RCAF P/Os. This was the single biggest loss of life of RCAF personnel at the hands of a U-boat. The fire at the hostel resulted in LAC George Lyon being awarded the George Medal for breaking a window from the outside and lifting through at least 10 people, despite himself being badly burned and bleeding profusely.

121. No citation for his MiD has been found.

122. For a summary of FS Mott's service and the MiD citation, search for his name on the RCAF Association web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

123. Douglas, *Creation of a National Air Force*, 413, 415.

124. Douglas, *Creation of a National Air Force*, 418.

125. A copy of the citation and his biographical information can be found at the RCAF Association web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

126. Greenhous et al., *Crucible of War*, 47–50. "Colonials" was a derogatory term used to suggest that someone, originating from a former British colony, was somehow inferior to someone from Great Britain.

127. There is a certain irony to this, as during the negotiations leading to the signing of the BCATP, the RAF had proposed that Canadian squadrons could be composed of RCAF aircrew and RAF ground crew. Hitsman, *Manpower Problems of the RCAF*, 7; and 437 Squadron, *Operations Records Book*, September 18 and 27 and October 25 and 27, 1944.

128. An example of the ongoing effort to provide Canadian airmen for RCAF units can be seen in Canada, DHH, 181.005 (D1571) Letter, Air Officer I/C Records to OC, 3078 Servicing Echelon, May 15, 1943; and Canada, DHH, Letter, AOC 11 Group to Air Officer I/C Records, October 14, 1943, requesting RCAF signals personnel for No. 3078 Servicing Echelon. Nominal rolls of some SEs from September 30, 1944, can be found in Canada, DHH, 181.005 (D1968). For an overview of the Canadianization issue pertaining to aircrew, see Greenhous et al., *Crucible of War*, Chapter 3. Hitsman, *Manpower Problems of the RCAF*, 36–38, discusses the ground crew issues. RCAF airwomen were not transferred to the RAF manning pool; hence, they remained under RCAF administrative control.

129. “SS. *Caribou* Torpedoed By Sub On N.S. to Newfoundland Trip; 14 Children Among the Victims,” and “Casualty List SS. *Caribou*,” *Hamilton Spectator*, October 17, 1942. One RCAF officer was also killed among the 136 lives lost in the attack by U-69.

130. On D-Day, the 2nd Tactical Air Force consisted of 124, 127 and 144 (Fighter) Wings, 128 (Reconnaissance) Wing as well as 129 and 143 (Fighter Bomber) Wings, and it was composed of both RAF and RCAF squadrons.

131. Greenhous et al., *Crucible of War*, 318–19.

132. Greenhous et al., *Crucible of War*, 344–45. Op VERITABLE was the northern part of the allied army pincer movement to clear the Germans from the area between the Rhine and Maas rivers, while Op CLARION was an air offensive designed to strangle communications in the Ruhr in support of Op VERITABLE.

133. FS Bradley was a member of 6409 SE, which supported 409 Squadron. His citation and a summary of his service can be found on the RCAF Association “Search Awards” web page: <https://www.rcafassociation.ca/heritage/search-awards/>.

134. LAC Ewasyshyn was serving with 6412 SE. The pilot was P/O Lloyd Frederick Berryman. Their citations and summaries of service can be found on the RCAF Association “Search Awards” web page: <https://www.rcafassociation.ca/heritage/search-awards/>. Another such incident was the crash of a bomber at RCAF Station Tholthorpe on the night of June 27–28, 1944, for which Air Commodore Arthur Dwight Ross was awarded a George Cross, Flight Sergeant J. R. M. St. Germain and Corporal M. Marquet were awarded the George Medal and LACs M. M. McKenzie and R. R. Wolfe the British Empire Medal.

135. Sgt McLeod was with 8420 SE. Greenhous et al., *Crucible of War*, 646649. For reasons unknown, he did not receive the award.

136. Greenhous et al., *Crucible of War*, 681–82.

137. Greenhous et al., *Crucible of War*, 764–65. Fauquier enlisted in the RCAF in 1939, rising to the rank of air commodore. He took a demotion to command 617 Squadron, the Dambusters. He also served as CO of 405 Squadron and flew with both the RCAF and RAF. He was known as being a tough commander who wanted to get as many aircraft on target as possible and never took the ground crew for granted; he had great respect for them as did they for him.

138. Corporal Brame was a member of 9425 SE. His citation can be found on the RCAF Association “Search Awards” web page: <https://www.rcfassociation.ca/heritage/search-awards/>.

139. Sergeant Nichols was a member of No. 62 Base SE. His citation can be found on the RCAF Association website at: <https://www.rcfassociation.ca/heritage/search-awards/>.

140. Greenhous et al., *Crucible of War*, 765.

141. T. W. Melnyk, *Canadian Flying Operations in South East Asia, 1941–1945* (Ottawa: Minister of Supply and Services Canada, 1976), 126–27. LACs R. H. Prosser and K. A. Scott were killed when their Dakota was shot down, while Corporal A. M. White was injured in another Dakota.

142. Melnyk, *Canadian Flying Operations*, 116, 119.

143. Unification was the final step in the government-initiated process to combine the three military services into one organization.

144. For example, the RCAF’s Air Defence Command became its own Canadian Forces Command, while the RCAF’s training system became part of the Canadian Forces Training Command.

145. Up to the end of 1974, the Air Force flew at least 36 missions to provide food, shelter and other necessities when earthquakes, floods, hurricanes and volcanic eruptions struck in places such as the Caribbean, South America, the Indian subcontinent and Europe. Other missions flew gifts of equipment to Caribbean nations.

146. See “From the Suggestion Box” in Volumes 3 and 4 (1951 and 1952) of the *Roundel*. The *Roundel* was the RCAF’s monthly—later bi-monthly—newspaper that was published until the introduction of the Canadian Forces’ *Sentinel* in 1964.

147. The Air Investigation Branch later became the Directorate of Flight Safety, while *Flight Comment* was initially named *Crash Comment*. The archived inventory of *Flight Comment* can be found at <https://flightcomment.ca/>.

148. Canada, DND, *Defence 1971* (Ottawa: Information Canada, 1972), 19.

149. Op MAYFLOWER was the name for the contingency plan. The RCAF plan was coordinated with the Canadian Army and, to some extent, with the British military services. See DHH, 181.009 (D5813); 113.063 (D1) and 112.3M2.003 (D29).

150. See René Morin, *DND Dependents’ Schools, 1921–1983* (Ottawa: DHH, 1986), Chapter IV, www.cmp-cpm.forces.gc.ca/dhh-dhp/his/docs/Dependants_e.pdf.

151. Most Auxiliary medical units were disbanded in 1963 and early 1964, as they were no longer required. Ten of the Auxiliary flying squadrons served in Air Defence Command where, from 1948 to 1955, they were the primary air defence force as the RCAF built up No. 1 Air Division in Europe. In 1958, all 11 remaining squadrons were in the transport role for national emergencies and were flying Beech Expeditors left over from the Second World War. The SAGE system allowed many radar stations to have reduced manning, thereby eliminating the need to have an augmentation force in time of emergencies.

152. Plans G and H of the RCAF indicated that the Auxiliary would be equipped with the CF-100, which is supported at the strategic level in the minutes of the Air Members of December 14, 1953, DHH, 73/1223, Box 91, File 1824, December 14, 1953, Item 1037. The minutes indicate that the first CF-100 would go to the Auxiliary in June 1955. The best reporting of the maintenance situation is in

the 438 Squadron historical notes, which report that it was the Auxiliary Support Unit (Regular Force personnel) that kept the squadron flying. See, for instance, Canada, DHH, Historical Return, December 1952–May 1953, Historical Return, June 1953–November 1953, 3.

153. Author's review of RCAF service cards, DHH, 76/10.

154. Canada, DHH, Air Force Administrative Order P1/33. The period of service depended upon the trade.

155. Canada, DHH, Air Force Administrative Orders 6.12/12, 6.23/01 and 6.23/02.

156. Canada, DHH, Air Force Administrative Orders 14.00/07, 29 June 1956 and 14.00/08, April 20, 1956.

157. See the various iterations of DHH, Air Force Administrative Orders 11.02/03 and 11.02/04.

158. No figures are available for the period after unification (February 1, 1968), as there was no RCAF against which to count enlistment or strength.

159. Jean Pariseau and Serge Bernier, *French Canadians and Bilingualism in the Canadian Armed Forces, Volume 1, 1763–1969: The Fear of a Parallel Army* (Ottawa: Department of Supply and Services Canada, 1986), 149–50, 159.

160. Pariseau and Bernier, *French Canadians and Bilingualism*, 159. There is no breakdown as to whether this is Regular Force and Auxiliary, or if it included English speakers who also spoke French.

161. Pariseau and Bernier, *French Canadians and Bilingualism*, 163, and see Operational Record Book, 3001 Technical Training Unit, 14 July 1952 and 3 June 1953, when instructors were attach-posted to the unit to provide summer instruction.

162. Pariseau and Bernier, *French Canadians and Bilingualism*, 165.

163. Canada, DHH, A-AD-267-000/AF-004, *The Insignia and Lineages of the Canadian Forces, Volume 4: Operational Flying Squadrons* (Ottawa: DHH, 2000), 2-180; and F 19012638, Director of Organization, June 26, 1969, Canadian Forces Organization Order 5.7.2, École technique des Forces canadiennes, St. Jean, QC.

164. Canada, LAC, Record Group 24, Accession 83/84, vol. 1624, File 304-117, Letter 304-101 Director of Personnel Management, July 18, 1956, S/L M. G. Bryan to Commanding Officer, RCAF Recruiting Unit Toronto.

165. Canada, DHH, 90/447, File 104, "History of the RCAF (Women's Division), 1941–1971," 26 May 1971, 13.

166. While many of the trades were support positions (e.g., clerks), others were directly related to aircraft maintenance and control, such as radar technician, electrical technician and instrument technician.

167. Canada, DHH, 90/447, File 104, "Short History of AW Development in the RCAF since July 1951," 7.

168. Canada, DHH, 90/447, File 104, "History of the RCAF (Women's Division)," 14.

169. Canada, DND, *Defence 1971*, 17.

170. Canada, DHH, 86/330, Folder 233, Public Service of Canada, Interaction 3, no. 3 (July 1974): 3. Women had been members of the RCAF Service Police during the 1950s, but when there got to be too few women, this trade was closed to them.

171. Canada, DHH, 90/447, File 21, Briefing, *Women in the Canadian Forces*, 2.

172. Some of the women came from Air Command HQ, Aerospace Engineering Test Establishment (AETE) and CFB Cold Lake. DHH, 90/447, File 46, "Statistical Data on Servicewomen Employed in Middle East from 1975–1979."

173. Canada, DHH, Air Force Administrative Order P1/13, Appendix A, issued August 31, 1949.

174. DHH, 73/1223, Box 90, File 1821, Minutes of the Air Members, May 25, 1949, Item 519; and 19 October 1950, Item 694.

175. Canada, DHH, 895-61/35 Director of Organization and Establishment (DOE) April 12, 1958, Organization Order 5.5.7, Aircraft Trade School, Camp Borden, Ontario. The three schools were the Trade Introductory School, the Aircraft Trades School and the Armament School.

176. Canada, DHH, 79/116, 1070D-2 (DOE), 14 July 14, 1953, Organization Order 50/53 – Field Technical Training Units.

177. Canada, DHH, 79/116, 895-108/4 (DOE) October 22, 1958, Amendment List 2 to Organization Order 8.8.1(L) – 4 Field Technical Training Unit, Trenton, Ontario; 895-108/4 (DOE) July 29, 1958, Amendment List 1 to Organization Order 8.8.1(L) – 4 Field Technical Training Unit, Trenton, Ontario; 895-108/5 (DOE) May 23, 1957, Amendment List 2 to Organization Order 4.4.4 – 5 Field Technical Training Unit (F86), RCAF, Zweibrucken, Germany; and 895-108/7 (DOE) June 4, 1959, Amendment List 1 to Organization Order 5.15.2 – 7 Field Technical Training Unit, Gimli, Manitoba.

178. Canada, DHH, A-AD-267-000/AF-004, *Insignia and Lineages*, 2-164.

179. The Air Council minutes of 1952 to 1955 are filled with discussions about how to solve the problem of not enough tradesmen in the Auxiliary. The Air Members even considered staffing the trade positions of the Auxiliary completely with Regular Force members as early as May 1952. See Canada, DHH, 96/24 Box 9, File 5, "Meeting of Air Members," May 28, 1952, item 696.

180. The best work on Op HAWK is Lawrence Motiuk's *Thunderbirds for Peace: Diary of a Transport Squadron* (Ottawa: Larmot Associates, 2004), which brings together the minimalist official records of the squadron with the journals and other unpublished sources. For brief summaries of Op HAWK, see "Details/Information for Canadian Forces (CF) Operation Hawk," National Defence and the Canadian Forces, last modified April 15, 2016, <http://uav-cmp.forces.gc.ca/dhh-dhp/od-bdo/asia/HAWK-eng.asp>; and Hugh Halliday, "Operation Hawk: The Korean Airlift," *Legion Magazine*, August 7, 2013, <https://legionmagazine.com/en/2013/08/operation-hawk-the-korean-airlift-2/>.

181. See the historical reports of the fighter squadrons in Canada and Europe to note the high pace of training.

182. In assessments of the early 1950s, the RCAF recognized that the CF-100 did not have a great speed advantage over some Soviet bombers, which meant that the CF-100 likely only had one chance of attack, as it did not have the speed to catch the bomber for a second try. Hence, the proper vector could mean the difference between a successful or failed attack. It also required the fighter-control operator to have a knowledge of the CF-100s operating parameters for the best attack and of the performance of the Soviet bombers.

183. Interestingly, the operational record books for fighter squadrons are missing the months of the crisis, while those for radar squadrons only indicate that they were at a higher level of readiness. The records of the RCAF squadrons in Europe are similarly devoid of details.

184. The security requirements for the nuclear weapons were tight and quite extensive. The best source of information on this is Ronald J. Donovan and David V. McElrea, *A History of the Royal Canadian Air Force Police and Security Services* (Renfrew, ON: General Store Publishing House, 2008). Chapter 13 provides details on how the security operation was run. It should be noted that the Army had the nuclear-equipped Honest John missile system.

185. For an overview of the maritime picture as it pertains to Canada's situation, see Peter T. Haydon, "Canadian Involvement in the Cuban Missile Crisis Re-Reconsidered," *Northern Mariner* 17, no. 2 (April 2007): 39–65.

186. Canada, DHH, Historical Report, 408 Squadron, November 1–11, 1962.

187. See for example Canada, DHH, Historical Record, 436 Squadron, November 15–19, 1954.

188. Canada, DHH, Historical Record, 435 Squadron, December 1953–May 1954, Appendix C, Report on Operation Loup-garou; for example, and DHH, Historical Record, 436 Squadron, December 8–9, 1954.

189. Canada, DHH, Historical Record, 436 Squadron, January 1955.

190. The DHH Resolute Bay Historical Record is replete with such instances, and although there was a hangar, it was not warm in the winter.

191. "Operation Danaca," *Sentinel: Magazine of the Canadian Forces* 4 (1974): 18–20.

192. Canada, DHH, Historical Report, 436 Squadron, November 20, 1956.

193. D. J. Goodspeed, *Directorate of History, Report No. 12: Canada and Peace-keeping Operation West New Guinea (West Irian)* [Ottawa: DND, December 9, 1966], 3–6.

194. Canada, DND, *Defence 1971*, 19. Mess dress of the old services could still be worn.

195. Canada, DHH, F 1901-2574, Director of Organization, February 2, 1970, Canadian Forces Organization Order 5.5.7, Canadian Forces School of Aerospace and Ordnance Engineering, and message CANGENHED 063, April 7, 1970.

196. Canada, DHH, Annual Historical Report, Canadian Forces Base Trenton, 1970.

197. Canada, DHH, 77/529, Catherine Eyre, *The Organization of Air Command, 1973–1976*, Files 2, 11, 12, 14.

198. Eyre, *Organization of Air Command*, 21–22.

199. The other casualties were the two pilots, the navigator and four Army NCMs from the Army contingent of Op DANACA.

200. During the 1993 election campaign, Jean Chretien called the EH101 a "Cadillac." One of his first acts as prime minister was to cancel the contract, which was done at costs to the government and Canadian industry that have ranged up to \$1 billion.

201. Dr. Allan English, *Command and Control of Canadian Aerospace Resources: Conceptual Foundations* (Ottawa: DND, 2008), 62, 76.

202. English, *Command and Control of Canadian Aerospace Resources*, 62.

203. Canada, Public Works and Government Services, *Independent Panel on Canada's Future Role in Afghanistan* (Ottawa: Public Works and Government Services, 2008), 37, recommendation 2, point 3. The report of the commission was unofficially known as the "Manley Report." The five-member panel examined the future of Canada's commitment in Afghanistan.

204. Canada, DND, "RESTORING THE HISTORIC NAMES OF THE ROYAL CANADIAN NAVY, THE CANADIAN ARMY AND THE ROYAL CANADIAN AIR FORCE," CANFORGEN 155/11 251649Z, August 2011.

205. Canada, DND, "RCAF GUIDANCE ON NEW UNIFORM AND RANK TITLE," CANFORGEN 170/14 021257Z, October 2014; and Canada, DND, "INTRODUCTION OF UPDATED RCAF RANK AND INSIGNIA," CANFORGEN 062/15 271435Z, March 2015. The rank insignia and rank change would be effective April 1, 2015.

206. English, *Command and Control of Canadian Aerospace Resources*, 71–72.

207. Major M. Purdy, *The Air Force Contingency Capability*, prepared August 12, 1998; LCol W. J. Williams, *Air Force Expeditionary Capability Concept of Operations, Briefing to AFDC*, October 19, 2007; and *Air Force Expeditionary Capability Project*. These documents can be accessed by requesting them through the Access to Information Act.

208. Beginning in 1971, 418 Squadron shared 440 Squadron's Twin Otters, using them in a search-and-rescue role. In 1975, 402 Squadron began flying Dakotas in support of the Canadian Forces Air Navigation School (as well as performing search and rescue and light transport), and when 420 Squadron was reformed on May 1, 1975, they shared 880 Squadron's Trackers in coastal patrol duties. Air Reserve maintainers worked alongside their Regular Force counterparts in keeping the aircraft operational, although the Regular Force personnel were the primary support.

209. On the support side, a ratio of one-third Regular Force and two-thirds Reserve Force personnel was used when the Air Reserve's Nos. 1 and 2 Tactical Aviation Support Squadrons were formed in 1987. They provided maintenance and logistical support not only to the Air Reserve helicopter squadrons of 1 and 2 Wings, but also to transiting Regular Force aircraft and Regular Force units as well as providing personnel to various exercises and operations in Canada and overseas. The squadrons were disbanded in 1996 along with two Air Reserve flying squadrons (401 and 411). 418 Squadron was disbanded in 1994. Air Reserve personnel are now integrated into the establishments of RCAF formations and units. The three remaining Air Reserve flying squadrons maintain a higher ratio of Reserve Force to Regular Force personnel, thus are "reserve-heavy." The Air Reserve Airfield Engineering Flights also fall into this category of being reserve-heavy.

210. Canada, Public Service Commission of Canada, *History of Employment Equity in the Public Service and the Public Service Commission of Canada* (Ottawa: Public Service Commission of Canada, 2011). A synopsis of the evolution of the Employment Equity Act can be found in Chapter 2, especially pages 8–25.

211. "Report Gives Military Failing Grade on Equity," CBC, March 16, 2001, <http://www.cbc.ca/news/canada/report-gives-military-failing-grade-on-equity-1.256775>.

212. Major Deanna Manson, “Canadian Forces ‘MAMS’ – Mobile Air Mobility Support – Women Traffic Technicians at Work on Domestic and Deployed Operations,” in *Women and Leadership in the Canadian Forces: Perspectives and Experience*, ed. Karen D. Davis (Kingston: Canadian Defence Academy Press, 2007), 59–68. It was found that women could do the work equally well.

213. Barbara Dundas, *A History of Women in the Canadian Military* (Montréal: Art Global, 2000), 124.

214. Lieutenant-General Al DeQuetteville, “Flight Plan,” *Roundel* 3, no. 2 (September 1995): 4. The trades included: 561 Metals Tech, 562 Machinists and 563 Refinisher Tech, which became 565 Aircraft Structures Tech; 511 Aero Engine Tech, 512 Airframe Tech, 513 Aviation Tech, 531 Safety Systems Tech and 572 Air Weapons System Tech, which became 514 Aviation Tech; and 521 Integral Systems Tech, 524 Comm and Radar Systems Tech, 525 Avionics Tech, 551 Instrument Electrical Tech and 572 Air Weapons System Tech, which became 526 Avionics Tech.

215. Parliament of Canada, House of Commons, Standing Committee on Public Accounts, “Eighteenth Report,” accessed January 18, 2022, <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=1032272&Language=E&Mode=1&Parl=37&Ses=2>. Initially, the training was done by Bombardier; however, in October 2015, it sold its Military Aviation Training Unit to CAE. “NATO Flying Training in Canada (NFTC)” CAE, modified January 2022, <http://www.cae.com/defence-and-security/training-and-services/training-centres/NATO-flying-training-in-canada-NFTC/>.

216. Captain Kyle Welsh, “Providing Essential Support to Canada’s Mission in Afghanistan,” *The Canadian Air Force Journal* 3, no. 2 (Spring 2010): 20; and Murray Brewster, “Airbus Chosen to Build Canada’s New Search Planes, Ending 12-Year Procurement Odyssey,” CBC, December 7, 2016, <http://www.cbc.ca/news/politics/fixed-wing-search-planes-1.3885653>.

217. Op DETERMINATION was the UN-sanctioned effort to force Iraq to allow United Nations Special Commission on Iraq inspectors to look for weapons of mass destruction. Canadian participation in the operation lasted from February 10 to June 16, 1996, and involved HMCS TORONTO and two KC-130 Hercules refuellers.

218. Although there are many more air force international operations and missions, these were selected because they involved detachments operating from locations outside Canada.

219. Dr. Allan English and Colonel John Westrop (Retired), *Canadian Air Force Leadership and Command: Implications for the Human Dimension of Expeditionary Air Force Operations* (Toronto: Defence Research and Development Canada, November 2006), 84–85.

220. English and Westrop, *Canadian Air Force Leadership*, 208, 212.

221. See for example Colonel Iain Huddleston, “Changing with the Times: The Evolution of Canada’s CP-140 Aurora,” *Canadian Naval Review* 11, no. 1 (2015): 10–15.

222. Lieutenant-Colonel David L. Bashow et al., “Mission Ready: Canada’s Role in the Kosovo Air Campaign,” *Canadian Military Journal* 1, no. 1 (Spring 2000): 56.

223. Bashow et al., “Mission Ready: Canada’s Role,” 58.

224. Jean Morin and Richard Gimblett, *The Canadian Forces in the Persian Gulf: Operation Friction, 1990–1991* (Toronto: Dundern Press, 1997), 44–46.

225. Major M. Joost, unpublished manuscript on Op SCOTCH. Op SCOTCH was initially an airlift operation, bringing Belgian soldiers into Rwanda and evacuating Canadian and foreign nationals. It soon became a humanitarian operation, as medical supplies were flown into the country and UN troops flown out.

226. Colonel Michael Ward et al., "Task Force Kosovo: Adapting Operations to a Changing Security Environment," *Canadian Military Journal* 1, no. 1 (Spring 2000): 68, 70.

227. In the case of the Auroras, maintenance personnel have now developed a self-sustaining supply kit to provide the necessary parts, and which is also readily transportable. Huddleston, "Changing with the Times," 14.

228. Colonel David L. Bashow et al., "Mission Ready: Canada's Role in the Kosovo Air Campaign," *Canadian Military Journal* 1, no. 1 (Spring 2000): 58, <http://www.journal.forces.gc.ca/vo1/no1/index-eng.asp>. The individual was Sergeant D. M. Neal of 1 Air Maintenance Squadron.

229. Ravi Tangri, "Tech's Ingenuity Saves \$78,000," *Roundel* 3, no. 8 (April 1996): 9. Corporal Steve McRae, on checking to find out what the problem was with the engines, suggested that he could go to the ship and repair the engines on site, which would save time and money compared to shipping two engines. In fact, once on-board the frigate, he had both engines running again within nine hours.

230. Morin and Gimblett, *Canadian Forces in the Persian Gulf*, 70, 72. The noted Sea King remained a challenge to the maintenance personnel.

231. Morin and Gimblett, *Canadian Forces in the Persian Gulf*, 135–36.

232. Captain Guylaine Codere, "From Point A to Point B," *Roundel* 3, no. 2. (September 1995): 16; and Captain Joe Kupecz, "Humanitarian Assistance in Haiti," *Roundel* 3, no. 3 (October 1995): 21.