THE ROYAL CANADIAN

# AIR FORCE JOURNAL

FALL 2012 VOL.1 NO.4

## IN THIS ISSUE



PRODUCED BY
THE CANADIAN FORCES
AEROSPACE WARFARE CENTRE

National Defence Défense nationale Canada

***THE ROYAL CANADIAN AIR FORCE JOURNAL*** is an official publication of the Commander Royal Canadian Air Force (RCAF) and is published quarterly. It is a forum for discussing concepts, issues, and ideas that are both crucial and central to aerospace power. The *Journal* is dedicated to disseminating the ideas and opinions of not only RCAF personnel, but also those civilians who have an interest in issues of aerospace power. Articles may cover the scope of air force doctrine, training, leadership, lessons learned, and air force operations: past, present, or future. Submissions on related subjects such as ethics, technology, and air force history are also invited. This *Journal* is therefore dedicated to the expression of mature professional thought on the art and science of air warfare and is central to the intellectual health of the RCAF. It serves as a vehicle for the continuing education and professional development of all ranks and personnel in the RCAF as well as members from other environments, employees of government agencies, and academia concerned with air force affairs.




Published by Canadian Forces Aerospace Warfare Centre, Trenton, Ontario
ISSN 1927-7601





http://www.rcaf-arc.forces.gc.ca/cfawc/eLibrary/Journal/Current_Issue_e.asp
http://trenton.mil.ca/lodger/cfawc/eLibrary/Journal/Current_Issue_e.asp





For copies of this publication or to be placed on a distribution list contact CFAWCProd@forces.gc.ca


## NOTE TO READERS

As a bilingual journal, readers should take note that where quotations are translated from their original language, we will use the term [Translation] at the end of the quote to indicate that readers can find the original text in the other language version of the *Journal*. Unless otherwise noted, photographs appearing in the RCAF *Journal* are attributable to the public domain.

THE ROYAL CANADIAN

# AIR FORCE JOURNAL

# SUBMISSION REQUIREMENTS

***THE ROYAL CANADIAN AIR FORCE JOURNAL*** welcomes the submission of articles, book reviews and shorter pieces (which will be published in the Letters to the Editor, Points of Interest and Pushing the Envelope sections) that cover the scope of air force doctrine, training, leadership, lessons learned and air force operations: past, present or future. Submissions on related subjects such as ethics, technology and air force history are also invited.

## JOURNAL SECTIONS

| ITEM | WORD LIMIT* | DETAILS |
|---|---|---|
| LETTERS TO THE EDITOR | 50-250 | Commentary on any portion of a previous *Journal*. |
| ARTICLES | 3000-5000 | Written in academic style. |
| BOOK REVIEWS | 500-1000 | Written in academic style and must include:<br>• the book's complete title (including sub-title);<br>• the complete names of all authors as presented on the title page;<br>• the book's publisher, including where and when it was published;<br>• the book's ISBN and number of pages; and<br>• a high resolution .jpg file (at least 300 dpi and 5 by 7 inches) of the book's cover. |
| POINTS OF INTEREST | 250-1000 | Information on any topic (including operations, exercises, and anniversaries) that is of interest to the broader aerospace audience. |
| PUSHING THE ENVELOPE | 250-2000 | Forum for commentary, opinions, and rebuttal on *Journal* articles and/or issues that are of interest to the broader aerospace audience. |

* Exclusive of endnotes

## AUTHORS ARE ASKED TO NOTE THE FOLLOWING GUIDELINES

- Submissions may be made in either official language.
- Authors must include a brief (one paragraph) biographical sketch which includes current appointment /position, telephone number, and email address. Please include all professional and academic designations as well as military decorations.
- Selected articles that have been peer reviewed have a to the left of the title.
- The Senior Editor will notify contributors on the status of their submission. It may not be possible to publish all submissions.
- All text submissions must be digital, in Microsoft Word or rich text format. Files must not be password protected and must not contain macros. Files may be submitted by mail or email at the addresses provided below.
- All supporting tables, images and figures that accompany the text should be sent in separate files in the original file format (ie., not imbedded in the text). Original vector files are preferred; high resolution (not less than 300 dpi) .psd or .jpg files may be submitted.
- Authors are now required to provide "alternate text" with detailed description for all diagrams and images. Not to be confused with captions, which are still needed. Right mouse click over your illustration and select "format picture" <select "Web" tab> insert "Alternative text:" and click "OK".
- Copyright permissions are required for all material that is not Department of National Defence or author originated. It is the author's responsibility to obtain and submit the necessary written permissions which must include the author's/artist's name as well as the publisher's name and location. Any material not meeting these requirements may be omitted from the article.
- The Senior Editor may select images or have graphics created to accompany submissions.
- Authors should use *Oxford English* or *Petit Robert* spelling. When required, reference notes should be endnotes rather than footnotes and formatted in Chicago style. For assistance refer to *The Little, Brown Handbook, Le guide du rédacteur,* or CFAWC Production Section at Francoise.Romard@forces.gc.ca
- Acronyms and abbreviations should be used sparingly:
  - If they are required in the text, the term is to be written out in full the first time it is used and then followed by the abbreviated form in brackets.
  - If they are required in tables or figures, each table and figure will contain a list of abbreviations.
  - A list of all abbreviations (and their terms) used in the text will be included at the end of each submission.
- The Senior Editor reserves the right to edit submissions for style, grammar, and length, but will not make editorial changes that will affect the integrity of the argument without consulting the author.

## CALL FOR SUBMISSIONS

FOR THE **SPRING 2013** ISSUE: **30 JANUARY 2013**
FOR THE **SUMMER 2013** ISSUE: **30 APRIL 2013**
FOR THE **FALL 2013** ISSUE: **30 JULY 2013**
FOR THE **WINTER 2014** ISSUE: **30 OCTOBER 2013**

## FOR FURTHER INFORMATION OR TO MAKE A SUBMISSION PLEASE CONTACT THE EDITOR AT:

Canadian Forces Aerospace Warfare Centre
8 Wing Trenton
Box 1000 Stn Forces
Astra, Ontario K0K 3W0
Attn: Major William March
William.March@forces.gc.ca

## DISCLAIMER

VOL. 1 | NO. 4
FALL 2012




CF Photo: Sgt Matthew McGregor


CF Photo: Sgt Frank Hudec


CF Photo: Sgt Robert Bottrill

## ARTICLES



## BOOK REVIEWS

# EDITOR-IN-CHIEF'S MESSAGE

This is my first editorial as the Editor-in-Chief of the *Royal Canadian Air Force Journal*, and I must admit that when I took over as the Commanding Officer of the Canadian Forces Aerospace Warfare Centre, with the myriad of responsibilities that came with the position, the *Journal* did not loom large in my mind. However, over the past few weeks I have had the opportunity to think about this publication and its role within the Air Force writ large. The more I thought about it, the more important the need for a publication like the *Journal* became apparent to me.

We, the members of the Royal Canadian Air Force (RCAF), are professional practitioners of air power. This is not a unique claim. Air power, in its broadest interpretation, may include a robust manufacturing component, a viable airline industry as well as the contributions of other government departments and agencies. In this construct, the RCAF is but one "strand" of the aerospace tapestry that Canada depends upon, but it has a unique responsibility in that the Air Force alone has been charged with mastering the warfighting elements of air power. Therefore, to be a professional airman or airwoman requires an in-depth understanding of air power that transcends what would be expected from our counterparts in civil or government agencies.

In the age of aerospace interdependencies, global terrorism, rising equipment costs, fluctuating budgets and the CNN-factor [Cable News Network 24-7 news coverage], highly sophisticated and technologically advanced platforms are not enough for an air force to be effective. Nor is it enough to be highly proficient at the tactical aspects of our chosen profession; that is expected and demanded of each of us. Our expertise at the "coal face" must be matched in equal measure with the intellectual understanding of air power and the mastery of its application. It should be a priority for all members of the RCAF to make an intellectual commitment to study air power in order to foster an atmosphere of continuous improvement.

Such a commitment, with all of the demands on our time, is not easy, but it is necessary. Highly capable and professional personnel, combined with advanced weapon systems and innovative approaches to operations, are essential to ensure that the RCAF remains a relevant and balanced element of

Canadian national power. Given our recent involvement in Afghanistan and Libya, there is no doubt that air power will continue to be a key factor in meeting Canada's security requirements now and in the future.

Therefore, RCAF personnel must constantly strive to improve their mastery of their profession through the study of air power, especially as it pertains to today's challenging security environment. And this is where the *Journal* comes into play. It serves as a venue where knowledge can be exchanged and ideas discussed for our mutual benefit and understanding. To this end, I will continue to encourage well-written, factual submissions from a wide variety of sources, be they from officer or non-commissioned member, recruit or veteran, Canadian or foreign, civil or military. The source of the material is, frankly, almost irrelevant as long as it serves the goal of increasing our understanding of air power and assisting the RCAF to be more efficient and effective in the way it does business. We should always remember that the future of the RCAF is as dependent upon the intellectual capital we invest as it is on the financial commitments we make.

Per Ardua Ad Astra

Colonel Martin Cournoyer, CD
Editor-in-Chief

## EDITOR'S NOTES:

Due to an editing error, the article "Air Power's Contribution to Coercion," which appeared in the Spring 2012 edition of *The Royal Canadian Air Force Journal* (Vol. 1, no. 2) included an incorrect title in the author acknowledgements. The text should have read: "The author would like to thank Group Captain (GPCAPT) Rick Keir, Director Royal Australian Air Force Air Power Development Centre (RAAF APDC) and Dr. Sanu Kainikara, Deputy Director Strategy (RAAF APDC), for their review of and significant contributions to this paper."

Due to an error, the article "Canadian Forces Air Command: Evolution to Founding," which appeared in the Winter 2012 edition of *The Royal Canadian Air Force Journal* (Vol. 1, no. 1) included an incorrect title on page 16. The text should have read: "The now two-star environmental chiefs, the Chief of Land Operations (CLO), Chief of Maritime Operations (CMO), and the Chief of Air Doctrine and Operations (CADO) reported through the DCDS, and they each had a separate air staff."

The pictures included with the Points of Interest story titled "Canada's Air Synthetic Environment Centre: Enabling Force Transformation" in *The Royal Canadian Air Force Journal* (Vol. 1, no. 3) (Summer 2012), were contributed by Captain Ray Dean.

# LETTERS TO THE EDITOR

Sir,

While I may not necessarily be an avid reader, I invariably make my way through most issues on night shifts. It was upon one such shift I read United States Air Force Captain Dumas' article "US Drone Strikes in Pakistan: Evil or Necessary?" in the Spring 2011 issue [Volume 4, Number 2]. In the closing paragraph he states: "Islamic extremism is now viewed as the greatest threat to US [United States] interests since the cold war." It immediately brought to mind a report I once read in a declassified United States intelligence review dated 14 Feb 1946.

In an article entitled "Islam: Threat to World Stability," the suggestion seems to be made that radical Islam was as great a threat to world stability as the Soviet Union, in large part because it is not a strongly unified and stable entity. The last page of the article even states that: "There cannot be world stability, when one-seventh of the earth's population exists under the economic and political conditions that are imposed upon the Moslems."

Whatever one's personal opinion may be on the matter, I can't help but wonder how different the world might have been if that warning had been taken seriously sixty-odd years ago.

Captain Kevin G. McLaren
D Flight Weapons Lead /
Flight Training Officer
21 Aerospace Control & Warning Squadron

Good Day William,

I would like to highlight an error printed in the article "Operation UNIFIED PROTECTOR: Understanding the Combined Air Operations Centre (CAOC)" in Volume 1, Number 2, Spring 2012 of the *Royal Canadian Air Force Journal*. On page 32, it states that "CC130J tankers" were part of the coalition task force. While the CC130J did support the mission, I believe this should properly read "CC130H(T) tankers." As the only tactical air-to-air refuelling squadron in the Royal Canadian Air Force, we here at 435 Transport and Rescue Squadron take significant pride in our mission support.

I enjoy the *Journal* articles and thank you for your efforts in their publication. Your support to correct this error is appreciated.

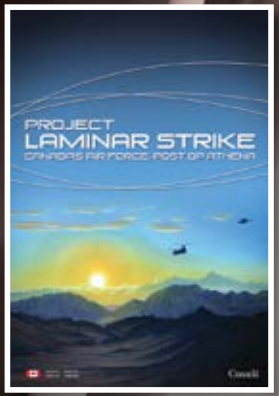
Cheers,
CK

Major Clayton Kotzer, PEng
Squadron Aircraft Maintenance and
Engineering Officer
435 Transport and Rescue Squadron

## EDITOR'S RESPONSE:

CK: Roger that—good eye! Indeed, the CC130H(T) aircraft are the only tactical tankers in the Canadian Forces' inventory; the CC130Js do not have a "tanking" capability.

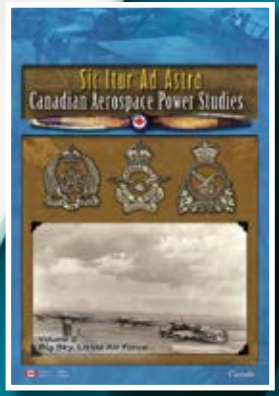
# ORDER YOUR BOOKS NOW!

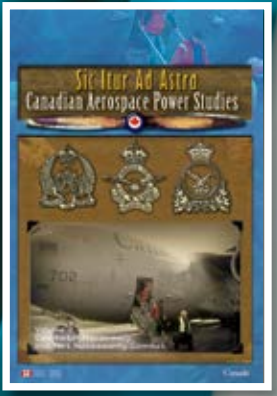


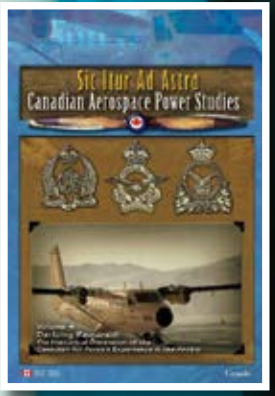







**THESE PUBLICATIONS ARE AVAILABLE UPON REQUEST.**
**Email: CFAWCProd@forces.gc.ca**

# FACTORS INFLUENCING THE DEFEAT OF ARGENTINE AIR POWER IN THE FALKLANDS WAR

BY OFFICER CADET COLIN CLANSEY, CD

A column of No. 45 Royal Marine Commandos march toward Port Stanley. Royal Marine Peter Robinson, carrying the Union Jack flag on his backpack as identification, brings up the rear. © Crown copyright. Imperial War Museum (IWM) www.iwm.org.uk/sites/default/files/public-document/IWM_NonCommercial_Licence_1.pdf

The Argentine defeat in the Falkland Islands War was due in part to the overwhelming superiority of the Royal Navy (RN).[1] Most of the action, however, involved the air powers of the Royal Air Force (RAF), the Fleet Air Arm of the RN, the *Fuerza Aérea Argentina* (*FAA*) or Argentine Air Force, and the *Commando de Aviación Naval Argentina* (*CANA*) or Argentine Naval Air Command.[2] This paper will analyse the strategy and tactics of the Argentine air forces as the most effective arm of the Argentine military junta. It will argue that the Argentine airmen displayed great skill, courage, and tenacity in their missions but that ultimately their defeat was due to the absence of rational leadership on the part of the junta, the presence of Chile as a strategic distraction, covert air intelligence given to Britain from other nations, and inferior technology.

The Argentine grand strategy envisioned by Lieutenant-General Galtieri, President and Commander-in-Chief of the Argentine Armed Forces, was to unite his people and provide a diversionary focus from the post-Perón revolutions that had essentially torn his country's economic and social fabric asunder.[3] The invasion of the Falklands was intended to give his people something to rally around and thus bolster national pride;[4] it was initially a political tool, aimed at motivating the negotiation of the sovereignty of the Islands.[5] There was no official intent for a large-scale military confrontation with the British. Indeed, the Argentine troops were originally slated to return to the mainland after the invasion, leaving only a small garrison behind.[6]

In a sense, Galtieri's initial success was his downfall. On 2 April 1982, he ordered the invasion of the Islands. Five hundred Argentine troops successfully captured Port Stanley from its guard of 69 Royal Marines, and for the next 10 weeks it became *Puerto Argentino*.[7] The resulting euphoria in mainland Argentina summarily convinced Galtieri that there would be no turning back, and he altered his military strategy from one of takeover, leave, and negotiate to one of defend the islands at all costs. The invasion precipitated a furious British response in the form of a large-scale military mobilization to retake the Islands. Forced now to adopt a defensive posture, Galtieri unilaterally ordered the airlift of the entire 10th Mechanised Brigade and the 3rd Brigade (a total well over 10,000 troops) to the Islands for their defence, a drastic increase from the initial 500 used for the invasion.[8] That he took this decision without consulting his own senior staff shows an overconfidence that belied a strategic ineptitude.[9] Not only was planning a ground defence an error (Argentine troops were not as well trained or experienced as the Royal Marines and the British Army), but the allocation of resources necessary to support the troop airlift constrained his strategic options.

With the British response in the form of the formidable Task Force 317 only a few weeks away,[10] Galtieri would have been better off using his time and airlift resources to move equipment to the Islands to construct a longer runway. The only hard runway available in the Falklands lay at Port Stanley, and although it could accommodate military turboprops and transports, it was too small for larger civilian or military jets and strike aircraft.[11] Strategic analysts in both the United States (US) and Britain viewed the lengthening of the runway as the most obvious first move, as it would have enabled Galtieri to forward-deploy his more advanced fighter aircraft, such as the Skyhawks and Daggers.[12] However, his airlift capability was limited: he had at his disposal only seven C-130 Hercules and a few Fokker F-27 transports, along with some impressed national airline aircraft capable of landing on short runways.[13] In using all of his transport capability to lift troops to the Islands, not only did he forego any opportunity to improve the runway, he also limited his ability to lift artillery or vehicles to support the troops he deployed.[14] The mismanagement of his limited strategic airlift capability thus caused the defence of the Islands to be lacking

in mobility, tactical firepower, and, with the exception of a small improvised airfield on Pebble Island,[15] close air support.

Another error in Galtieri's strategy was his assumption that the US would back the Argentine cause.[16] Argentina was offended that the US had denied its request for "full intelligence support"[17] in a war against Britain, indicating that Galtieri and his junta were naive about international affairs and politics and the "special relationship" between Britain and the US. The only intelligence Argentina was to receive from the US was Landsat imagery granted perforce due to a contractual agreement with the National Aeronautics and Space Administration (NASA).[18] Argentina thus managed to successfully acquire satellite imagery of South Georgia, the open seas of the south Atlantic, and the Falklands, presumably to assist in targeting the British task force with bombers; however, the US provided Britain with the same imagery and mollified London by showing that Landsat was a civilian image acquisition system that presented only low-resolution images of little intelligence value. Although the US was neutral on the matter of sovereignty of the Falklands itself and initially maintained an "even-handed approach,"[19] it was not neutral over the Argentine use of force, and there was never any real chance that Argentina would benefit from US military intelligence. Public and official support for Britain remained high both in the US and in Europe.

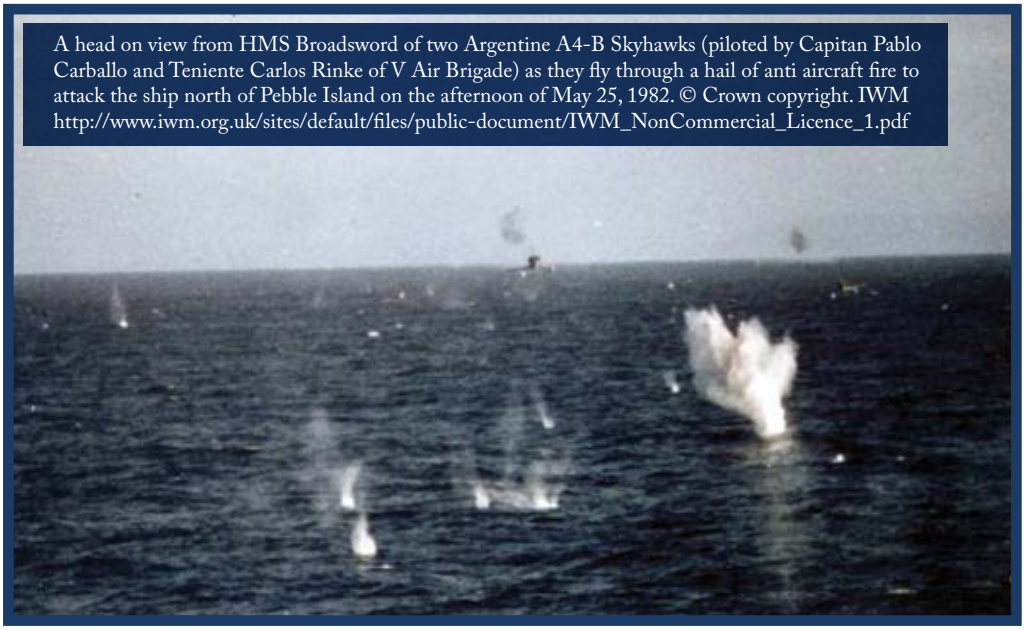
Galtieri may have failed to efficiently exploit his time advantage in terms of Task Force 317's distance from the Islands, but his air forces were more competently led and thus better prepared. Argentine air assets were divided among the three services: the *Commando de Aviación del Ejército*, or Army Air Command, which operated tactical and troop-lift helicopters from the Islands; *CANA*, which took advantage of airfields on the mainland and on the Islands;[20] and the *Fuerza Aérea Sur* (*FAS*), or Southern Air Force, a component of the *FAA* designated to control the air war in the South Atlantic.[21] The *FAS* was set up on 5 April under the command of an experienced air force pilot and commander, Brigadier-General (BGen) Crespo.[22] Its primary mission was simply to attack the British fleet. It was a modern, capable, and well-trained air force, and along with Chile's, one of the best in South America.[23] Crespo immediately set to the preparation of his pilots for the oncoming onslaught, exercising them vigorously against each other and against the Argentine navy standing in for British warships.[24]

While all army, navy, and air force units physically deployed to the Islands were under the command of BGen Menendez, who reported to Vice-Admiral Lombardo (Commander South Atlantic Theatre of Operations), Crespo himself reported directly to the ruling junta. He was expected to coordinate his operations with Menendez, but it was not a clear system of command and control,[25] particularly as air assets on the Islands were under Menendez's authority. This was exacerbated by an awkward air traffic control system that involved multiple departments, apparently necessitated by the requirement for intra-coordination of the air assets of the *FAA*, the Army Air Command and *CANA*.[26] In fact, the first time the *FAS* and *CANA* actually worked together was during the 30 May attack on Her Majesty's Ship (HMS) *Invincible*.[27]

Crespo himself was limited as to where to base his own 122 aircraft.[28] Most of his southern mainland bases were not sufficiently disposed to facilitate large-scale air mobilization; for instance, Rio Gallegos was underdeveloped, and the Naval Command bases at Trelew and Rio Grande were either limited by their distance from the theatre or by their inadequate facilities.[29] Crespo resorted to three civilian airfields in the Santa Cruz province to supplement his available airfields, chief of which was San Julian. The disposition of major Argentine air assets during the Falklands War is illustrated in Table 1.

| AIR BASE (Air/Navy/Civil) | COMMAND | AIRCRAFT |
|---|---|---|
| Rio Grande (Argentina's major military base during the War) | *FAS* | 10 Dagger (Mirage V fighter) |
| | *CANA* | 8 A4-Q Skyhawk (fighter)<br>4 Super Etendard (fighter)<br>6 S-2E Tracker (antisubmarine)<br>2 Neptune (antisubmarine/reconnaissance) |
| Rio Gallegos | *FAS* | 24 A-4B Skyhawk (fighter)<br>*10 Mirage III* (fighter)<br>*Canberra* (bomber)<br>*KC-130H* (tanker) |
| Santa Cruz | Civilian Airfield (FAS) | Mainland support establishment for Pucara deployed to Islands |
| San Julian | Civilian Airfield (FAS) | 10 Dagger (fighter)<br>15 A-4C Skyhawk (fighter) |
| Puerto Deseado | Civilian Airfield (FAS) | Served as a diversion field and a search and rescue facility |
| Comodoro Rivadavia | *FAS* | 20 Pucara (counter-insurgency)<br>3 Boeing 707 (transport)<br>7 C-130 (transport)<br>2 KC-130H (tanker)<br>Learjet (impressed civilian/reconnaissance)<br>6 Twin Otter (transport)<br>F-27, F-28 (transport)<br>*Mirage III* (fighter) |
| Trelew | *FAS* | 8 Canberra (bomber) |
| Port Stanley | *CANA* (under BGen Menendez) | 6 MB-339A (light strike)<br>1 Puma (SAR helo)<br>2 Skyvan (transport) |
| | *FAS* | *Pucara* (counter-insurgency) |
| | Army Air Command | 5 SA.330L Puma (tactical helo)<br>2 CH-47C Chinook (tactical helo)<br>9 UH-1H Iroquois (tactical helo)<br>3 A-109A Hirundo (tactical helo) |
| Goose Green | *FAS* | 24 Pucara |
| Pebble Island | *CANA* (under BGen Menendez) | 4 T-34C Mentor (light attack) |
| | *FAS* | Pucara (counter-insurgency) |

**TABLE 1. DISPOSITION OF MAJOR ARGENTINE AIR ASSETS AT THE TIME OF THE FALKLANDS WAR. AIRCRAFT IN ITALICS OFTEN FLEW OUT OF THE BASE INDICATED, BUT WERE OFFICIALLY STATIONED AT ANOTHER BASE.**[30]



A head on view from HMS Broadsword of two Argentine A4-B Skyhawks (piloted by Capitan Pablo Carballo and Teniente Carlos Rinke of V Air Brigade) as they fly through a hail of anti aircraft fire to attack the ship north of Pebble Island on the afternoon of May 25, 1982. © Crown copyright. IWM http://www.iwm.org.uk/sites/default/files/public-document/IWM_NonCommercial_Licence_1.pdf

Not only did Crespo have the war looming over the Islands to consider, but there was also the legacy of the Chilean threat. Prior to the invasion, Argentina's increasingly aggressive claims over the Chilean-controlled Beagle Channel Islands had been causing high levels of tension between Buenos Aires and Santiago. The greater part of the *FAA's* airfields had, therefore, been built in northern Argentina, oriented toward possible Chilean incursions, and Argentine pilots had trained extensively for close air combat against Chile.[31] Given the Argentineans were aware of the friendly relations between Santiago and London and feared possible collusion between Chile and Britain, they were not disposed to alter this strategy, and defence against Chile remained a priority throughout the war.[32]

This was a reasonable fear, although it was self-perpetuating. Chile was concerned that a victorious Argentina in the Falklands would be emboldened enough to follow it up with an invasion of its own territory.[33] Santiago also had reason to expect that Argentine expansionism would not stop at the Beagle Channel. The Argentine troops and airmen stationed near the Chilean border may have been a necessary defence for Argentine fears, but they were ideally positioned to cross over into Chile once the Falklands matter was settled.[34] This ramping up of forces along the border caused, either directly or indirectly, a distraction for Argentina that prevented it from concentrating its forces in the Islands and provided a pathway for a common-cause relationship to blossom between Chile and Britain.

For the British, an alliance with Chile was an ideal prospect. Britain lacked any significant intelligence on Argentine air bases[35] and sent a military official to Chile's General Matthei, a member of Augusto Pinochet's ruling junta, to explore possibilities of cooperation in information and intelligence gathering.[36] It could be said that an indirect result of Argentina's aggressive and fearful stance over Chile was the subsequent provision to the Chilean military of British aircraft, long-range radar, anti-aircraft missiles, and a photo-reconnaissance unit (PRU) with oblique cameras to overlook Argentina from Chilean airspace.[37] In particular, the long-range radar and PRU was used during the war to provide Britain with air

intelligence. Matthei installed the radar in southern Chile to collect information about activity in the Argentine base Comodoro Rivadavia, the *FAS* headquarters. He also based a secure underground command centre in Punta Arenas to synthesize radar intelligence. British agents worked from there and forwarded information on Argentine aircraft movements to London;[38] given the lack of any British airborne early warning (AEW) platform, this information was essential.[39]

The Anglo-Chilean relationship was not the only covert connection during the war. American aid under the Reagan administration was initially muted due to a desire to retain favourable links with Latin America, and it was deemed necessary to appear impartial and "even-handed."[40] However, US military aid was indeed funnelled through the United States Air Force (USAF) Base Wideawake on British-owned Ascension Island, midway between the United Kingdom (UK) and the Falklands. Approximately $120 million of US material was readily made available, often at the expense of ongoing US operations, and sent either to the UK or to Ascension Island for use.[41] In terms of air power, this included Sidewinder missiles, Vulcan/Phalanx anti-missile gun systems, 4,700 tonnes of airstrip matting for rebuilding the captured Stanley airport, Shrike missiles for use by the Vulcans, helicopter engines, submarine detection devices for use by RN Sea King helicopters, and Stinger ground-to-air missiles.[42] Any Argentine hopes that Britain would become financially drained in her efforts to mount the offensive were in vain.

Argentina, insulted over US refusals to come to its aid, became suspicious that the US was indeed helping Britain. The optics of US military aid to Britain were bad for the American image in Latin America; however, US aid was not so much given in terms of strategic satellite intelligence, as was commonly believed, but more in terms of tactical signals interception from Argentina.[43] Officially, the only military satellite intelligence provided to Britain from the US during the entire campaign was of South Georgia, taken a week after Argentina's invasion of the South Georgia Islands, in an effort to gain awareness of Argentina's troop disposition there.[44] However, there are suspicions that Britain may have gained battle damage assessment (BDA) intelligence on Argentine air assets on the mainland from US satellite imagery.[45] Again, Galtieri's naivety in assuming the US would either come to its aid or at least remain neutral was a major strategic error.

In another case of Argentina being unable to secure international support, France played an instrumental role in assisting Britain. Argentina placed great hopes in its Super Etendard aircraft, recently purchased from France, along with the modern and fearsome Exocet missile.[46] While most of Argentina's weaponry incorporated older technology, the Exocet was a powerful, radar-guided warhead with a 25-mile ( 40-kilometres [km]) plus range.[47] However, Argentina had taken delivery of only five of the aircraft and five of the missiles ordered, and as of 15 April, France had suspended all trade with Argentina in accordance with the arms embargo put in place by the European Community.[48] French President Mitterand proceeded to provide London with extensive and detailed lists of prior French military exports to Argentina, including "…modifications/limitations to systems, precise capabilities of key aircraft as well as serviceability rates, spares consumption and known shortages, and proficiency of those Argentine pilots trained by the French."[49] More important was the technical information provided on the Exocet itself, giving Britain full knowledge of this missile threat.

Mere British knowledge about the Exocet, however, did not diminish its tactical relevance, and the Argentineans knew this, particularly after two of their missiles successfully engaged the British destroyer

HMS *Sheffield* (4 May)[50] and the supply ship *Atlantic Conveyor* (25 May).[51] Accordingly, they set about trying to acquire more missiles from anywhere in the world they could. One potential conduit for Argentina was Peru. Peru ordered four Exocet missiles from France, but the French delayed delivery as they suspected the ultimate destination was likely to be Argentina.[52] Almost all other developed countries were complicit with the arms embargo, and almost all *developing* countries that had Exocets did not want to give them up. Those countries that were actively attempting to aid Argentina's missile programme (such as Peru, Venezuela, Israel, South Africa, Iran, and Libya) were hindered by a major British covert operation to interdict arms transfers.[53] The British Defence Minister, Sir John Nott, later claimed that he

> authorised [British] agents to pose as bona fide purchasers of equipment on the international market, ensuring that [they] outbid the Argentineans, and other agents identified Exocet missiles in various markets and covertly rendered them inoperable, based on information provided by the French. It was a remarkably successful operation. In spite of strenuous efforts by several countries, particularly the Israelis and the South Africans, to help Argentina, we succeeded in intercepting and preventing the supply of further equipment to the Argentineans who were desperately seeking re-supply.[54]

The magnitude of international intelligence and espionage activities required to enforce the embargo was clearly significant. Since the British were also occupied with the Irish Republican Army (IRA) in Northern Ireland and with the cold war in Europe, Argentina's best hope in all of its strategic efforts to acquire more Exocets lay in causing yet further drains on British resources.

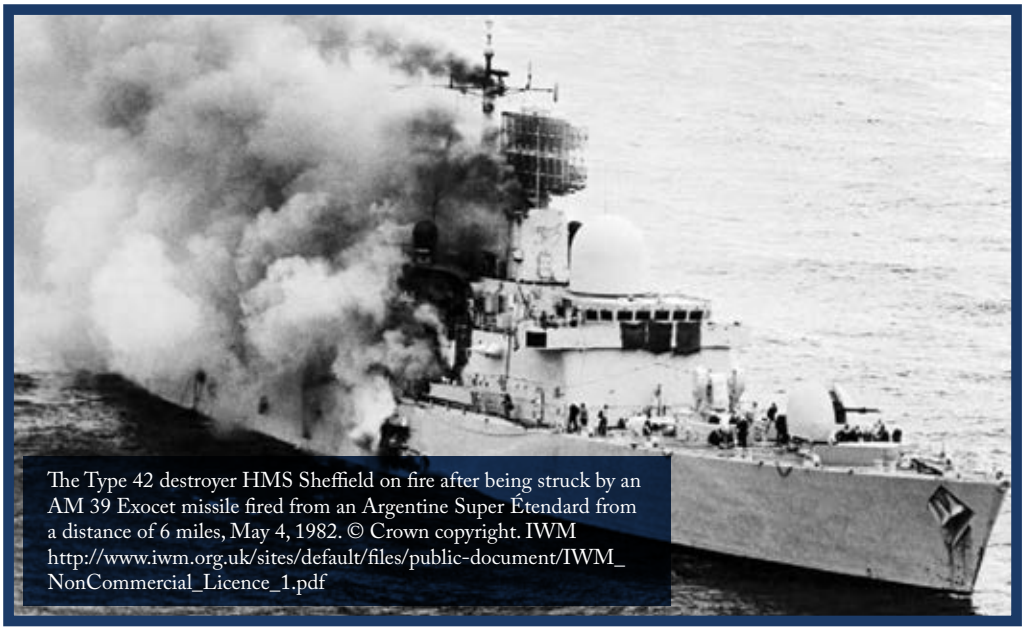
Any tactical or strategic benefits realized by Crespo from the five Exocets in his arsenal were affected both by technical problems and by the distance his pilots had to fly in order to deliver them. The British worried that should *CANA* deploy its Super Etendards from the Argentine aircraft carrier *25 de Mayo*, it would greatly enhance its mobility, and thus the Exocet missiles would themselves pose a far greater threat.[55] However, a defective catapult system on the *25 de Mayo* prohibited carrier takeoffs for the Etendards.[56] Nevertheless, the RN deemed it necessary to station the British carrier group over 100 miles (160 km) east of the Islands in order to force *FAS* air power to the extent of its range.[57]

The strategic advantage Argentina enjoyed in terms of proximity to the Islands was considerable, but the reach of the RN was long, especially with the use of USAF Base Wideawake on Ascension Island and the two RN aircraft carriers *Hermes* and *Invincible*.[58] The British lack of AEW meant that they had to minimize Argentine pilots' time on target; any significant damage sustained to either of the two carriers would have likely cost Britain the war.[59] A spin off of this (happily for the British) was that the Argentine pilots could not exploit the tactical edge their supersonic Mirage fighters held over the British Harriers, because by turning on the afterburners, they would run out of fuel before reaching home.[60] This, in turn, presented the *FAS* with a tactical time advantage in attacking RN escort frigates closer to the Islands, as the Harriers had to fly all the way from the fleet in order to engage them.[61]

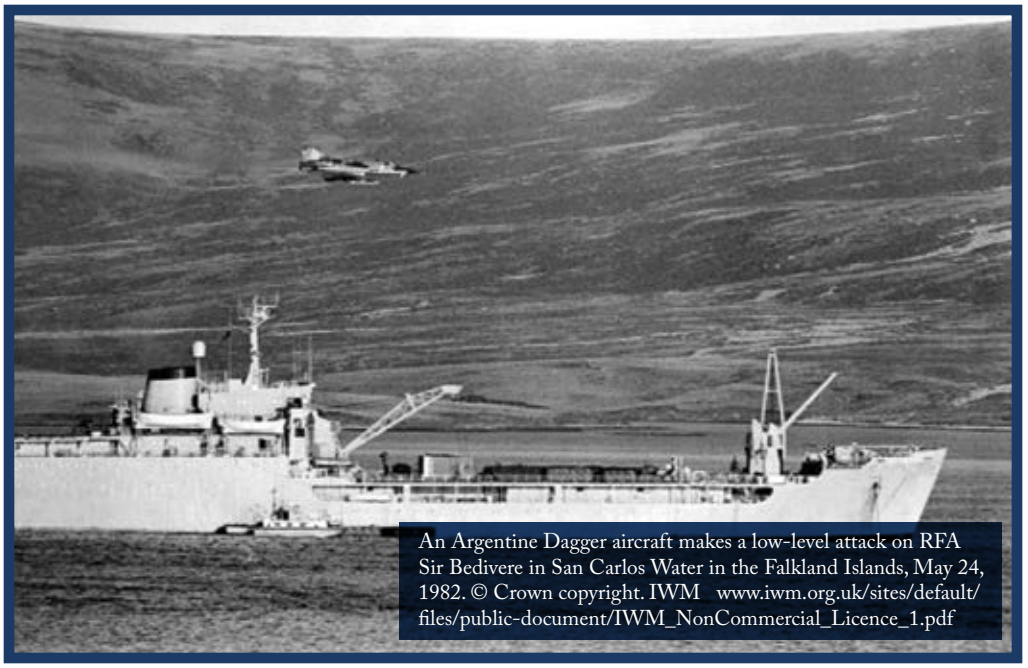
Another tactical advantage exploited by the *FAS* was given by its operators' skilful use of a leading-edge Westinghouse long-range radar and accompanying Cardion tactical surveillance radar mounted at Port Stanley.[62] Using sophisticated plotting algorithms to analyse recurring RAF flight patterns, the *FAS* personnel were sometimes able to ascertain an approximate location for the British fleet. This facilitated the *FAS* plan of attack on HMS *Invincible* on 30 May.[63]

Unfortunately for Crespo, significant strategic and tactical deficiencies relative to the RAF and RN plagued the *FAS*. One limitation was frequent bad weather and the requirement for most *FAS* aircraft to fly under visual flight rules (VFR); this restricted deployments to narrow windows of attack.[64] Another was the lack of an extensive air-to-air refuelling capability that resulted in the long distances between the mainland and the Islands limiting *FAS* time on target due to fuel.[65] In spite of this, the *FAS* used its two KC-130 tankers exceptionally well, carefully planning and coordinating missions in order to successfully meet as many refuelling points as possible. The lack of long-range reconnaissance aircraft was also a strategic deficiency as it prevented accurate BDA and other intelligence from being gathered (the *FAS* possessed only two aging P-2 Neptunes capable of reconnoitring the area). Interestingly, Buenos Aires was able to collect some BDA by listening in on the British Broadcasting Corporation's (BBC's) coverage of the war. An evolving policy of open communication between the British government and British media was responsible for broadcasting, albeit inadvertently, to the *FAS* that its Exocet strike on HMS *Sheffield* had been successful.[66] It is possible that this confirmation provided the motivation for further Exocet attacks and precipitated the attack that sank the British supply ship *Atlantic Conveyor*.

There was also a lack of tactically employed radar defence measures on *FAS* aircraft, with only the Super Etendards and the Daggers being equipped with radar warning receivers.[67] Furthermore, all *FAS* aircraft suffered a distinct lack of effective electronic warfare countermeasures (ECM) such as chaff and flares; this frustrated *FAS* efforts to avoid the Harrier's heat-seeking Sidewinder missiles.[68] However, the ingenuity and flexibility of *FAS* pilots partially overcame this disadvantage, and because the British possessed no AEW and relied on shipborne radar defences, the *FAS* was able to successfully ingress by flying in dangerously low-level tactical manoeuvres.[69] This involved flying at a normal altitude from the mainland until about 100 nautical miles (185 km) away from the target, then dropping to about 150 feet (46 metres) above sea level for the ingress, attack, and initial egress. It was in this manner that the *FAS* was able to strike the *Sheffield* with an Exocet.



The Type 42 destroyer HMS Sheffield on fire after being struck by an AM 39 Exocet missile fired from an Argentine Super Étendard from a distance of 6 miles, May 4, 1982. © Crown copyright. IWM http://www.iwm.org.uk/sites/default/files/public-document/IWM_NonCommercial_Licence_1.pdf



An Argentine Dagger aircraft makes a low-level attack on RFA Sir Bedivere in San Carlos Water in the Falkland Islands, May 24, 1982. © Crown copyright. IWM www.iwm.org.uk/sites/default/files/public-document/IWM_NonCommercial_Licence_1.pdf

One possible consequence of having to fly so low to avoid radar detection was the repeated malfunctioning of bombs released from the fighters. Many bombs hit their RN targets but failed to detonate. In flying so low, the window of time between dropping the bomb and hitting the target may have been too small for the fuse to function.[70] In addition to this, Argentina had no precision-guided bombs, and pilots had to skilfully mark their targets hoping that they would accurately hit home.[71] Furthermore, the *FAS*'s main air intercept missile (an early model of the French Matra 530) had a low range of six miles (10 km), a field of vision only 30 to 40 degrees wide, and could only lock on to the Harrier from behind.[72] In contrast to the Harrier's Sidewinder missiles, this was severely limiting.[73] These tactical limitations gave the British some luck (in being hit by dumb bombs) and a decided superiority in air-to-air combat and exemplify the courage and tenacity of the *FAS* pilots who were able, despite their deficiencies, to sink 7 ships, disable 5 more, and damage a further 12.[74] This earned the respect of the British naval commander, Rear Admiral James Woodward, who commented on their "continued efforts and bravery."[75]

Tactically, *FAS* pilots performed superbly. This was demonstrated by such methods as performing most of their attacks in the late afternoon, when the *FAS* pilots would have the setting sun at their backs and in the faces of their enemy.[76] Another example of their tactical prowess occurred after the British landing at San Carlos.[77] Using the tall hills of the landscape as a screen, they were able to successfully challenge sophisticated British air defence systems by flying low and suddenly appearing over the hills, giving the British only about 25 seconds to mark their targets and shoot, turning back on itself the apparent British tactical advantage of hiding their fleet.[78] In this manner, HMS *Ardent* was sunk, and four other ships suffered moderate to heavy damage during the landing; nine *FAS* aircraft and four more based on the Islands were shot down, yet the *FAS* pilots kept flying.[79]

Finally, Crespo showed initiative and daring when he established an improvised

squadron of impressed civilian Learjets to act as unarmed decoys.[80] *Escuadron Fenix* (Phoenix Squadron), as it was known, was based at Trelew and would simulate attacks by Canberra bombers by flying close enough to be noticed by British radar. By the time the British Harriers had been scrambled and sent after them, the Learjets were safely on their way home. Apart from diverting priority Harrier combat air patrols from their tasks, this caused a frustrating distraction and waste of resources on the part of the British. But in the end, ingenuity and innovation in war was not enough for the Argentine airmen.

Deficiencies in strategic capabilities, such as the poor decision-making abilities of the military junta and the lack of air-to-air refuelling and long-range reconnaissance aircraft, overcame the skill, courage, and tenacity of *FAS* personnel, and despite being well-trained and reasonably well-equipped, the *FAS* was unable to prevent an early Argentine defeat. It is quite conceivable that the British would have won the conflict regardless of the Argentine strategy, especially given the intelligence input from France, Chile, and the United States. Nevertheless, the quality of the fight waged by the Argentine air forces leads one to believe that the length of the war and the number of British casualties may have been substantially greater had these strategic deficiencies been corrected.

---

Officer Cadet Colin Clansey has served 15 years in the Canadian Forces. After a 10-month tour in Afghanistan, he was accepted into the University Training Plan - Non-Commissioned Members and is currently finishing a degree in economics before training as an air combat systems officer.

Argentine prisoners wait to hand in their weapons and other equipment at Port Stanley after the surrender. Many of the Argentine troops were conscripts with limited training. © Crown copyright. IWM www.iwm.org.uk/sites/default/files/public-document/IWM_NonCommercial_Licence_1.pdf

## ABBREVIATIONS

| | |
|---|---|
| **AEW** | airborne early warning |
| **BDA** | battle damage assessment |
| **BGen** | brigadier-general |
| **CANA** | *Commando Aviación Naval Argentina* (Argentine Naval Air Command) |
| **FAA** | *Fuerza Aérea Argentina* (Argentine Air Force) |
| **FAS** | *Fuerza Aérea Sur* (Southern Air Force) |
| **HMS** | Her Majesty's Ship |
| **km** | kilometre |
| **PRU** | photo-reconnaissance unit |
| **RAF** | Royal Air Force |
| **RN** | Royal Navy |
| **UK** | United Kingdom |
| **US** | United States |
| **USAF** | United States Air Force |

## NOTES

1. James S. Corum, "Argentine Airpower in the Falklands War: An Operational View," *Air & Space Power Journal* 16, no. 3 (2002): 63; and Rodolfo Pereyra, "Clausewitz and the Falkland Islands Air War," *Air & Space Power Journal* 20, no. 3 (2006): 114. Major Pereyra's (Uruguayan Air Force) article relates the military philosopher Clausewitz's ideas to the air war in the Falklands, but it is also a valuable source for a South American perspective on the war.

2. Corum, "Argentine Airpower," 59–60, 63, 69. Pereyra described the evolution of the islands' destiny as "dominated by aerial combat." See Pereyra, "Clausewitz," 111, 118.

3. Jozef Goldblat and Victor Millán, *The Falklands/Malvinas Conflict – A Spur to Arms Build-ups* (Solna, Sweden: Stockholm International Peace Research Institute, 1983), 6–7; Pereyra, "Clausewitz," 112; and Joseph A. Page, *Peron: A Biography* (New York: Random House, 1983), 501.

4. Lawrence Freedman, *The Official History of the Falklands Campaign, Vol. II: War and Diplomacy*, 3rd ed. (London: Routledge, 2007), 74. The history of the dispute is largely documented elsewhere, but it is worth noting that the Argentineans held—and continue to hold—the issue of sovereignty over the Islands close to their hearts.

5. Pereyra, "Clausewitz," 113.

6. Ibid.

7. Freedman, *Official History*, 4, 7–11; Corum, "Argentine Airpower," 60; Pereyra, "Clausewitz," 113.

8. Corum, "Argentine Airpower," 63; and Pereyra, "Clausewitz," 114–16.

9. Corum, "Argentine Airpower," 63.

10. Ibid., 62–63. Task Force 317 comprised 25,000 men and over 100 naval vessels including the 2 aircraft carriers HMS *Hermes* and HMS *Invincible* with associated air power and air defence systems. See also Pereyra, "Clausewitz," 114.

11. Corum, "Argentine Airpower," 63, 73; and Pereyra, "Clausewitz," 116.

12. Corum, "Argentine Airpower," 73. The Skyhawks belonged operationally to the *Commando Aviación Naval Argentina*; the Daggers, Israeli versions of the Mirage V fighters, belonged to the *FAA*. See Rodney A. Burden and others, *Falklands: The Air War* (Dorset, Great Britain: Arms and Armour Press, 1987), 39, 129 for more details.

13. Corum, "Argentine Airpower," and 63; Burden and others, *Falklands*, 82.

14. Corum, "Argentine Airpower," 63.

15. Pebble Island, just off the north tip of West Falkland, was significant to the Argentineans because of radar installations and the necessity to base close air support and light attack aircraft there in order to menace any British approach to Falkland Sound from the north. However, with only a handful of T-34C Mentors and a squadron of ill-suited Pucaras available, the strategy was not maximized.

Pebble Island was rendered even less useful after the British Special Air Service conducted a raid and destroyed all the aircraft, fuel, and ammunition on the airfield. Freedman, *Official History*, 435, and Corum, "Argentine airpower," 74. See also Table 1 for a distribution of Argentine air assets during the war.

16. Corum, "Argentine Airpower," 73.

17. Ibid.

18. Freedman, *Official History*, 388–90.

19. Ibid., 130–31.

20. *CANA* was unable to launch its Super Etendards from its only aircraft carrier, *25 de Mayo*, due to technical issues, and general operational capability with any aircraft was limited to daylight hours in good weather. Furthermore, after the British sank the Argentine warship *Belgrano*, the carrier returned to its port and stayed there for the remainder of the war. Freedman, *Official History*, 264–65; and Corum, "Argentine Airpower," 69.

21. Corum, "Argentine Airpower," 60–61.

22. Ibid.; Burden and others, *Falklands*, 18–19.

23. Corum, "Argentine Airpower," 61–62.

24. Ibid.

25. Ibid., 61, 74; Burden et al., *Falklands*, 19, 162; and Pereyra, "Clausewitz," 115.

26. Burden and others, *Falklands*, 162.

27. Freedman, *Official History*, 545. This was the last Exocet attack by the Argentineans, which although skilfully executed, was rendered impotent by RN anti-aircraft fire. Skyhawk pilots later confused the hulk of the *Atlantic Conveyor*, sunk on 25 May, for HMS *Invincible*, and subsequently attacked it, thinking it victim of the more recent attack. See also Corum, "Argentine Airpower," 72.

28. See Table 1 for a disposition of Argentine aircraft. The *FAA* had a total of 122 aircraft at its disposal. See Corum, "Argentine Airpower," 63.

29. Burden et al., *Falklands*, 19.

30. Corum, "Argentine airpower," 61–63; and Burden and others, Falklands, 14–182.

31. Freedman, *Official History*, 77; and Corum, "Argentine Airpower," 62.

32. Paolo Tripodi, "General Matthei's Revelation and Chile's Role During the Falklands War: A New Perspective on the Conflict in the South Atlantic," *Journal of Strategic Studies* 26, no. 4 (2003): 113–14, 118, 120–21.

33. Ibid., 113, 118; and Freedman, *Official History*, 396.

34. Tripodi, "General Matthei's Revelation," 118–19.

35. Britain had in fact generated a wish list in case the US were to offer aid that included "strategic, tactical and technical intelligence cover of Argentine strengths, dispositions, intentions and deficiencies …." Freedman, *Official History*, 384.

36. Ibid., 397; Tripodi, "General Matthei's Revelation," 115–16. Chile was also considered for potential forward operating bases for British aircraft such as the Nimrod maritime patrol aircraft. The Nimrod was based at San Felix, Chile, conducting surveillance and reconnaissance for a limited time, but the political dangers of the Anglo-Chilean collusion being exposed cut the operation short. Another idea involved targeting the Argentine oil fields in Tierra del Fuego with air strikes; this, too, was politically problematic and any garrison holding the area would be subject to attack from Argentine mainland airfields. The focus thus centered on cooperation in intelligence acquisition. See Freedman, *Official History*, 394–95, 401.

37. Freedman, *Official History*, 398; and Tripodi, "General Matthei's Revelation," 116.

38. Freedman, *Official History*, 401; and Tripodi, "General Matthei's Revelation," 114–16, 120. Prime Minister Thatcher herself remarked on the aid the Chilean military provided Britain during the war and the proof

of its value. Two Royal Fleet Auxiliary (RFA) landing ships, *Sir Galahad* and *Sir Tristram*, were destroyed by Argentine forces on 8 June, the same day that the Chilean long-range radar was offline due to maintenance (RFA *Sir Tristram* was later repaired). See Margaret Thatcher's speech in "Pinochet was this country's staunch, true friend," *The Guardian*, October 6, 1999, http://www.guardian.co.uk/world/1999/oct/06/pinochet.chile?INTCMP=SRCH, cited in Tripodi, "General Matthei's Revelation," 117–18 (accessed August 13, 2012).

39. Freedman, *Official History*, 732; Corum, "Argentine Airpower," 68; and Tripodi, "General Matthei's Revelation," 117.

40. Freedman, *Official History*, 130–31.

41. Ibid., 387–88. A deal was made whereby Britain would pay only for stocks used, and return unused weapons and supplies.

42. Ibid. The Vulcans were long-range bombers used by the RAF to bomb the runway at Port Stanley (Operation BLACK BUCK) in hopes of disrupting Argentine air supply lines and preventing the use of the runway by enemy aircraft. A consequent Argentine fear that the RAF might bomb the mainland was one factor that prevented the *FAA* from deploying all of its Mirage III fighters in the Falklands theatre. Another factor may have been the vulnerability of the Mirage to the Harrier as evidenced by the air battle of 1 May when the *FAA* responded to BLACK BUCK with an air assault on the British task force. See Burden and others, *Falklands*, 144; Corum, "Argentine Airpower," 65; John R. Harvey, "Regional Ballistic Missiles and Advanced Strike Aircraft: Comparing Military Effectiveness," *International Security* 17, no. 2 (1992): 57; and Freedman, *Official History*, 263, 279–86, 425.

43. Lawrence Freedman, *Britain and the Falklands War* (Oxford: Basil Blackwood Ltd, 1988), 71; and Freedman, *Official History*, 73.

44. Freedman, *Official History*, 73, 241. South Georgia was invaded the day after the Falklands. In the interest of scope, I have limited this paper to the Falklands theatre. Details on South Georgia can be found in Freedman, *Official History*, 11–14, 226–60.

45. Corum, "Argentine Airpower," 67. This intelligence may also have originated from Chile. See Freedman, *Official History*, 398; Tripodi, "General Matthei's Revelation," 116.

46. Corum, "Argentine Airpower," 61; Pereyra, "Clausewitz," 115; and Patrick Chisan Hew, "National Effects-Based Operations: The Example of Fleet Air Defence," *Security Challenges* 4, no. 1 (2008): 94.

47. Corum, "Argentine Airpower," 62; Pereyra, "Clausewitz," 115; and Freedman, *Official History*, 233.

48. The European Community agreed to an embargo against Argentina on 9 April. Freedman, *Official History*, 264; Freedman, *Britain and the Falklands War*, 41; Hew, "National Effects-Based Operations," 94; and Corum, "Argentine Airpower," 68. There is some evidence that the French firm *Société Nationale Industrielle Aérospatiale* (SNIAS, the forerunner to Aérospatiale) continued to provide aid to Argentine technicians in their efforts to arm the fighters with the missiles (there were apparently problems with the alignment of the inertial navigation systems). However, given the nature of French presidential support, it is highly unlikely any such aid would have been sanctioned. British engagement with the French Mitterand government was amicable and productive, resulting in the provision of detailed intelligence on French-supplied weapons and aircraft. See Freedman, *Official History*, 73, 264–65, 302.

49. Freedman, *Official History*, 73.

50. Ibid., 304; and Harvey, "Regional Ballistic Missiles", 56.

51. Freedman, *Official History*, 487; and Harvey, "Regional Ballistic Missiles," 56.

52. Freedman, *Official History*, 390.

53. Hew, "National Effects-Based Operations," 94–96; and Freedman, *Official History*, 390–93, 496. Israel vehemently

denied any involvement, although Israeli equipment was found on the Falklands after the war. For an interesting and detailed account of the connection between Muammar Gaddafi's Libya and Argentina, started during the final years of the Perón era and lasting through the war, see Jimmy Burns, *The Land that Lost its Heroes: The Falklands, the Post-war and Alfonsín* (London: Bloomsbury Publishing Ltd, 1987), 59–64.

54. Sir John Nott, *Here Today, Gone Tomorrow: Recollections of an Errant Politician* (London: Politico's, 2002), 305, cited in Freedman, *Official History*, 391. Sir John Nott was the British Defence Minister during the war.

55. Freedman, *Official History*, 264–65.

56. Ibid.

57. Corum, "Argentine Airpower," 66; and Hew, "National Effects-Based Operations," 96.

58. Freedman, *Official History*, 383; and Freedman, *Britain and the Falklands War*, 72.

59. Tripodi, "General Matthei's Revelation," 117. Tripodi presents this as a reactionary strategy where Britain was *forced* east of the Falklands due to lack of AEW, rather than choosing to position east in order to constrain FAS fighter range. The two were doubtlessly linked. An additional constraint on the British, however, was that the lack of replacements for lost Sea Harriers required a defensive strategy in terms of safeguarding the carriers.

60. Corum, "Argentine Airpower," 66; and Tripodi, "General Matthei's Revelation," 117. The range of the Skyhawk (575 miles [925 km]) could just reach the fleet; the Mirage (625 miles [1,005 km]) had a few minutes of action before having to return home. See House of Commons, *The Falklands Campaign: The Lessons* (London: HMSO, 1986), 4.

61. Tripod, "General Matthei's Revelation," 117–18.

62. Corum, "Argentine Airpower," 67; and Pereyra, "Clausewitz," 117.

63. Freedman, *Official History*, 545; Pereyra, "Clausewitz," 117; and Jeffrey Ethell and Alfred Price, *Air War South Atlantic* (London: Sidgwick and Jackson, 1986), 221–22.

64. Corum, "Argentine Airpower," 67.

65. Freedman, *Official History*, 79; Corum, "Argentine Airpower," 62, 66–67; Pereyra, "Clausewitz," 116; and Tripodi, "General Matthei's Revelation," 117.

66. Freedman, *Official History*, 36, 413; Corum, "Argentine Airpower," 69; and House of Commons, *The Falklands Campaign*, 29-9.

67. Pereyra, "Clausewitz," 117; and Harvey, "Regional Ballistic Missiles," 56–57.

68. Harvey, "Regional Ballistic Missiles," 57.

69. Corum, "Argentine Airpower," 68; Pereyra, "Clausewitz," 116; and Harvey, "Regional Ballistic Missiles," 56.

70. Freedman, *Official History*, 473; Corum, "Argentine Airpower," 79; Pereyra, "Clausewitz," 118; Harvey, "Regional Ballistic Missiles," 57, footnote 24.

71. Corum, "Argentine Airpower," 62; and Pereyra, "Clausewitz," 117.

72. Corum, "Argentine Airpower," 62.

73. The AIM-9L Sidewinder heat-seeking missile had a field of vision 90- to 120-degrees-wide and could lock on to an enemy aircraft head-on. See Corum, "Argentine Airpower," 62.

74. Pereyra, "Clausewitz," 117.

75. Freedman, *Official History*, 484.

76. Corum, "Argentine Airpower," 69.

77. Ibid., 70.

78. Ibid.

79. Ibid. See Appendix 1 in the reference for a list of Argentine aircraft losses.

80. Burden and others, *Falklands*, 151–52; and Corum, "Argentine Airpower," 70.

# ROYAL MATTERS:

## Symbolism, History and the Significance of the RCAF's Name Change, 1909–2011

By Richard Oliver Mayne, CD, PhD

Defence Minister Peter MacKay (centre), and LGen André Deschamps (left), Commander RCAF, present F/Sgt (ret'd) Michael Nash Kelly with the historical ensign of the Royal Canadian Air Force during the announcement of the restoration of the RCN, CA and RCAFs . Photo: Cpl Dan Bard

On the morning of 16 August 2011, Minister of National Defence Peter MacKay announced that the air, sea, and land environments of the Canadian Forces (CF) would once again be known as the Royal Canadian Air Force (RCAF), Royal Canadian Navy (RCN) and Canadian Army. Reaction to this change within the new RCAF has been positive, yet there are undoubtedly members who are curious about the significance of a "Royal" prefix that has not applied to the Air Force in over 44 years.

Such attitudes are understandable, as there have been many generational changes between the RCAF that was disbanded in 1968 and the one that exists today. As a result, current members of what has been light-heartedly (yet accurately) labelled "RCAF 2.0"[1] may be surprised to learn that they have more in common than they realized with the airmen who first requested the Royal prefix for the Canadian Air Force almost nine decades ago. The aim of this article, therefore, is to explain why the embryonic Canadian Air Force (CAF) of the 1920s wanted the Royal designation and why this story is important to the modern RCAF and its sense of identity.

The CAF that existed between 1920 and 1 April 1924 was a much different entity

compared to the one that would follow it. Unlike the RCAF, the CAF was a small, non-permanent and non-professional force that acted more like an air militia than an actual air force. Reporting to the civilian Air Board, which was established in 1919 to "supervise all matters connected with aeronautics," the CAF that was created in February 1920 consisted mostly of former wartime pilots who took a 28-day refresher course every two years.[2] Yet as the official history of the RCAF observed, this set-up was an "ingenious and pragmatic solution to a perplexing dilemma"[3] that was rooted in problems that were uniquely Canadian:

> Any Canadian air force at this time had to be many things to many people: economical yet efficient, unobtrusive yet effective, unmilitaristic yet military … . A non-permanent militia organization, solidly in the Canadian tradition, would enable the government to skirt the tough political, strategic, and technological obstacles that inhibited the immediate development of military air power.[4]

Policy aimed at the realities of national requirements was certainly one factor that gave this particular air force a Canadian character, but so too did other more observable aspects, such as its unique motto *Sic Itur Ad Astra* (such is the pathway to the stars) as well as a distinctive uniform and maple leaf adorned badges.[5] The key question, therefore, is why would this national organization abandon symbols that emphasized its Canadian identity in favour of characteristics that some have argued turned it into "a faithful colonial replica" of the Royal Air Force (RAF)?[6] To answer that question it is first necessary to understand what tradition and customs mean and why they are important to military organizations like the RCAF and their sense of identity.

There are many definitions for these terms, but according to one reliable authority on Canadian military heritage, E. C. Russell, customs are the "long established, continuing practice or observance, considered as an unwritten rule, and dependent for its continued reality and usage on long consent of a community." Tradition, on the other hand, is "a process of handing down, or passing from one to another knowledge, beliefs, feelings ways of thinking, manners, codes of behaviour, a philosophy of life, or faith without written instructions." [7] Yet another key source, the Directorate of History and Heritage, ties these two important strands together by observing that, when "combined with historical knowledge," customs and traditions create heritage.[8] All of these elements are essential factors to the operational effectiveness of any military organization, particularly since an understanding of history and heritage is key to the development of esprit de corps, teamwork, and discipline. Each plays its own role. For instance, tradition often employs unique symbols—such as badges, uniforms, flags, mottos, and music—to help members identify with their particular service as well as build pride and a sense of cohesion; all essential characteristics without which military units cannot survive.[9] Likewise, history relies on the power of the collective narrative and shared experiences to bond members together. By doing so, it can also be used as a lessons leaned tool to help guide present and future policy by teaching present members about their successors' achievements and even failures. It can serve further to improve operational effectiveness and maintain professionalism within the military, as past experiences are some of the best means "to set standards against which to measure future conduct."[10] More specifically, however, history forms the basis of institutional identity and culture, which is why it is a good starting point to explain how problems with professionalism, permanency, coherence, and efficiency all led the RCAF to adopt the Royal prefix as well as other British symbols in the early 1920s.

The roots of Canadian military aviation are generally traced to J. A. D. McCurdy's first flight on 23 February 1909 at Baddeck, Nova Scotia, and, more importantly, a follow-up demonstration at the militia's summer camp in Petawawa, Ontario, five months later. This latter test was specifically designed to show the military potential of aircraft. Unfortunately, the militia observers concluded that aircraft were "too expensive a luxury" for a cash starved Canadian military. It was a theme that would become all too common throughout the RCAF's history.[11] Although the First World War modified this view, the next attempt to create a Canadian air service was as unsuccessful as the first. The problem this time was that its founder, E. L. Janney, was a reputed "confidence trickster." Putting those skills to full use, Janney managed to convince the colourful Minister of Militia and Defence, Sir Sam Hughes, of the need to create the Canadian Aviation Corps (CAC) in 1914. While his goal was certainly admirable, it was Janney's method of achieving that aim that was questionable. Elaborate requests for money, dubious tours of Royal Flying Corps (RFC) stations, and frequent absences without leave resulted in a quick end to the CAC along with its three members and single aircraft.[12]

Despite this unfortunate start for the creation of a national air force, Canadians did distinguish themselves in the air during the First World War. Serving with the RFC and Royal Naval Air Service (RNAS), which, in turn, were both consolidated into the RAF in 1918, Canadian airmen saw action from the English Channel to the Indian Ocean as well as from the skies over Western Europe to the Middle East and even Africa. They flew in fighters, bombers, and seaplanes, and they had a reputation of being some of the best airmen in the war. Indeed, statistics clearly bear this out. At times accounting for 35 per cent of the RFC's total strength, 22,812 Canadians served with the RFC, RNAS, and, eventually, the RAF. Over 800 decorations, including three Victoria Crosses (the highest award for bravery) were issued to Canadian airmen; roughly 1,500 would make the most supreme sacrifice.[13]

While the CAC may have proven something of a nightmare, the dream of a purely Canadian air force again materialized toward the end of the First World War. National pride in the achievements of Canadian airmen and the desire to forge a unique identity were constant themes among the Toronto press, with one report going so far as to claim that the time had come to form an independent service, particularly since in their view the Canadians in the RFC and RNAS were superior to their British counterparts.[14] Toronto newspapers were not the only ones chomping at the bit for the creation of a Canadian Air Force, or at least all-Canadian squadrons within the RFC. After a trip to the United Kingdom in spring 1917, Prime Minister Robert Borden found that the British were failing to appreciate Canada's contribution to the air war. So much so, in fact, that he complained how:

> Canadians in Flying Service are not receiving adequate recognition. There seems to have been a disposition from the first to assign them subordinate positions and to sink their identity. They were forbidden to wear any distinguishing badge to indicate that they were Canadians. … The question of establishing a Canadian Flying Corps demands immediate … consideration … . I am inclined to believe that the time for organizing an independent Canadian Air Service has come … .[15]

This represented a considerable reversal from earlier government policy. In 1915, the War Office actually invited the Dominions

to create their own squadrons for service in the RFC; an offer which was rejected by the Canadian government on the grounds that air units were an imperial, or more precisely, British, concern. Things had clearly changed by 1918 as the outstanding contributions made by Canadian airmen resulted in a greater desire to recognize the nation's role in the air war. The first changes were small but, nevertheless, significant to the development of a Canadian air identity. Some Canadians serving in what was now the RAF were allowed to stitch "Canada" flashes on their shoulders, while others mentioned in certain types of correspondence had a bracketed "C" after their name.[16] Bigger changes followed, such as the actual formation of an all-Canadian wing.

The wing itself, which sometimes appeared in official correspondence as the "Canadian Royal Air Force" or "Royal Air Force, Canadian,"[17] became operational nine days after the First World War had ended. Now under the command of Colonel R. Leckie, this embryonic Canadian Air Force continued training throughout the rest of 1918 and early into 1919 with the belief that it would grow into a peacetime force back in Canada. It certainly had a solid foundation from which to expand, as it not only had received 100 British aircraft (the same gift was given to all the Dominions to start their own air forces) but also had combat-trained pilots, observers, and mechanics as well as bases in Canada. It was not to be. From the moment it had been approved, the government went to great lengths to emphasize that the wing was not a permanent air service but rather was designed for use in the current war only.[18] The permanency as an air force that so many wanted for Canada once again proved just beyond reach, more so since the wing was disbanded in early 1920 due to a government decision to focus on civilian aviation. Military aviation, as had been concluded in the earlier attempts to create a Canadian Air Force, was once again deemed to be too expensive.

The same was true for the other air force that had formed during the final year of the war. This air force was the product of incursions by German U-boats into Canadian waters in 1918 that led to a desire to create a Canadian naval air service. More than 600 applicants wanted to join the embryonic Royal Canadian Naval Air Service (RCNAS), but, unfortunately, the Canadian government was unwilling to support the costs of this fledgling branch once the operational emergency of the First World War was over. As a result, the RCNAS's birth on 5 September 1918 was quickly followed by its disbandment a little over two months later.[19]

The scrapping of the RCNAS and overseas wing marked the end of the third and fourth attempts to establish some type of national air service since McCurdy's first flights nine years earlier, and as a result, there is little wonder many members of the Air Force that was created in February 1920 did not see much hope for their future. Indeed, the fact that it was the non-permanent and non-professional component of the civilian Air Board led one historian to correctly observe that this new CAF was an "air force in name but not fact."[20] At least one other modern critic took this sentiment even further by calling the CAF a "travesty of a force."[21] While the latter observation is perhaps a bit excessive, the CAF did indeed have its fair share of troubles getting established in what the Officer in Charge of Camp Borden, R. A. Logan, colourfully labelled as their "bow and arrow days … ."[22] For instance, the CAF's pay was lower than the civilian operations branch and that, one individual claimed, left many wondering:

> why enlist in the CAF when the civil Operations Branch pays more. There are excellent mechanics who would be very willing to serve if they got permanent employment … . I feel that any money paid me for recruiting for the CAF is

> wasted. It would be more economical in the end to have a few men well trained than a large number of men who are hard up, and come up simply for a job and to have a holiday.[23]

Worse yet, the quality of recruits and mechanics was also low, since most men who signed on for the training would then use that experience to get full-time jobs elsewhere. As one air force officer observed in June 1921:

> The main trouble in getting the right kind of men here is that there is nothing to attract them … . We are getting as good as we can expect in the way of officers, and until we make it worth while for a man to come here, we never will get better … . Very often a man leaves his own job to come here, and somebody else gets it. Until we can offer him something better, he is going to think twice before coming. We are getting two classes of men. The class out of a job will take anything. There is another class. The one who is coming to learn, who is not worrying about the pay. He is considering training, and comes up for all the instruction he expects to get. As soon as he considers himself good enough, he will take a civilian position, because there is nothing to attract him to the CAF at present … . Most of the men are not here out of patriotism. It is for what they can learn. In the meantime we have got to trust our lives to these men.[24]

The need for permanency was all too clear as few officers in the CAF understood the logic of why most people would want to serve in an organization that paid so little and "which is practically non-existent."[25]

Discipline was also an issue, as another CAF officer found that "the present regulations lead to very lax discipline. It leads to a policy which seems to be 'eat, drink and be merry, for tomorrow we are fired.' The regulations are very bad for discipline and that applies to mechanics as well as officers. They know they are here for a short while and dont [sic] care."[26] It is hard to ascertain exactly how bad the discipline problems in the CAF were. Testimony from some members during this period suggests that morale was relatively good, since the CAF consisted of ex-service men who enjoyed any chance to fly. Yet many other accounts paint an altogether different picture. Desertion, for instance, was a real problem as the vast majority of courts of inquiry in this period dealt with unauthorized absences. It is also a well-documented fact that the immediate incarnation of the Canadian Air Force (the Canadian overseas Wing of 1918–1920) suffered from at least two mutinies in January 1919.[27]

The CAF was certainly a different entity than its immediate predecessor, but there is little doubt that it, too, suffered from the same lack of military cohesion. Although it did have its own dark blue serge uniform patterned on an Army cut with buttons and badges of silver, the use of that uniform was sometimes inconsistent. One officer recalled how:

> …for many months after the CAF started we were permitted to wear any kind of uniform, army, navy or RAF or any combination thereof, during working hours, but for dinner we were supposed to dress in CAF blues, with wing collar. At Borden, this practice apparently continued "for the first two years" of

> the CAF's existence in order to permit us to wear out our old RFC, RNAS, or RAF clothing. At the Officers mess we could wear almost anything …[28]

Others complained that the CAF uniform was impracticable and soon lost its "neat appearance" once subjected to the rigours of training. Despite the fact that the Air Officer Commanding the CAF, Air Commodore A. K. Tylee, felt that this outfit "was 'democratic and economical' and would enhance the identity of the service,"[29] other senior members clearly listened to these complaints recording that CAF personnel wanted "a new uniform now." More to the point, however, the lack of a practical and enforced uniform policy made it difficult for CAF members to identify themselves as a military force, and that led one serving individual to the conclusion that "whatever might be said of the RAF one, at least they [have] a workable uniform."[30]


The use of officer rank titles was equally problematic, as these ex-RFC fliers often ignored CAF regulations by using their Army ranks over Air Force ones. While Army ranks were almost always used verbally, the written record was much more confused. A scan of official correspondence identifies a strange mix where the same officer might use his Air Force rank in one instance and his Army one in another.[31] The CAF suffered from other inconsistencies as well. There was a tremendous need for new pilots, as most of the ex-RFC personnel were getting older, but solutions to this problem were not forthcoming. Suggestions to extend the flying age reeked of desperation and only served to delay the inevitable.[32] The equipment needed to keep these pilots flying was also aging. While the British had apparently reported that Canada had made the most "profitable use" of the aircraft gifted to any of the Dominions, those machines were now obsolete and quickly wearing out after three years of service.[33]

The training facilities at Camp Borden were also in trouble. The training itself was often ad-libbed and was simply designed to ensure that aircrew did not forget what they had learned from the war. It further provided an opportunity to update pilots on recent improvements to aircraft or flight techniques, yet even this refresher training was eventually abandoned in the spring of 1922. This not only resulted in the virtual cessation of flight operations at Borden, but also led the officer in charge at the base to "eventually quit in disgust."[34] Moreover, Borden personnel were often forced to do whatever they could to keep aircraft flying, as the following story from the base illustrates:

> Of course, we started with no flying equipment, in the GIS [Ground Instructional School], but by wrangling, scrounging and digging through the scraps of dozens of wrecked Curtiss "Jennys" that had been left behind as not worth carting

> away, in a hangar near us, we eventually had not one but four Jennys in good flying condition and we used them … . Lacking authority to do all this it was difficult to maintain our boot-leg air fleet and eventually we lost it … .[35]

For the man who had become the inspector-general of the CAF on 23 April 1920, Air Vice Marshal Sir Willoughby Gwatkin, the solution to all these problems was always the same. In order to survive and raise morale, the CAF had to become a permanent and professional force; adopting the symbols of the Royal Air Force was seen as one way of achieving this aim.[36]

The first RAF symbol that the CAF embraced was the ensign. Having heard in February 1921 that the RAF had designed its own ensign, Gwatkin wanted the CAF to do the same. It was a good idea. As a mark of national identification, an ensign would give the CAF's members a powerful object to rally around. Much like the First World War, the Air Force's first inclination was to Canadianize a British concept by using the RAF ensign with the addition of a maple leaf in the inner circle. The RAF's chief of the air staff, Air Marshal Hugh Trenchard, agreed that the CAF should adopt his ser vice's ensign, but suggested that "to retain the sentiment of unity between the Air Services of the Empire" it was better if no changes to the original were made. The RAF had its own reasons for not wanting the change. Much like the CAF, the RAF was also fighting for its existence, and the chances that it would be usurped by the British Army and Royal Navy would be diminished if more Dominions flew its flag. It was a convenient argument but one that the CAF understood all too well. As a result, Gwatkin was willing to accept the British condition that the ensign be accepted "without difference." What was more important was that the CAF had a symbol that, in Trenchard's words, represented:

> … the good work that Canadian Pilots and Observers carried out under me in France, and I am very glad to think that they and their successors use the Royal Air Force ensign, the underlying idea of which is the target used to mark all British machines in France, and in connection with which so many gallant airmen fought their last fight.

Gwatkin agreed. Adopting the RAF ensign was indeed "an honour and privilege," but he also wanted to take full advantage of the situation to draw attention to the CAF. He therefore ordered that the flag raising ceremony scheduled for 30 November 1921 at Camp Borden was to be "made as pompous as possible." Unfortunately, the upcoming election ensured that key dignitaries were unable to attend, yet the CAF had nevertheless made an important stride. It now had a symbol that was associated with the motherland, and this link, it was hoped, would make it that much more difficult for the government to simply abolish the CAF.[37]

The same logic applied to appeals for the CAF to adopt the Royal prefix. One air officer, at a senior air conference in June 1921, not only suggested that "there may be something in the name of the CAF," but also that the "King be approached to use the name Royal Canadian Air Force and that Prince Albert be appointed an Honorary Colonel." His argument, while not stated implicitly, was obvious. The Royal title and linkages to

Royal Family would give the CAF a sense of permanency since no government (it was assumed) would dare disband an organization associated with the monarchy. Gwatkin was not convinced and he instead used this occasion to shore up fissures within the CAF by observing that:

> The King would grant the privilege if only having regard to what Canadians did in the RAF during the war. We do not like the King to be mentioned with a thing that is not going to be a success . . . . Unless we are certain, unless we are quite satisfied the CAF is going to go on, we do not like to ask members of the Royal Family to accept posts, when some threatens resignation. It fills one with sinister forebodings.[38]

Gwatkin had good reason for concern. The uncertainty of the CAF's future made many members jittery, so much so, in fact, that it was noted how "present employees should be sounded out as to whether they would be prepared to join a permanent Air Force." [39]

The election of William Lyon Mackenzie King in December 1921 and his minority Liberal Government's promises of a rigid economy and drastic retrenchment only heightened these concerns. Once again the CAF faced the same problem that haunted all of its predecessors; namely, its existence was being threatened by proposed budgetary cuts and a lack of political support. In fact, one Liberal member captured the mood of the post-war political climate perfectly when he noted that the effort expended on the CAF was:

> . . . a pretty high price to pay for an air service in peace time. If we had a war, of course it would be necessary to keep our air service and we would expect to have accidents. But it is a crime to render our very best young men . . . liable to be killed or dangerously injured, just for the sake of having in Canada a service which is absolutely unnecessary.[40]

Few politicians understood the need to maintain an air force, and as a result, the prevailing view was that the "high cost of a military force would cause it to be so small in peacetime as to be negligible in war."[41]

It was a period of tremendous uncertainty for the CAF. In an effort to find economies and trim the budget, King's Government not only cut expenditures to the military as a whole, but it also embarked on a reorganization that would consolidate the CAF, RCN, and militia under a single Department of National Defence. Gwatkin had worked hard to get the CAF recognized as an independent and equal service, and the fact that it was represented on what would become the Defence Council in 1920 was certainly evidence of his efforts. Yet by the time of the reorganization, both the RCN and militia still saw air power as something that existed merely to serve and support their needs over land and sea.[42] No one captured this view more vividly than the Chief of the General Staff, Major-General J. H. MacBrien, who wrote that the Canadian defence establishment "will not be large enough to warrant a separate Branch of the Service such as the Royal Air Force, and our Flying Corps should be part of the Army with attachments to the Navy as required."[43] MacBrien eventually modified his view on the need for a separate air service, but the CAF's independence and identity was, at times, clearly challenged by the other services which often looked at the air force "as a friendly enemy . . ."[44] In fact, the Air Force was treated very much as a junior partner, more so since it was administered as a Directorate of the General Staff to allow "the Air Force to draw on the experience of the senior officers of the older services."[45]

While many rightfully feared the Liberal's planned cuts to the military, the CAF actually benefited from the creation of a single Department of National Defence in one particular area. For instance, the reorganization, which received royal assent on 28 June 1922 and was effected six months later, finalized the CAF's divorce from the civilian Air Board and, in the process, turned it into Canada's only air service. More importantly, however, it also became a permanent force that would serve as a core through which the entire service could expand in times of emergency. Indeed, air members quickly jumped on this distinction to lay plans for the recruitment and training of younger pilots whose new blood would finally revitalize the aging CAF.[46]

Having overcome his earlier reservations about applying the Royal designation to a force with a questionable future, Gwatkin was now satisfied that the changes to the CAF would make it a viable organization. As a result, when the Director of Technical Services drew attention in the spring of 1922 to the fact that Australia had obtained permission to use the Royal prefix, Gwatkin indicated that he was now willing to do likewise once the reorganization of the CAF was complete.[47] It was a powerful symbolic gesture which captured Gwatkin's confidence in the permanency of the new Air Force, explaining why one of his last acts before retiring was to ask the Chief of the General Staff:

> … as soon as things have settled down [for] the right to use the prefix "Royal." Already the Australian Air Force has received that titular distinction from the King. But it was we who led the way in securing the right to fly the light blue ensign, and the CAF now firmly established, would like to share the privilege enjoyed by the Canadian Navy, as well as by permanent units and corps of the Canadian militia."[48]

MacBrien agreed, noting that the CAF had indeed "earned the privilege of being entitled to 'Royal' and [I] feel sure that they will prize it highly."[49] Using other links to the RAF as a means to strengthen the CAF's standing and growing professionalism followed.

Believing that it was "considered wisest for the status of the Canadian Air Force to be kept as close as possible to the Royal Air Force," MacBrien also agreed that the Air Force Act should be modified for Canadian requirements and then applied to the CAF in the same way "the Army Act is to the Permanent Force."[50] This, it was argued, instantly would give the CAF a more reliable set of regulations and allow it to take advantage of the experience that the RAF had gained.[51] Likewise, the adoption of the British drill and ceremonial manual achieved the same effect. But it was the decision to wear the RAF uniform (a duplicate with exception of RCAF appearing on all buttons) and rank structure which represented one of the most visible examples of how the CAF was symbolically using the mother country as a professional marker and tool to further guarantee its permanency.[52]

Perhaps worried about their own defence cuts, the RAF saw tremendous "importance to the wearing by the Air Forces of Empire of a common uniform" and they accordingly encouraged other Commonwealth nations to follow the Canadian example.[53] The adoption of the RAF's motto would achieve the same effect—although it is interesting to note that recently unearthed documents clearly show that Canada did not officially apply to use "*per ardua ad astra*" until the summer of 1928.[54] It also was observed that Canada had taken the lead in adopting the RAF ensign, and having already done so for Australians in 1921, the British happily provided their blessing for the CAF to adopt the Royal prefix.[55] These symbolic links to the empire paid off. Questionable political arguments about the Air Force's strategic value

now could be brushed aside, as the RCAF's ability to integrate with the RAF gave it a global raison d'être that the purely national air force could never justify. In essence, the deliberate policy of conforming as closely as possible to RAF equipment, procedure, and regulations ensured that the expansion of the small RCAF would be "a very simple matter" in times of an imperial emergency.[56] Suggestions from Britain to Canada on how both could render mutual assistance, build up the air forces of their respective countries, and "co-operate in the event of war" only served to strengthen the RCAF's importance to the potential defence of the Commonwealth.[57] And that further gave the RCAF the sense of permanency it so desired.

The adoption of the Royal prefix was indeed symbolically important, and its effects were felt almost immediately. Although the King granted permission for the CAF to use his royal title on 12 February 1923, a weekly order promulgated one month later observed that the Royal would apply to the new "permanent force and not the temporary CAF." The birthdate of this organization was set for 1 April 1924, but it was hard for many to contain their enthusiasm. Comments from officials that conferring the Royal title upon the CAF would "add greatly to the prevailing esprit-de-corps," were validated by serving members. Perhaps the most revealing came from a former CAF officer who later recalled how "there was a sort of revival of the 'military spirit' in the belief that the CAF would become the RCAF and would then become a sort of step-child of the RAF."[58] Nor was this impression contained to the military, as one potential recruit observed that his decision to apply to the new RCAF was based on a desire "to get placed in something with a future."[59] The long journey for recognition as a permanent and professional force had finally come to an end.

The RCAF matured quickly during the interwar and early war years, and it did not take long before many of the symbols it had

adopted from the British were Canadianized. For instance, in July 1940, the RCAF adopted its own ensign in which the maple leaf finally appeared at the centre of the roundel, because, as it was explained at the time, "of the desirability of distinguishing the Royal Canadian Air Force from the Royal Air Force."[60] Approval to replace the centre of aircraft roundels with a maple leaf was also granted earlier in the war, but it was not until after six hard years of fighting that the RCAF took yet another leap to define itself as a Canadian institution by finally adopting the new roundel on 19 January 1946.[61] The RCAF tartan and the adoption of Pilot Officer John Gillespie Magee's "High Flight" as the Air Force's poem—along with the policy of "Canadianization," which represented a deliberate and nationalistic attempt for as many Canadian airmen and ground crew as possible to serve under Canadian officers, command, and regulations—further helped identify the RCAF as a distinct organization from the RAF. The creation of the King's Colour and the Colour of the RCAF in January 1949 (both of which were consecrated in Ottawa on 5 June 1950) did the same thing. Unlike earlier colours, which were presented to components of the RAF only, the RCAF was the first of any of the Royal Air Forces to have the King's Colour dedicated to an individual or national air force.[62] It was a fitting

tribute to a service that had performed so well in the defence of the Empire and the democratic world.

The RCAF continued to play an important role in the post-war period, but it was an event in the late 1960s, namely the unification of the three services into a single Canadian Armed Forces, that once again saw the Air Force's identity challenged. Much like the early 1920s when the Canadian Air Force faced the threat of being usurped into the RCN and militia, the remnants of the air force in the late 1960s did not have a central authority or a command structure, and its assets were dispersed throughout the Canadian Force's functional commands. Moreover, the fears from the early 1920s about not being recognized as an independent or permanent force were again haunting air members of the new CF, particularly since the RCAF had ceased to exist on 1 February 1968. Other changes brought on by unification only added to this crisis of identity. The blue that the RCAF had worn since 1924 was now replaced by a generic green uniform and a common rank structure in which wing commanders became lieutenant-colonels. Witnessing the removal of symbols and traditions that had defined their experience with the Air Force, a number of members chose to leave what would be known as the air element of the Canadian Armed Forces.

Unification had gone too far, and as a result, the Air Force slowly began to reclaim its identity. The first crucial step was initiated by a man who should be regarded as the father of the modern Canadian Air Force, Lieutenant-General William Carr. Beginning with the formation of Air Command (AIRCOM) in Winnipeg on 2 September 1975, Carr, who was the first Commander of AIRCOM, effectively restored a central authority and command structure to control all of the CF's air assets and activities. Given that the Air Force had almost ceased to exist, Carr took great care to give his command

Lieutenant-General William Carr

new life through the adoption of various Air Force symbols. The AIRCOM badge sent a particularly powerful message, as the eagle rising from the Canadian astral crown was designed to denote the air element taking flight and becoming an entity in the form of a command. The ensign achieved a similar effect, standing as a marker of the command's existence, while the original CAF motto of the early 1920s, *sic itur ad astra*, was selected "because it was Canadian, not RAF because its choice could not be interpreted as an echo of the RCAF." The command was also given a new set of colours to rally around which were consecrated in July 1982.[63] It was a pivotal moment that was followed by other acts—such as the restoration of Air Force uniforms in 1985 and the resurrection of the Chief of the Air Staff 12 years later—that once again created a greater sense of permanency and autonomy from the CF's other two elements.

Carr's efforts clearly paid off, as a recognizable Air Force once again rose out of the ashes of the initial confusion created by unification. And thanks to the establishment of AIRCOM, today's RCAF is a confident, experienced, resilient, agile, integrated, and coherent air force, yet that fact might leave some current members wondering why the new Royal title is required, while others might even feel it is actually a retrograde step.

Part of the answer to these key questions lie with E. C. Russell, who observed in his book on CF heritage that:

> customs and traditions are not sacrosanct for all time. Like words of the language, they are living things; they come and go. For they reflect social conditions and moral values. They mirror political innovation and technological advance. They change. As Alfred Whitehead, the philosopher, put it, societies which cannot combine reverence for their symbolism with freedom of revision must ultimately decay. It is essential that outworn sentiment be quietly retired, and it will be, for the essence of custom and tradition is that they live by consent.[64]

It is for this reason that the restoration of the RCAF is particularly important for the Air Force's current members. For instance, the return of the Royal prefix not only reminds RCAF 2.0 of the hard-earned road its predecessor's took to get recognition as a permanent institution but also provides a link between the heroic actions of the previous RCAF and the professionalism of those who have served since that time. More importantly, however, the name change symbolically recognizes that the air element of the CF is indeed an "Air Force." This is a key distinction. The RCAF has had to guard its independence and permanency as a separate service at various times throughout its history. Usually the culprit was government cutbacks, reorganizations, or command and control issues with the Army and Navy, but since these types of situations can easily occur again in the future, the RCAF is wise to embrace the symbols that help define it as an institution.

While the name change has not resulted in any organizational adjustment (there being no diminution of unification through the restoration of the element's former titles), it has nevertheless finished an important exercise in self-identification that Carr started in 1975. It has been a worthwhile endeavour. The Air Force of today has a strong identity based on a proud history. Since the first Canadians took flight over a century ago, the members of Canada's Air Force helped to win two world wars, maintained a fragile cold war peace, brought aid and comfort to suffering people worldwide, was involved in combat over the skies of Iraq, Kosovo as well as Libya, and fought a global campaign against terrorism. The RCAF 2.0 team can take great pride in this heritage and the new name only serves to strengthen its sense of identity as an air force.

---

Dr. Richard Oliver Mayne, CD, spent 17 years in the Canadian naval reserve and has worked as a historian for the Directorate of History and Heritage as well as a deputy section head for the Chief of Force Development's Future Security Analysis Team. He earned his PhD from Queen's University in the spring of 2008 and has authored numerous publications on Canadian military affairs. He now works for the RCAF as the Director of Air Force Heritage and History.

## Abbreviations

| | |
|---|---|
| AIRCOM | Air Command |
| CAC | Canadian Aviation Corps |
| CAF | Canadian Air Force |
| CF | Canadian Forces |
| RAF | Royal Air Force |
| RCAF | Royal Canadian Air Force |
| RCN | Royal Canadian Navy |
| RCNAS | Royal Canadian Naval Air Service |
| RFC | Royal Flying Corps |
| RNAS | Royal Naval Air Service |

## Notes

1. The author of the term "RCAF 2.0" is currently unknown.

2. W. S. Breadner lecture, "The Royal Canadian Air Force," n.d., Directorate of History and Heritage (hereafter cited as DHH), 181.009 (D2); R. A. Logan to F. H. Hitchins, 6 August 1955, DHH, Logan Papers, 75/117, file 26.

3. W. A. B. Douglas, *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force*, *Volume 2*, (Toronto: University of Toronto Press, 1986).

4. Ibid., 48.

5. Fred Hitchins, *Air Board, CAF and RCAF, 1919–1939*, vol 1, Directorate of Air Force Heritage and History, Griffin Collection, 12.

6. Desmond Morton, "A Non-Operational Air Force: The RCAF, 1924–1931," in *Sic Itur Ad Astra: Canadian Aerospace Power Studies, Volume 3 Combat if Necessary, but not Necessarily Combat*, ed. Bill March (Government of Canada, 2011), 3.

7. E. C. Russell, *Customs and Traditions of the Canadian Forces* (Ottawa: Deneau Publishers, 1981), 1.

8. National Defence, "Directorate of History and Heritage", www.cmp-cpm.forces.gc.ca/dhh-dhp/his/her-pat/index-eng.asp (accessed August 8, 2012).

9. Department of National Defence, A-DH-267-004/AF-001, *Insignia and Lineages of the Canadian Forces*, vol. 4: *Operational Air Squadrons*, Date of Publication: April 5, 2000; Russell, *Customs and Traditions*, 1.

10. National Defence, "Directorate of History and Heritage."

11. *Royal Canadian Air Force Historical Review,* 1909–1951, DHH, 74/507; Brereton Greenhous and Hugh Halliday, *Canada's Air Forces 1914-1999* (Montréal: Art Global, 1999), 13; *Canadian Air Policy 1909–1939,* DHH, Hitchins Papers, 74/27; and Hugh Halliday, *Chronology of Canadian Military Aviation*, Canadian War Museum Paper No. 6. National Museum of Man and Mercury Series.

12. Greenhous and Halliday, 15; Royal *Canadian Air Force Historical Review, 1909–1951*, DHH, 74/507.

13. S. F. Wise, *Canadian Airmen and the First World War*, *The Official History of the Royal Canadian Air Force Volume 1* (Toronto: University of Toronto Press, 1981), 590.

14. Collishaw to Curtis, April 29, 1970, Library and Archives Canada (hereafter cited as LAC), MG 31 G9, file 8, Curtis Papers. With typical Canadian modesty, Raymond Collishaw, himself a top air ace with 60 victories, later challenged this view. "The belief [that the Canadians did better in the air than British pilots] was fostered by the Canadian press, which tended to glorify Canadian events," he wrote to Air Marshal Curtis in 1965, continuing with, "however, the whole idea is fake." Collishaw was correct, but his calculations did identify that the young Dominion's aviators were about equal to their British counterparts.

15. As quoted in Greenhous and Halliday, 19.

16. *Canadian Air Policy 1909–1939,* DHH, Hitchins Papers, 74/27.

17. *Active Service Canadian Force serving in the Royal Air Force*, Canadian, November 1918, LAC, RG 9, II-1-9, vol. 179.

18. Greenhous and Halliday, 23–24.

19. "Wings over water: Canada's Naval Aviators, 1915–1975," *Legion Magazine*, November – December 2010, 28–32; Morton, 1.

20. Hitchins, *Air Board,* 106.

21. No author, "The Second Oldest Air Force," *Pathfinder*, no. 114, June 2009, 2.

22. Logan to Hitchins, 18 October 1959, DHH, Logan Papers, 75/117, file 26.

23. Proceedings of Canadian Air Force Association (CAFA) Conference, 22 June 1921, DHH, 181.003 (D2716).

24. Logan, Proceedings of CAFA Conference, 22 June 1921, DHH, 181.003 (D2716).

25. Ibid.

26. Proceedings of CAFA Conference, Camp Borden, 22 June 1921, DHH, 181.003 (D 2716).

27. Rachel Lea Heide, "After the Emergency: Demobilization Strikes, Political Statements, and the Moral Economy in Canada's Air Forces, 1919–1946," in *The Insubordinate and the Non-compliant: Case Studies of Canadian Mutiny and Disobedience, 1920 to Present*, ed. Howard Coombs (Toronto: Dundurn, 2008), 179–83, 202. In both instances the causes of the insurrection, which consisted of airmen refusing to parade or carry out orders, were attributed to a desire for better treatment, conditions of service, pay, and clarification on demobilization policies. "Poor leadership and transgressing the men's sense of self-respect" were also attributed as mitigating factors to the disturbances, while "slovenly deportment" within the Air Force was seen as contributing to the general state of low morale.

28. Logan to Hitchins, 6 August 1955, and Logan to Manning, 29 June 1960, DHH, Logan Papers, 75/117, file 26.

29. Douglas, 51.

30. Logan, Proceedings of CAFA Conference, 22 June 1921, DHH, 181.003 (D2716).

31. Logan to Hitchins, 12 July 1955, and Hitchins to Logan, 21 July 1955, DHH, Logan Papers, 75/117, file 26; Logan to Manning, 29 June 1960, DHH, Logan Papers, 75/117, file 26.

32. Hitchins, *Air Board*, 26–28, 82.

33. Air Board Minutes, 7 February 1922, LAC, RG 24, vol. 3517, file 866-17-1; Extract from memo CGS, Statutory Authority, 8 August 1923, DHH 76/37; and Hitchins, *Air Board*, 106.

34. Douglas, 51–52; and Logan to Manning, 30 March 1960, DHH, Logan Papers, 75/117, file 26.

35. Logan to Manning, 30 March 1960, DHH, Logan Papers, 75/117, file 26.

36. Proceedings of CAFA Conference, 22 June 1921, DHH, 181.003 (D2716).

37. See various correspondence on files LAC, RG 25, G-1, vol. 1300, file 1061; and LAC, RG 24 vol. 5221, file 19-7-26. The quotes in the paragraphs following the previous endnote are attributed to these sources.

38. Proceedings of CAFA Conference, 22 June 1921, DHH, 181.003 (D2716). Each of the quotes following the previous endnote comes from this source.

39. Various minutes, 1922, LAC, RG 24, vol. 3517, file 866-17-1.

40. Hansard, 1921 Session, Vol. IV, (23 May 1921), 3899–3906.

41. Hitchins, *Air Board*, 11.

42. Logan to Hitchins, 6 August 1955, DHH, Logan Papers, 75/117, file 26; Morton, 11.

43. As quoted in Douglas, 58.

44. MacBrien Statement, Proceedings of CAFA Conference, 22 June 1921, DHH, 181.003 (D2716).

45. CGS memo, Statutory Authority, 14 September 1923, DHH 76/37.

46. Hitchins, *Air Board*, 106.

47. 10 May 1922, Air Board Minutes, LAC, RG 24, vol. 17664, file 045-3.

48. Gwatkin to MacBrien, 10 May 1922, LAC, RG 24, vol. 17664, file 045-3.

49. MacBrien to Gwatkin, 11 May 1922, LAC, RG 24, vol. 17664, file 045-3.

50. MacBrien to JAG, 12 December 1922, LAC, RG 24, vol. 6523, HQ 462-23-1.

51. Inclusion of Air Force Regulations, 10 January 1923, LAC, RG 24, vol. 6523, HQ

462-23-1; CGS to AG, 23 January 1923, LAC, RG 24, vol. 6523, HQ 462-23-1; and DCGS to DS and T, 27 February 1923, LAC, RG 24, vol. 6523, HQ 462-23-1.

52. Hitchins, *Air Board*, 124. Memo to Commonwealths, 11 April 1923, Public Records Office (Hereafter cited as PRO), CO 532, 240/3988; Pocaud to Secretary of the Air Ministry, 6 February 1923, PRO, CO 532, 240/3988.

53. Letter to Under Secretary of State for the Colonies, 26 March 1923, PRO, CO 532, 240/3988.

54. Minute notes, 18 August 1928, PRO, AIR 2, 337/857405/28; Slater to Secretary, 28 August 1928, PRO, AIR 2, 337/857405/28; O. D. Skelton (for Secretary of State for External Affairs), 18 June 1928, PRO, AIR 2, 337/857405/28; Amery to Secretary of State Canada, 27 September 1928, PRO, AIR 2, 337/857405/28; O. D. Skelton to Secretary of State for Dominion Affairs, 12 October 1928, PRO, AIR 2, 337/857405/28.

55. Minute note, 2 February 1923, PRO, AIR 2 236/407693/23; Letter to E. Marsh, 12 February 1923, PRO, CO 532, 240/3988.

56. Pocaud to Secretary of the Air Ministry, 6 February 1923, PRO, CO 532, 240/3988. CGS speaking of the Air Force, Statutory Authority, n.d., DHH 76/37.

57. Secretary of State to Governor General, 16 January 1924, PRO, CO 886/10 and PRO, CO 532, 240/3988; Committee of Imperial Defence, Air Requirements of the Dominions, Canada, circa 16 October 1923, PRO, AIR, 19/116. For an excellent account of this incident involving the RCAF's humanitarian involvement in Poland see: Hugh Halliday, "Penicillin for Poland: A Tale of Two Plaques," *Legion Magazine* (November – December) 2011, 50–53.

58. Byng of Vimy [Governor General Lord Byng] to Duke of Devonshire, 15 January 1923, PRO, AIR 2 236/407693/23; and Logan to Manning, 29 June 1960, DHH, Logan Papers, 75/117, file 26.

59. Arthur Bell letter, 8 August 1923, DHH, 75/373, Granger Papers, folder A-15.

60. K. S. Maclachlan to DM, 27 January 1940, LAC, GV Walsh Papers, MG 30 E 308, E-311.

61. Walsh to CAS, 14 December 1945, LAC, GV Walsh Papers, MG 30 E 308, E-311. The trigger for implementing that change is worth telling, as it illustrates the frustration the RCAF often felt when others overlooked their achievements due to an inability to distinguish them from the British. As Air Vice Marshal Walsh explained to the Chief of the Air Staff on 14 December 1945: "I was speaking to Air Commodore Plant yesterday and in the course of conversation he mentioned that during his recent flight to Warsaw he felt it was definitely not appreciated by the Poles that Canadian aircraft flew the Penicillin to Poland. … For some time past I have been thinking it would be of great advantage if we replace the red circle on our aircraft markings by the red Maple Leaf … there would certainly be no doubt whatever as to the nationality of the aircraft." For an excellent account of this incident involving the RCAF's humanitarian involvement in Poland, see: Hugh Halliday, "Penicillin for Poland" 50–53.

62. Russell, *Customs and Traditions*, 168; and RCAF Publication, Canadian Air Publication 90, Chapter 20.

63. Catherine Eyre, "The organization of Air Command, 1973-1976," DHH, Catherine Allan Collection, 77/529. File 2, 134; and AIR COMMAND Ceremonial Program presentation of Colours, 31 July 1982, DHH, 83/13.

64. Russell, *Customs and Traditions*, 1.

*Flying Officer P. W. Lochnan*

# The Other Canadians in the Battle of Britain

By Major Mathias Joost, CD

Each September, we celebrate and recognize the pilots and ground crews whose efforts repulsed the Luftwaffe in its attempt to destroy the air forces stationed in Great Britain and, hence, pave the way for an invasion. An estimated 115 Canadians flew in the Battle of Britain, mainly with No. 1 Fighter Squadron, Royal Canadian Air Force (RCAF)—later renumbered 401 Squadron—and in No. 242 Squadron, Royal Air Force (RAF). However, there were two other Canadian squadrons present in Great Britain during the Battle of Britain (10 July to 31 October 1940) whose activities and support during the battle are hardly mentioned.

In 1932 the RCAF created Nos. 10, 11 and 12 Squadrons as the first units of the RCAF Auxiliary, each with the role of army co-operation. They were formed at the behest of Major-General A. G. L. McNaughton, who wished to have one squadron of aircraft supporting each Canadian Army division that might be sent to Europe in the event of another conflict.[1] In 1940, the government of W. L. Mackenzie King sent Nos. 10 and 12 Squadrons (now renumbered 110 and 112 Squadrons and later 400 and 402) to Great Britain to provide this support to the 1st Canadian Division and to the RAF respectively.

These two army co-operation squadrons were sent to England, prepared for a German invasion and were later converted to fighter aircraft. During the Battle of Britain, they played an important role in the preparation for a potential invasion but also provided support to the RAF's Fighter Command and Canada's No. 1 Fighter Squadron. This support has not been recognized in the past, and given its nature, it was a very important factor in the success of No. 1 Squadron, demonstrating how two RCAF units played their role in the Battle of Britain, even if they did not fly operational sorties against the Luftwaffe.

*Mock gas attacks*

On 20 December 1939, Defence Minister Norman Rogers announced that Canada would be sending the 1st Canadian Division to England. Along with the logistical support for the Division would be No. 110 Army Co-operation Squadron from Toronto.[2] No. 110 was augmented by personnel from the Regular Force's No. 2 Army Co-operation Squadron, which was disbanded, as well as some personnel from No. 112 Squadron. No. 112 Squadron was deployed when the Canadian government offered Great Britain a second army co-operation squadron, which was readily accepted as the offer was made on 11 May 1940, the day that Germany invaded Belgium, France and the Netherlands.[3]

Both squadrons suffered initial setbacks in becoming operational. Lack of parts for their Westland Lysander aircraft, servicing equipment and critical equipment such as parachutes hindered the start of training.[4] The training was consistent with army co-operation roles and was done in conjunction with the 1st Canadian Division and associated units. With the Battle of Britain raging overhead, the pilots and ground crew of both squadrons could not but wish they could participate; however, the RAF and Major-General McNaughton, Commander of the 1st Canadian Division, had other ideas.

After the evacuation of the British Expeditionary Force from Dunkirk, the 1st Canadian Division became the backbone of the British VII Corps, which was the operational reserve in the south of England and virtually the only mobile formation in Great Britain. The Division, thus, became involved in training for defence against an invasion, with No. 110 Squadron conducting training in parallel. McNaughton had no desire to lose his air component, for which he worked diligently to acquire in the early 1930s. A second army co-operation squadron, the arrival of No. 112 Squadron, fit in with his belief that each army corps should be supported by two squadrons and, thus, enhanced his Corps' capabilities.[5]

At the same time, the RAF had created Army Co-operation Command; however,

it was last on the list of their priorities. The RAF certainly did not have the resources to devote to creating more of its own army co-operation squadrons, especially during the Battle of Britain.[6] Thus, the two RCAF army co-operation squadrons were important pieces in the defence of Britain should there be an invasion.

In preparation for any invasion, the two squadrons conducted a broad variety of training missions. Mock gas attacks were made against the Canadian soldiers as well as dive-bombing them to help them prepare for such possibilities.[7] All of 110 Squadron's personnel conducted Molotov cocktail training on 26 August. Major-General McNaughton occasionally flew with the squadron to see what problems his eyes-in-the-sky were experiencing and to observe the disposition of the Canadian soldiers during exercises.[8] No. 110 Squadron even conducted tests of 20 mm Hispano Suiza cannons installed in the Lysander's wheel spats, so the aircraft could possibly be used in an antitank role.[9]

While 110 Squadron was busy training with the 1st Canadian Division, it also had the opportunity to become the first RCAF squadron "into action," to quote Air Vice Marshal G. V. Walsh. Near the end of the Battle of France, the RAF army co-operation squadrons evacuated that country in a rush, leaving their maintenance crews behind. The British Air Ministry appealed to Walsh for assistance so that the squadrons could continue their operations. As a result, 110 Squadron sent 26 maintenance personnel to Croydon and Wellsbourne to service their aircraft.[10] While the first combat against the enemy by an RCAF unit remains with No. 1 Squadron, No. 110 Squadron's assistance constitutes the first RCAF unit to support direct action against the enemy during the Second World War.

These training missions and tests were not without their risks. Fighter Command Hurricanes and Spitfires could appear unexpectedly, to which the response was a very rapid display of the proper identification

signal. During air raids, 110 Squadron was ordered to stay on the ground for that very reason.[11] As it was, Fighter Command did shoot down some RAF army co-operation and other RAF aircraft during the Battle of Britain, although 110 and 112 Squadrons were fortunate in never having had this happen. Anti-aircraft gun crews were equally quick at firing rounds at aircraft that did not promptly display proper identification.

The Luftwaffe also posed a threat. The Lysanders began to carry ammunition during training exercises as a training aircraft had been shot down nearby.[12] During the phase of the Battle of Britain when the Luftwaffe attacked RAF airfields, nearby airfields were attacked, and some local towns bombed. Although neither squadron suffered casualties during the Luftwaffe's attacks, 112 Squadron's field was shot up by the rear gunner of a Heinkel 111.[13]

With a major air battle going on around them, the two army co-operation squadrons were more affected than just being incidental targets. This is where the two squadrons provided direct support to Fighter Command. Fighter Command occasionally called upon the Lysanders to provide dissimilar air combat training. Three Lysanders would meet three Hurricanes at a pre-designated point and commence dogfighting.[14] While the Hurricanes had the advantage of speed in these mock battles, the Lysander's much slower speed and turning ability provided the Hurricane pilots with some interesting challenges. In some ways this would be similar to what they would face if they intercepted the Luftwaffe's Stuka dive-bombers, while the skills learned in meeting an opponent with a better turning ability would be useful against other Luftwaffe aircraft. For the pilots of 100 and 112 Squadrons the benefits were not only more immediate—how to handle their aircraft in a dogfight against a superior opponent, which they could expect if England was invaded—but also more long term as 112 Squadron became a fighter squadron in December 1940 and some of the pilots of the two squadrons were transferred to No. 1 Fighter Squadron.

Another avenue of support to Fighter Command was the calibrating of anti-aircraft batteries. A Lysander from 110 Squadron would fly back and forth at a steady speed and altitude over the arc of fire of a local anti-aircraft battery. The gun crews would work out the altitude, course and speed of the aircraft and then confirm this with the Lysander crew. These operations were not without their risk. If Luftwaffe aircraft appeared, the Lysanders were on their own. They could not leave their training area lest they risk being mistaken for a Luftwaffe raider; at the same time, they had to avoid the anti-aircraft fire of the guns that they had so recently assisted. The Luftwaffe aircraft also posed a threat to which a Lysander pilot could play "hide and seek" among the barrage balloons. Flight Lieutenant "Jack" Bundy of 112 Squadron was fortunate while he was on such an anti-aircraft calibration mission. Three Italian fighters flew about 150 metres under and about 800 metres from him, apparently not noticing his presence.[15]

Perhaps the most important contribution to the Battle of Britain from the two army co-operation squadrons was the provision of pilots. Then Group Captain G. V. Walsh, the senior RCAF officer in Great Britain, was worried about replacements for casualties in No. 1 Squadron. The Canadian government and RCAF had not made any arrangements for replacing the pilots, so only RAF personnel would be available. This would, over time, transform the squadron from having a distinct Canadian identity to one of being indistinguishable from other RAF squadrons. Walsh, already having been informally approached by pilots of 110 Squadron, knew that the pilots of the two army co-operation squadrons were ready for action. He also knew it would be galling to these pilots to see replacements

from Canada eventually arrive and be the ones to meet the enemy in combat. Accordingly, he requested authority to train a number of the army co-operation pilots in preparation for eventual transfer to No. 1 Squadron and made sure that—even if the answer was in the negative from RCAF Headquarters, which it was—the pilots would still be trained.[16] A little subterfuge on Walsh's part was likely also necessary, as McNaughton would probably not have supported any diminution of "his" two squadrons.

On 19 August, six pilots were selected for training on the Hurricane. The diary for 112 Squadron stated simply that Flying Officers D. P. Brown, P. W. Lochnan and R. W. G. Norris departed on temporary duty to No. 5 Operation Training Unit (OTU) at Aston Down. On 2 September, they were struck off strength on transfer to No. 1 Canadian Squadron. No. 110 Squadron's record is even simpler—that three officers were selected for fighter replacement and went to No. 5 OTU on 19 August. These officers were not listed in the squadron record but were Flying Officers W. B. N. Millar, J. D. Pattison and C. W. Trevena.

The six pilots were a diverse group. DePeyter Brown was an American who joined the RCAF on 9 September 1939. He later joined the United States Army Air Force (USAAF) in May 1942. Peter Lochnan was a Regular Force pilot who enlisted in early 1939 and was the most successful of the six during the Battle of Britain, being credited with three enemy aircraft destroyed and three damaged. Trevena was an Auxiliary pilot who originally joined 120 Squadron in 1936.[17]

They were selected not because they were the best pilots in their squadrons—Walsh would not permit the squadrons to be stripped of their most capable personnel—but because they were good pilots.

The real significance of these six pilots was what they did for the manpower of No. 1 Squadron. With the heavy pace of operations, the squadron was, by 30 September, quite exhausted. Captain R. J. Nodwell, the medical officer for the squadron, noted on that date that the pilots were suffering from strain and general tiredness, that their reaction time was slower and that minor ailments were now becoming lingering ones. His recommendations included that more rest be required, which meant more pilots would be required for the squadron to maintain operational readiness and that the squadron be pulled out of the line.[18] A week later the squadron was redeployed to Prestwick.

The casualties suffered by the squadron were also showing in the number of pilots available for duty. On 2 September, four pilots were posted to 112 Squadron for rest, while on 19 September, five pilots were convalescing from injuries.[19] Other pilots were also unavailable due to colds and other ailments as well as combat injuries. With Flying Officers R. L. Edwards, R. Smither and O. J. Peterson having already died in combat, the squadron's pilot strength in mid-September was less than 50 per cent of what it had been at the start of their participation in the Battle of Britain in August.[20] The presence of the six pilots from 110 and 112 Squadrons was, thus, an important addition.

The toll on pilots was recognized early in the operational tour of No. 1 Squadron. On 14 September, a further six officers from 110 Squadron proceeded to No. 5 OTU for eventual transfer to No. 1 Squadron. Although not listed, research has found four of these to be Flying Officers N. R. Johnstone, J. D. Morrison and J. B. Reynolds as well as Pilot Officer J. A. J. Chevrier.[21] Of the four, only Chevrier, who served with No. 1 Squadron RAF before going to No. 1 Squadron, RCAF, was awarded the Battle of Britain clasp.[22]

No. 112 Squadron also sent at least three pilots to No. 1 Squadron, via the OTU, in early September. While in Canada, Flying Officer R. C. "Moose" Fumerton was posted to 112 Squadron. He arrived on British soil on 1 September, was sent on 15 September to No. 6 OTU at Sutton Bridge and did his on-the-job-training with No. 32 Squadron, RAF. While there, he earned his Battle of Britain clasp for having flown operationally. He joined No. 1 Squadron on 29 November, having been on the establishment of No. 112 Squadron for but a short period of time.[23] Flying Officer W. C. Connell similarly participated in the Battle of Britain with No. 32 Squadron, while Pilot Officer F. S. Watson joined No. 112 Squadron on 8 September and went to 6 OTU on 21 September. He earned his Battle of Britain clasp with No. 3 Squadron, RAF, where he arrived on 5 October. He joined No. 1 Squadron (RCAF) on 21 October. A further seven were also transferred from 112 Squadron on 26 October, although their names are not listed in the squadron records.

The fact that the original six transfers from Nos. 110 and 112 Squadron were sent to No. 1 Squadron upon completion of the OTU demonstrates several important points. The original six were urgently required and were sent immediately into battle. By the time that the nine pilots were sent for training on Hurricanes in September, the RAF had recognized that sending "green" pilots into combat was to risk higher than normal losses among pilots new to an aircraft type or to combat operations, hence some time was spent at RAF units. Further, RCAF personnel were included as part of the RAF manning pool and could be sent to any squadron as required. Thus Johnstone, Morrison (they were with No. 85 Squadron after

No. 5 OTU) and Reynolds were not posted to any of the squadrons involved in the Battle of Britain.[24]

The drain on Fighter Command's resources resulted in one further effort to have the army co-operation squadrons participate in the Battle of Britain or, at least, provide some direct support. On 18 November, Canada's Minister of National Defence for Air, C. G. Power, announced in the House of Commons that No. 112 Squadron would begin transformation to a fighter squadron so it could take part in the Battle of Britain.[25] However, before the squadron's transformation could be completed, the Battle of Britain was over.

It is an acknowledged fact that 110 and 112 Squadrons did not participate in the Battle of Britain; however, the facts of their support have not been generally well known. The two army co-operation squadrons not only played an important role in preparing for the defence of Great Britain in case of invasion and supporting the VII Corps but also provided a valuable service to Fighter Command and to No. 1 Squadron.

Most importantly, the injection of six army co-operation pilots was a very significant factor in the continued participation of No. 1 Squadron in the Battle of Britain. The squadron would likely have been withdrawn from combat much earlier without this injection of fresh pilots. Their availability also allowed the squadron to maintain its Canadian identity, but more importantly, they allowed the squadron to keep flying and fighting until 10 October. The pilots of 110 and 112 Squadrons who proceeded to Nos. 5 and 6 OTUs may have been credited with participating in the Battle of Britain with No. 1 Squadron (RCAF) or RAF squadrons; however, their origin with the two army co-operation squadrons has been forgotten or missed.

The foresight and effort of Walsh should also be applauded. He realized that the Canadian identity of No. 1 Squadron could soon be diluted because of casualty replacement if RAF pilots were sent to the squadron and also acknowledged that a ready pool of reinforcements existed in Nos. 110 and 112 Squadrons. His sagacity allowed the original six reinforcements to participate in the Battle of Britain with No. 1 Squadron and, hence, keep that squadron flying in the battle up to 10 October. Without the support of the six original reinforcements from Nos. 110 and 112 Squadrons, by the time that reinforcements did arrive from Canada and were trained on the Hurricane, No. 1 Squadron would likely have been pulled from the line or been filled with RAF replacement pilots.

The two army co-operation squadrons in Great Britain have received little recognition for their support during the Battle of Britain. Just like the ground crew of No. 1 Squadron, they did not fly in the Battle of Britain, but their services were required. Yet, the support of the two army co-operation squadron's was very important to No. 1 Squadron in continuing operations and maintaining its Canadian identity and the pride of the RCAF for its role in this critical battle.

---

Major Mathias (Mat) Joost is a historian at the Directorate of History and Heritage (DHH). He joined the Canadian Forces in 1986, serving in the Navy and as a military police officer. Taking the Force Reduction Plan in 1995, he went to South Korea where he taught English and met his future wife. Returning to Canada in 1998, he joined the Air Reserve, working in Winnipeg until joining DHH in 2003. Mat is currently working on a history of the Air Reserve and on Black Canadians in the RCAF.

## Abbreviations

| | |
|---|---|
| **OTU** | operational training unit |
| **RAF** | Royal Air Force |
| **RCAF** | Royal Canadian Air Force |

## Notes

1. Various articles and publications about the Auxiliary / Air Reserve have attributed the formation of the RCAF Auxiliary squadrons to several factors, either separately or in combination. These factors include public lobbying, pressure within the RCAF and lack of funding. However, recent research has demonstrated that the squadrons were formed at the behest of the Militia's Chief of the General Staff, Major-General A. G. L. McNaughton, to whom the RCAF reported until November 1938. McNaughton, a strong supporter of the Air Force, wished to have Canadian air support for any Canadian divisions sent to Europe in the event of another conflict. See: Mathias Joost, "McNaughton's Air Force: The Creation of the First Non-Permanent Active Air Force Squadrons, 1931–1933" (master's thesis, Royal Military College, 2008), http://www.collectionscanada.gc.ca/obj/thesescanada/vol2/002/MR47897.PDF (accessed August 22, 2012).

2. "Toronto R.C.A.F. Squadron Will Join First Division With 6,000 Corps Troops," *Toronto Telegram*, December 21, 1939.

3. Brereton Greenhous, Stephen J. Harris, and William C. Johnstone, *The Crucible of War, 1939–1945: The Official History of the Royal Canadian Air Force, Volume III* (Ottawa: University of Toronto Press in cooperation with the Department of National Defence and the Canadian Government Publishing Centre, Supply and Services Canada, 1994), 175.

4. Details of No. 110 Squadron operations are taken from the No. 110 Squadron Daily Diary, Directorate of History and Heritage (DHH), 2004/3, Series 8, Microfilm reel number 117; and Details of No. 112 Squadron operations are taken from the No. 112 Squadron Daily Diary, DHH, 2004/3, Series 8, Microfilm reel number 121.

5. Paul Johnston, "McNaughton and the Evolution of Canadian Tactical Air Power: A Cautionary Tale of the Limits to a Junior Partner's Innovations," (unpublished article), 18–19. This article provides a more detailed discussion of the evolution of Canada's tactical air support capability during the Second World War and how it interacted with the RAF's policies. It should be noted that initially the RAF believed only one squadron was required for a corps, whereas McNaughton believed two. The RAF eventually shifted their position to that held by McNaughton.

6. Ibid., 15.

7. W. J. Bundy, "Airmen Have Many Close Shaves," *Hamilton Spectator*, May 13, 1941. Flight Lieutenant W. J. Bundy served with both Nos. 110 and 112 Squadrons during the Battle of Britain. He wrote a series of three articles that were published in the *Hamilton Spectator* in May 1941. On 4 July, No. 110 Squadron's Daily Diary notes that one officer went to the Porton Gas Experimental Centre for a lecture on how to load gas spraying equipment and how to decontaminate the aircraft for the mock gas attacks that were conducted on 24 September.

8. W. J. Bundy, "A Brigadier Loses His Calm," *Hamilton Spectator*, May 12, 1941. No. 110 Squadron Daily Diary notes that McNaughton was a passenger on 7 and 25 July.

9. No. 110 Squadron Daily Diary, 13 and 20 July 1940. The testing and consultations continued through August and into September.

10. No. 110 Squadron Daily Diary, 19 May 1940; Note written on interview with Air Vice Marshal G. V. Walsh, April 23, 1959, DHH, PRF File, "110 Squadron"; and Ron Wylie, *On Watch To Strike: History of 400 (City of Toronto) Squadron* (n.p: n.d.), 29.

11. Wylie, *On Watch*, 1.

12. No. 112 Squadron Daily Diary, 22 July. A Messerschmitt-110 shot down a Hawker Hart trainer from Netherhaven the previous day.

13. Bundy, "Airmen Have Many Close Shaves."

14. Ibid. See also No. 110 Squadron Daily Diary entry for 7 June, noting that the squadron had trained with 501 Squadron. Whether this date refers to the 20 April training held with 501 Squadron is unknown. Although this later date is before the accepted dates of the Battle of Britain, the RAF and RCAF knew that England

was next to be attacked. It should also be noted that many flight activities were not recorded in the records of Nos. 110 and 112 Squadrons, such as this fighter training with 501 Squadron, which was noted after the fact. Likewise, anti-aircraft gun calibration flights were not listed until they had been underway for at least two weeks. Other events known to have occurred are also not listed. The diaries of these two squadrons cannot, therefore, be taken to be authoritative for details of squadron activities.

15. Bundy, "Airmen Have Many Close Shaves"; and Ross Munro, "Canadian Flyers Direct Fire of Defence Guns," *Globe and Mail*, February 1, 1941. No. 110 Squadron Daily Diary for 23 October notes that the squadron had been conducting anti-aircraft-ranging with local batteries for the past several weeks. This continued on into November when on 25 October the squadron was tasked with conducting this activity over London. This tasking was only noted the day after it began.

16. Greenhous, Harris, and Johnstone, *Crucible of War*, 184, 189.

17. N. R. Johnstone and J. D. Morrison along with Trevena were among the first 15 pilots transferred to No. 1 Squadron during the Battle of Britain. They had all enlisted in 120 Squadron prior to the war and had been transferred to 110 Squadron to fill out its establishment shortly after war was declared.

18. No. 1 Squadron Daily Diary, "Flying Personnel," 1-M-25, 7 October 1940; and Capt R. J. Nodwell to Principal Medical Officer, RCAF in Great Britain.

19. No. 1 Squadron Daily Diary. The pilots posted on 2 September were Flight Lieutenant Corbett as well as Flying Officers Desloges, Kerwin and Hyde. Those recovering from injuries were Flying Officers Beardmore, Nesbitt, Desloges, Little and Millar.

20. No. 1 Squadron began operations with 21 pilots.

21. The four names were found and confirmed through various sources. Flying Officers F. W. Hillock and J. B. McColl may have been the other two pilots. They flew with 151 and 607 Squadrons respectively during the Battle of Britain after completing their courses at No. 5 OTU and hence are considered to have been Battle of Britain pilots and received the Battle of Britain clasp to the 1939–45 Star. Hillock and McColl are listed with Johnstone and Morrison in a memo found in the 1 Squadron Daily Diary. Memo S.12-7, 27 November 1940, from Air Commodore L. F. Stevenson, Air Officer Commanding RCAF in Great Britain. Airmen were also transferred between No. 1 Squadron and No. 110 Squadron. Two Group "B" armament artificers were transferred to No. 1 Squadron on 21 September with No. 110 Squadron receiving two Group "C" armament artificers. See No. 110 Squadron Daily Diary, 21 September. No. 112 Squadron also had Flight Lieutenant W. R. Pollock depart for No. 1 Squadron on 26 July to serve as that unit's adjutant.

22. Memo S.12-7, from Air Commodore L. F. Stevenson; and 1 Squadron Daily Diary, 24 October.

23. DHH, Biography File: Robert Carl Fumerton. Fumerton may have been part of the group of 10 reinforcements from Canada that arrived at 112 Squadron on 8 September. Pilot Officer Watson also may have been among this group. 112 Squadron apparently served as the reinforcement pool for the three Canadian squadrons. The squadron's entry for 26 August notes the appointment of an adjutant for the reinforcement pool. Other entries for Nos. 110 and 112 Squadrons suggest this role for No. 112 Squadron while Greenhous, Harris, and Johnstone, *Crucible of War*, 30 indicates the squadron provided reinforcements to Nos. 1 and 110 Squadrons.

24. No. 85 Squadron was withdrawn from the Battle of Britain on 3 September for rest and recuperation at North Fenton. Hence, any flying that Johnstone and Morrison did with the squadron did not qualify as Battle of Britain service.

25. "Second Unit of Fighters Aids Britain," *Globe and Mail*, November 19, 1940. At the time of the announcement it was not yet recognized that the Battle of Britain was over and that the Third Reich had changed strategy. Hence, the intent to re-equip and re-role No. 112 Squadron was supportive of the Battle of Britain. No. 112 was to become No. 2 Squadron as part of this effort; the squadron number was changed and then changed again to 402 Squadron.

# UNITED STATES AIR FORCE DOCTRINE TO THE FIRST GULF WAR:

## FIGHTING CONFLICTS WITH WORLD WAR I DOCTRINE

BY RADU VENTER

## Introduction

The creation of an effective military doctrine is as fundamental as the development of the weaponry on which a military depends. The people and technology that make up a military force are only effective when used in concert with a plan to achieve an overarching goal, usually the surrender or destruction of an enemy's forces. When such goals are not achieved, it is necessary to examine the doctrine and its approaches to attaining victory. Through the examination process, a military can identify the weaknesses and limitations of current doctrine and how best to prevent or rectify them, in the process developing a newer, more capable doctrine. The United States Air Force (USAF) received a great deal of criticism over its ineffective strategies in the past, prompting numerous calls for adaptations to its doctrine. However, this only led to retrenchment and the use of past doctrine despite noted faults and limitations. The Air Force's[1] inability to single-handedly force the capitulation of the enemy's military forces from the Second World War to the Gulf War was eclipsed by its ability to inflict massive damage on the Iraqi Forces in the Gulf War, in what many saw as a rebirth of air power doctrine. In reality, the doctrine that was applied against Iraq was exactly the same as the one that the Air Force had used in its previous actions. The sole change in that conflict was the technology that was utilized to achieve the goals. The copy-and-paste approach that has distinguished USAF doctrine since its inception as the United States Army Air Service during World War I was masked by the high technology utilized to such effect in the Gulf War. Rather than proving the Air Force's ultimate supremacy, the Gulf War merely represented a case study of all the pieces aligning in the fashion that the United States has always fought its air wars and of the inability of the Air Force's doctrine to bring about the "strategic decapitation" it claims will result in a victory without requiring the deployment of ground forces.

The unchanging nature of the fundamental precepts of Air Force doctrine can be seen through a careful examination of the major events of its history. Brigadier General William "Billy" Mitchell laid the groundwork for the doctrine, seeing a strong strategic bomber force that would destroy the enemy's infrastructure, capability and will to win. This doctrine would be put to the test in World War II and found wanting, but the lessons were ignored by both the United States government and Air Force. Again, the doctrine would be utilized during the Vietnam War, be proved unable to accomplish the desired objectives and result in a crisis of identity for the Air Force. Though the Air Force would reform its doctrine by the time the Gulf War erupted, the overall focus on strategic decapitation remained. As in World War II, the doctrinal limitations were hidden by a spectacular victory, heralded by surgical air strikes on the Iraqi command structure and forces.

Historically, American air power doctrine was specific and inflexible, reflecting the relative inexperience of the majority of its forces, often called to serve on short notice.[2] Air power doctrine rigidity was due in part to the relative newness of airplane technology, coupled with the rate at which the technology developed. Airplanes are remarkably versatile, capable of performing multiple roles if necessary.[3] Thinking of airplanes as platforms allows for an improved understanding of their capabilities. An airplane's versatility is demonstrated by the variety of deployable weapons; a single frame can be equipped with guns, cannons, bombs, missiles and rockets. Airplanes are largely unencumbered by terrain, and travelling at speeds of hundreds of kilometres per hour, they are quite difficult to shoot down without modern technology.[4] Wresting control of the skies from an air force requires both the numbers and the technology to match the opponent's forces.

Aircraft can use their range and weaponry to strike the enemy deep in the heart of their terrain. Defending forces require large

and dedicated air defence systems, as aircraft can appear almost anywhere at any time.[5] The speed at which aircraft move means defenders have a limited time to marshal their own airplanes or ready their anti-aircraft weaponry. However, despite these strengths, airplanes have one major limitation. Unlike ground forces, they can not conquer or hold terrain.

## Billy Mitchell and initial doctrine

United States Air Force doctrine began with United States Army Air Force (USAAF) Brigadier General Mitchell. Along with his contemporaries, Italian General Giulio Douhet and British Air Marshal Hugh Trenchard, Mitchell saw in the airplane a means of escaping the carnage of World War I by flying over the weapons of the enemy and striking the enemy's population and industrial centres. He identified anti-aircraft weaponry as a threat to aircraft but saw the massing of pursuit fighters as the best means of defeating the enemy's offensive forces.[6]

However, Mitchell's theories were full of inconsistencies that seriously affected the Air Force's doctrine for decades to come. Mitchell's support of the bomber was based almost entirely upon ideas that had not been tested in World War I. The 1922 test bombardment of a World War I prize, the German battleship *Ostfriesland*, and other ships demonstrated the potential damage gravity bombs could do, but the tests were conducted on individual, unmanned targets.[7] Consequently, the bombers were able to make runs without the risk of being shot down by enemy fighters or enemy anti-aircraft fire, allowing them to make precise attacks at very low altitude. Similarly, the crew's ability to repair the damage done to the ship was never tested. Finally, these tests developed the Air Force's belief that its bomber force was a crack force, capable of destroying an enemy's forces, with ease and precision. Mitchell, himself, declared that the bomber force could destroy any target while operating at any height.[8] For Mitchell, such a specialized and capable weapon necessitated an independent air force. Subordinated to the army or navy, the air force would find itself playing a supporting role on a tactical level. Acting freely, Mitchell argued, the bomber could target the enemy's industry and morale, bringing about a swift resolution to conflicts.[9] These claims were largely unsubstantiated and would be found wanting in World War II.

Mitchell's calls for the Air Force's independence from the Army and his criticisms of the United States Navy resulted in his court martial and eventual dismissal. Furthermore, it perpetuated the feeling within the Air Force of the need to achieve independence from the Army and become a separate branch of the United States military.[10] In order to do so, it would have to prove itself as sufficiently different from the other branches. This need to prove itself manifested almost as an inferiority complex, with the Air Force struggling to prove itself in a conflict without the support of the other branches.[11] Despite gaining independence in 1947, the newly christened United States Air Force retained this complex, and it continues to affect their actions to the present day.

## World War II: Testing bomber doctrine

World War II put the USAAF to its first test. The conflict matched their interwar doctrine and preparations. It was a modern conventional war and saw the USAAF's first deployment of air power as a strategic weapon. Viewing mass bombing attacks as immoral and unnecessarily costly, the goal became the precise destruction of the enemy's critical industries.[12] The USAAF decided to apply its policy of precision bombing, targeting German industry, while their British allies focused their attacks on targeting the enemy's morale through attacks on the civilian population.[13] Bombing sorties, however,

proved ineffective against enemy industry. In attempting the pinpoint strikes the USAAF bragged about, the force actually ended up causing as many civilian casualties as their Royal Air Force counterparts. Despite the development of the Norden bombsight, then the most advanced sighting technology, the average error of daylight bombing, even under ideal conditions, was 450 yards (411.5 metres).[14] Poor visibility of the ground nearly tripled that figure.

United States Army Air Force bombing assessments and expectations were largely based on ideal conditions. It was believed to be possible to scientifically predict the fall of the enemy through the use of the heavy bomber. The USAAF calculated the desired degree of destruction, a 2000-foot (610-metre) circle centred on the target, accomplishable with the use of 100 bombers.[15] Focusing this offensive against the German power supply, it was believed that two 1100-pound (500-kilogram) bombs would be required to damage a plant for a period of a few months, with three bombs incapacitating the plant for up to 18 months. To achieve the desired effects, each power plant, approximately 4 acres (1.6 hectares) in size, would require an attack force of 108 bombers, to give a 99.9 per cent chance of a single hit, a 96.5 per cent chance of two hits and 89 per cent chance of three.[16] These numbers are inflated, not incorporating other factors such as an increase in altitude, weather and attrition. Considering the 57 electrical plants Germany had operating at the time and the amount of consistent bombing to render the plants inoperable for an extended period of time, the amount of resources necessary to eliminate this sole aspect of the German industry was prohibitive.

The USAAF strategic bombing campaigns during World War II did not start to

*Precision bombing featured this attack by 100 B-17s on a Focke-Wulf plant at Marienburg on October 9 1943.*

severely impact German industry until the last year of the war, by which point the land and naval forces had already made victory a foregone conclusion.[17] In the Pacific theatre, the Japanese military continued to fight on despite the destruction of its industry and the firebombing of major population centres. The weaponry and tactics were refined to their most efficient forms given the capabilities of the time. The addition of stabilizing fins on the bombs and rockets and straightening of the bomber's trajectory maximized accuracy, but the inability to correct for factors such as aircraft speed, wind direction and wind speed prevented the weapons from being effective.[18] At this point in the history of the USAAF, the doctrine did not accurately reflect the capabilities of the men and the technology at its disposal. Despite years of effort, the USAAF was unable to single-handedly defeat either the German or the Japanese militaries.

## The cold war: The conventional nuclear bomber force

World War II ended with the deployment of nuclear weaponry that would define the following decades. The devastation wrought by the atomic bomb at the same time resolved the bombing issues of World War II and prevented the fall of the bomber from its position of esteem. Weapons of such power eliminated the need for accuracy and saturation, multiplying the force and effect of each individual bomber. Given its important new role as a nuclear bomber force, USAF was granted independence from the United States Army. For the next 30 years, USAF would be dominated by officers whose support of Mitchell's theories, and bomber service in World War II, led to "an era of unparalleled doctrinal stagnation."[19]

In 1947, USAF was structured around Strategic Air Command (SAC), tasked with the deployment of nuclear bombers, and Tactical Air Command (TAC), which oversaw the use of fighters and fighter-bombers. The prevailing strategic expectations, that the next conflict would be a major conventional nuclear war with the Soviet Union, saw SAC rise to the forefront.[20]

The further development of the thermonuclear bomb and Eisenhower's massive retaliation doctrine also favoured SAC, which evolved into a capable bomber force, able to deploy nuclear weaponry at any point in the world, day or night. TAC, despite the important role that fighters and fighter-bombers played in World War II, was relegated to a secondary position, seen as irrelevant in the coming nuclear war.[21] The nuclear bomber allowed for remarkably simple operational planning. In the event of a large-scale war, bombers would deploy their nuclear arsenals on the enemy's major military, civilian and economic points, continuing until the enemy was either obliterated or surrendered. For the two decades following World War II, USAF was fully prepared for a nuclear war with the Union of Soviet Socialist Republics (USSR) and its Warsaw Pact allies.

## North Korea and Vietnam: Nuclear bombers in limited wars

The first half of the 1950s saw USAF deployed to Korea, where it fought a war with limited objectives, preventing it from deploying atomic weaponry. The United States Air Force established air superiority and embarked on both an interdiction campaign targeting supply lines as well as a strategic bombing campaign of North Korean electrical plants and industrial facilities. In a chilling demonstration of what America would face in Vietnam, USAF was unsuccessful in both attempts. The supply lines were rapidly re-established by the swift repair of rail lines or the use of simpler means of transportation. Despite this failure, their doctrine was unfazed. They maintained that the strategic bombing of North Korean industry brought about the ceasefire and would have

*Air Force F-105 Thunderchief pilots bomb a military target through low clouds over the southern panhandle of North Vietnam*

resulted in victory had the Air Force been able to operate without strict political limitations. However, the resolution of the conflict met the expectations of United States (US) political leaders, limiting the need for a close examination of the efficacy of USAF tactics during the conflict. The United States Air Force ended the Korean War confident that, in the unlikely recurrence of another limited war, its total war tactics would still be applicable and effective.

Little more than a decade later, USAF instead found itself deployed to Vietnam. As before, nuclear weaponry could not be used on North Vietnam without escalating the conflict nor would it be effective against the insurgents in the deep jungles of the region.[22] Thus, the brunt of the combat fell to the TAC, which struggled with having to relearn the ground-attack and interdiction tactics perfected during World War II.

SAC returned to the World War II tactic of conventional bombardment, beginning with Operation ROLLING THUNDER,[23] in the hopes of persuading North Vietnam to end its actions and to stop supporting the Viet Cong in the South. This was hampered by the limited goals of the bombing campaign. The intent was to use the strategic bombers to gradually increase the pressure on the North Vietnamese, giving them the impression that USAF was willing to go to any lengths without forcing the North Vietnamese to turn to the USSR or China. ROLLING THUNDER was implemented gradually rather than against a specific target, such as the enemy's lines of communications, and had limited success in obtaining its objectives. As well, ROLLING THUNDER was also regularly halted, in the hopes that the enemy would capitulate rather than invite renewed destruction. This had the effect of allowing the North Vietnamese the time necessary to rearm or resupply in preparation for the next wave. The fundamental flaw with the campaign was North Vietnam's limited industrial base, which meant that its military lifeline was external. In addition to the operational

*Husky 1,000-pound demolition bombs hurtle from this U.S. Far East Air Forces B-29 "Superfort" towards a target somewhere beneath the cloud layer in Korea.*

difficulties, SAC also had to deal with a limited deployment, as Vietnam was a secondary objective; USAF's first priority remained the defence of Europe.[24]

The strategic bombing offensive was ineffective for a number of reasons. First of all, political limitations prevented the indiscriminate bombardment that characterized total wars. Similarly, the presence of Soviet and Chinese troops in critical facilities such as anti-air batteries prevented their destruction for the aforementioned fears of escalation, allowing the batteries to fire with impunity. The strategic bombing campaign also did not take into account the resolve of the people of North Vietnam, for whom the capture of the South was of the utmost importance.[25] Most important of all, the strategic bombing campaign could not adapt to the fact that the bulk of the North Vietnamese weaponry and materiel was coming from outside of the country.[26]

All bombing restrictions on North Vietnam were lifted in 1972, and USAF was able to target the enemy's logistics directly. The North Vietnamese harbours were mined, preventing the import of military resources through the sea.[27] Air power was also used to target the enemy's supply routes in neighbouring Laos and Cambodia. These operations made logistics difficult for the North Vietnamese and increased the cost of supplying operations in the country, but USAF was never able to cut off the supply route entirely.[28] Vietnam's monsoon season also complicated the attempt to cut the enemy's logistical lines. In response to the attacks on their logistics, the North Vietnamese either increased the flow of supplies or patiently stockpiled weapons and materiel until they had the numbers necessary for an attack.[29]

The Vietnam War revealed the limitations of USAF doctrine, again focused on the strategic decapitation of the enemy's industry. The air campaign was, as before, seen as a cost-effective means to end the war without ground forces having to invade the north. However, since the infantry maintained a defensive stance in Southern Vietnam, air power's inability to win the war became visible.[30] Despite USAF General LeMay's claim that the Christmas bombing of Hanoi was the appropriate measure and that continued pressure on the capital city would have resulted in victory, it was clear that USAF's doctrine remained flawed.

The lessons from Vietnam were numerous. On a strategic level, USAF did not accomplish any of its stated objectives.[31] Despite the effective application of precision guided munitions (PGMs), such as laser, wire and video-guided munitions by war's end, USAF's approach was poorly tailored for the conflict it had to fight. Having created a conventional nuclear force, USAF's doctrine was so specialized and simplified that it was entirely unprepared to operate in a complex, unconventional war.

## Vietnam to Gulf War: Doctrinal renaissance?

The period immediately following the Gulf War was a difficult time for the Air Force, saddled with the memory of its inability to defeat the North Vietnamese despite possessing air superiority and technological supremacy. In the aftermath of the conflict, it was realized that USAF had ignored the possibility of low-intensity conflicts which, as the cold war continued, became far more likely. Strategic nuclear bombers were ineffective against such threats. The United States Air Force, however, found itself polarized between the tactical and strategic branches. The divisiveness came about from the use of the airframes and their weapons. Divided based on nomenclature,[32] weapon types, ordnance weight, range of airplanes and number of crew, USAF ignored the major issue: the goal of an air force is to identify a valid target, determine the best means to destroy it and act on said information.[33]

Following the doctrinal failure of the early 1970s, the 1980s saw great changes in USAF. First of all, there was a significant shift in the general staff. In 1982, General Charles Gabriel was selected as Chief of Staff, the first fighter pilot to hold a major staff position in over three decades.[34] This was the start of a major transition in USAF, with tactical airmen holding the majority of the senior positions by 1992.[35]

**Despite USAF General LeMay's claim that the Christmas bombing of Hanoi was the appropriate measure and that continued pressure on the capital city would have resulted in victory, it was clear that USAF's doctrine remained flawed.**

During the 1980s, USAF struggled to find a new doctrine in order to remain relevant in military affairs. Colonel John Warden III[36] drafted a new approach to the application of air power. Borrowing heavily from Clausewitz, he developed a doctrine centred on the physical paralysis of the enemy military and the psychological paralysis of the military and political decision-making bodies.[37] The years of doctrinal stagnation resulted in examining the other branches of the military, hoping to find lessons which could be applied by USAF in order to rediscover its purpose. Warden borrowed Colonel John Boyd's[38] policy of psychological paralysis, involving the use of repeated, sudden attacks against an opponent, preventing them from being able to recuperate from each individual strike and hampering their ability to counter-attack or make informed decisions.

Warden's theory focused greatly on Clausewitz's ideas of the centres of gravity. They represent the enemy's weak points, whether economic, industrial, psychological or material. Targeting and eliminating the centres of gravity will bring about the enemy's defeat or capitulation. Adapting this idea, Warden created a series of rings, with the more central rings being the more valuable targets for destruction, since the elimination of an internal ring will negatively affect all the rings outside it. In the centre, the most valuable target to destroy is the enemy's leadership, both military and political. The first ring around leadership is "organic essentials," the means of sustaining the political and military entity. This can range from food to spare parts or the fuel that allows for the transfer of such goods. The next ring involves the destruction of infrastructure. Another broad target, this can represent energy production facilities, military industry or telecommunications and transportation. The final ring involves the physical destruction of the enemy's fielded forces. This is the external ring because it comprises the greatest number of targets and, in the event of a direct assault, will result in the most casualties. This theory, however, was merely a repackaged form of previous USAF doctrine. Again, the goal is the defeat of the enemy through the strategic application of air power.[39]

Warden, like his predecessors, maintains the view that air weapons are inherently superior to surface weapons. However, Warden shifts his focus slightly. Where previous contemporaries focused largely on the economic targets and the enemy's ability to fight a war, Warden's focus is largely based on political targets, with enemy leadership being the central part of the ring.[40] In Warden, one can still see Mitchell's focus of targeting the vital centres deep within the enemy's territory, with air power being the sole force capable of achieving such strategic ends with minimal cost and effort.[41]

United States Air Force doctrine during this period of time also saw the rediscovery of parallel and effects-based operations.[42] The idea of parallel operations is an expansion of manoeuvre warfare, encompassing a strategic attack on the enemy's centres of gravity with tactical strikes on the enemy's forces and leadership. Previous air force operations had involved targeting a single target (or set of targets) at a time, such as the enemy's air force, before moving on to the next target.[43] Precision weaponry remained the Achilles heel for parallel operations, which had been theorized as early as World War II. It no longer became necessary to mass thousands of planes when a single aircraft armed with a single bomb could accomplish the same objective.[44] Targeting all of the enemy's critical points (such as defences, operations centres and leadership) would grant the offensive force a marked advantage, allowing for increased destruction and confusion.[45]

Putting parallel operations together with effects-based operations allows for a more varied and fluid attack, compromising all aspects of the enemy's defence systems and, theoretically, forcing them to concede when their offensive and defensive capabilities have been rendered ineffective. It is this approach, not markedly different from previous USAF doctrine, which USAF would utilize in the Gulf War.

## The Gulf War: The new doctrine?

The United States Air Force approached the Gulf War, its first major conflict since the Vietnam War, with great care. The goal was, as always, to play a decisive and independent role in the conflict, demonstrating USAF's capabilities.

Unlike Vietnam, the Gulf War was a much simpler conflict. The enemy was easy to define: Saddam Hussein and his military, specifically the forces presently in Kuwait.[46] Strategic targeting of the enemy became the focus in Operation DESERT STORM, thanks to a new operational plan, titled INSTANT THUNDER, in response to Vietnam's gradual escalation bombing campaigns.[47] Central Command responded positively to this idea and tasked members of the SAC to develop the plan; Air Force Central Command was busy with the task of deploying forces to Saudi Arabia as part of DESERT SHIELD.[48] Also, being primarily composed of TAC officers, the men lacked the strategic-level thinking that was necessary for such planning. Warden, who had so recently been writing on the subject, now found himself being given the chance to prove that air power could be strategically decisive in a campaign.

The air campaign against Iraq placed a priority on gaining air superiority immediately. The gradualist approach of the Vietnam campaign was abandoned for a more aggressive and immediate result. Key to this was the idea of manoeuvre warfare, denying the enemy the time necessary to recover from the previous strike.[49] The United States had clear objectives and an end state planned for the campaign. The policy objectives were immediately, completely and unconditionally removing Iraqi military forces from Kuwait, restoring Kuwait's government and ensuring the safety and stability of all nations on the Persian Gulf.[50] The theatre objectives were destroying Iraqi political and military leadership; hampering command and control (C2); maintaining air superiority while severing Iraqi supply lines; and destroying their nuclear, biological and chemical (NBC) weaponry.[51]

Operationally, there were to be four phases. The first three were monopolized by USAF, which was to prepare the area for the deployment of the ground forces in the fourth. The first phase consisted of attacks on air defences, leadership, C2 and NBC capability. The national infrastructure, specifically electricity and oil, would also be targeted.[52] The second phase would establish air superiority,

destroying aircraft, airfields and air defence weapons. Phase three would target the ground forces, attacking artillery forces, supply lines and battlefield C2, with the goal to reduce enemy ground combat effectiveness by a factor of 50 per cent. The plan was designed with gradual, steady escalation in mind, giving Saddam Hussein a chance to withdraw before moving to the next phase.[53]

The air planning committees constantly updated the list of strategic targets to be attacked. For the first three days of the attack, there were 476 targets identified by the eve of the air campaign.[54] This detailed list was the result of the bolstered numbers of coalition forces as well as the improvement of intelligence-gathering technology. Operations began on 17 January 1991. From that point on, the planning committee would work to identify new targets to attack and targets for renewed attack if previous sorties were ineffective.[55] Following target selection, the information would be passed down to command agencies, filtering down to the airborne battlefield command and control centres and eventually to the pilots themselves, who then carried out the mission.[56] All efforts were taken to eliminate Iraq's ability to fight before the ground forces were deployed.

*F-117 Nighthawk (U.S. Air Force photo)*

Increased precision finally allowed economy of force. Where it once took two combat wings of bombers to destroy critical targets, aviators finally had a weapon that allowed a single fighter to complete the mission with a few bombs. The further development of technology, both civil and military, drastically altered the way this war would be fought. Live media feeds of the first bombs being dropped on Baghdad and the use of PGMs in the middle of cities shows the marked difference in the capabilities of the Air Force since World War II. Playing a minor, though important

*F-16A, F-15C and F-15E flying during Desert Storm. (U.S. Air Force photo)*

role, PGMs accounted for a mere 5 per cent of the total ordnance dropped during the air campaign.[57] For targets where a precise strike was necessary, such as a high value target or a target with a high risk of collateral damage, PGMs were critical. Unguided bombs were deployed against military targets such as defensive lines and airfields.

The end result of the conflict was a thoroughly decisive victory for the US and coalition forces. The United States Air Force was able to claim a massive victory. On the eve of the ground operation, it was estimated that the air strikes had destroyed 40 per cent of all Iraqi tanks and artillery pieces, as well as 33 per cent of their armoured vehicles.[58] In actuality, they had surpassed this number, having accounted for 60 per cent of the tanks and artillery, with almost 40 per cent of armoured vehicles destroyed.[59] The tactical strikes had placed the Iraqis in operational paralysis and prevented them from fighting effectively. However, the effect was not total. By 16 February 1991, 65 per cent of the Iraqi Air Force remained functional in hardened underground bunkers.[60] Similarly, Iraqi ground forces in hardened positions were able to weather the assaults and still provided effective defensive fire.[61] Air power had proven itself very effective, as in the past, at defeating the enemy's morale.[62]

However, the air campaign had failed, yet again, to bring about the resolution of the conflict without the involvement of ground forces. Saddam Hussein remained in power, and Iraq still possessed enough C2 and communications to order withdrawals and reposition its forces in response to the ground offensive.[63] Rather than destroying the enemy leadership and cutting off communications between the forces, USAF had to settle with claims that the strategic attacks broke down communications and that the government facilities were forced to utilize backup generators to remain functional.[64] Strategic attack did force the Iraqi military and political leadership to remain mobile and utilize less secure communication systems, such that the US was better able to access their communications. Similarly, the attacks on the electrical network proved highly effective; those power plants that were not destroyed were shut down to avoid being targeted. However, USAF's main objective was the strategic decapitation of the Iraqi forces, and despite 109,876 sorties, it did not deliver the decisive victory it promised.[65] Once again, USAF had established a set of lofty objectives which it could not achieve.

## Conclusion

The more things change, the more they stay the same. Despite evidence to the contrary, USAF remains sure that a strategic attack, using the newest technology available to it, will provide the knockout punch necessary to defeat the enemy. On the eve of the First Gulf War, USAF proudly declared to the United States military that it could do so by striking the enemy's leadership, industry and infrastructure, crippling them with a minimum of cost and expenditure. These claims mirrored those made by USAF generals during the Vietnam War and World War II before it. Though USAF's doctrine has been steadily improving in terms of realistic expectations of what is possible with the available weaponry, there remains within USAF this dream of superseding the other branches of the military. The United States Air Force continues to view itself as a specialized weapon designed to strike directly at the heart of an enemy while also operating tactically to weaken the opponent's military capabilities. While there are definite merits for having such high goals, they prevent USAF from setting itself on a stable foundation and acting in the most effective means possible. It would do USAF well to adopt the practice of the German Luftwaffe in World War II, working to assist the other branches in order to achieve victory in concert rather

than accomplishing those goals on its own. Instead, USAF continues to see itself as the crack bomber force of the past with a minor focus on tactical strikes. Where the technology has evolved vastly, the doctrine remains focused on the same unrealistic objective.

Radu Venter is a second-year master's student of War Studies at the Royal Military College of Canada, specializing in air force doctrine and the use of air power in counter-insurgencies.

## Abbreviations

| | |
|---|---|
| C2 | command and control |
| NBC | nuclear, biological and chemical |
| PGM | precision guided munition |
| SAC | Strategic Air Command |
| TAC | Tactical Air Command |
| US | United States |
| USAAF | United States Army Air Force |
| USAF | United States Air Force |
| USSR | Union of Soviet Socialist Republics |

## Notes

1. Between World War I and 1947, the air element of the United States Army underwent a number of name changes before becoming the independent service we know today as the United States Air Force. For continuity, regardless of the time period, the author uses the title "Air Force."

2. Williamson Murray, "A Tale of Two Doctrines: The Luftwaffe's Conduct of the Air War and the USAF's Manual 1-1," *Journal of Strategic Studies* 6, no. 4 (1983): 84.

3. Stephen Wright, "An Airman's View of United States Air Force Airpower," *Air and Space Journal* 22 (2008): 26.

4. Ibid.

5. Ibid., 29.

6. William Mitchell, *Winged Defense* (New York: Kennikat Press, 1971), 164.

7. Ibid., 72.

8. Ibid., 165.

9. Robert Martyn, "Theories of Post-Cold War Air Campaigning: The Development of Air Power Doctrine," in *Air Campaigns in the New World Order*, ed. Allan English (Winnipeg: Centre for Defence and Security Studies, University of Manitoba, 2005), 45.

10. Mark Clodfelter, "Molding Airpower Convictions: Development and Legacy of William Mitchell's Strategic Thought," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Philip Meilinger (Maxwell Air Force Base, Alabama: Air University Press, 1997), 106.

11. Ibid., 79.

12. George Friedman, *The Future of War: Power, Technology and American World Dominance in the 21st Century* (New York: Crown Publishers, 1996), 214.

13. Martyn, 45.

14. Friedman, 219.

15. Barry Watts, *The Foundations of U.S. Air Doctrine: The Problem of Friction in War* (Maxwell Air Force Base, Alabama: Air University Press, 1984), 107.

16. Friedman, 220.

17. Martyn, 45.

18. Friedman, 218.

19. Martyn, 46.

20. Philip Meilinger, "The Problem with Our Air Power Doctrine," *Airpower Journal* 6 (Spring 1992), n.p.

21. Ibid.

22. Ibid.

23. Operation ROLLING THUNDER was the longest sustained bombing campaign in history, targeting North Vietnamese cities and industry. Political constraints limited potential targets until later in the war.

24. Friedman, 229.

25. Dennis Drew and Donald Snow, *The Eagle's Talons: The American Experience at War* (Maxwell Air Force Base, Alabama: Air University Press, 1988), 312.

26. Friedman, 232.

27. Drew and Snow, 308.

28. Ibid., 307.

29. Ibid., 308.

30. Friedman, 231.

31. Ibid., 240.

32. In USAF, the F- designation denotes a fighter or fighter bomber, A- denotes an attack aircraft, and B- denotes a bomber. As technology has eliminated the range differences and increased payloads, these designations are largely irrelevant.

33. Meilinger, "The Problem with Our Air Power Doctrine," n.p.

34. Ibid.

35. Ibid.

36. Colonel John A. Warden III is a retired USAF officer with a career spanning three decades, including service in Vietnam. His book, *The Air Campaign: Planning for Combat*, was the basis for the Gulf War air campaign.

37. Martyn, 47.

38. USAF Colonel John Boyd was a military theorist known for the OODA (observe, orient, decide and act) Loop concept, which held that whichever entity responded faster to an event would emerge the victor, as the other would be responding to a situation that had already changed. This was the basis of the Marine Corps' model of manoeuvre warfare.

39. David Fadok, "John Boyd and John Warden: Airpower's Quest for Strategic Paralysis," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Philip Meilinger (Maxwell Air Force Base, Alabama: Air University Press, 1997), 357.

40. Ibid., 371.

41. Ibid.

42. Martyn, 47.

43. David Deptula, "Parallel Warfare: What Is It? Where Did It Come From? Why Is It Important?" in *The Eagle in the Desert: Looking Back on U.S. Involvement in the Persian Gulf War*, eds. William Head and Earl H. Tilford (Westport, Connecticut: Praeger, 1996), 130.

44. Ibid., 137.

45. Effects-based operations, similar to parallel operations, involves a specified end point, such as limiting mobility by destroying an enemy's logistical capabilities, rather than the total obliteration of the enemy's production facilities or military forces. Rendering a target ineffective is equivalent to its destruction.

46. Howard Coombs, "The Post-Modern Air Campaign: Operation Desert Storm to Operation Iraqi Freedom," in *Air Campaigns in the New World Order* (see note 9), 59.

47. Daniel Kuehl, "Thunder and Storm: Strategic Air Operations in the Gulf War," in *The Eagle in the Desert* (see note 43), 112.

48. Operation DESERT SHIELD was the coalition effort to deter Iraqi aggression against Saudi Arabia and to compel a withdrawal from Kuwait. Once it became clear that Iraq would not back down, Operation DESERT STORM was launched to force the retreat of Iraqi forces from Kuwait.

49. Walter Boyne, *Beyond the Wild Blue: A History of the U.S. Air Force* (New York: St. Martin's Griffin, 1998), 256.

50. United States General Accounting Office, *Operation Desert Storm: Evaluation of the Air Campaign* (Washington, DC: The Office), 194.

51. Ibid., 195.

52. Ibid.

53. Ibid., 197.

54. Ibid., 200.

55. Ibid., 202.

56. Brian Jones, "Close Air Support: A Doctrinal Disconnect," *Airpower Journal* 6 (Winter 1992), n.p.

57. Coombs, 59.

58. Richard Hallion, *Storm Over Iraq: Airpower and the Gulf War* (Washington, DC: Smithsonian Institution Press, 1992), 205.

59. Ibid.

60. Rauf Tariq, *An Analysis of the Gulf War: "Operation Desert Storm"* (Ottawa: Canadian Centre for Arms Control and Disarmament, 1991), 10.

61. Ibid.

62. Hallion, 219.

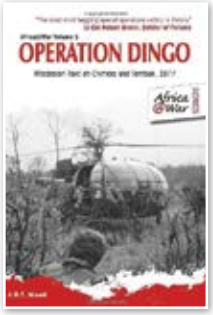
63. Kuehl, 119.

64. Stephen Budiansky, *Air Power: The Men, Machines and Ideas that Revolutionized War, from Kitty Hawk to Gulf War II* (London: Penguin Books, 2004), 426.

65. William Head and Earl H. Tilford Jr., *The Eagle in the Desert: Looking Back on U.S. Involvement in the Persian Gulf War* (Westport, Connecticut: Praeger, 1996), 108.

# BOOK REVIEWS

## AFRICA @ WAR SERIES VOLUME 1 Operation Dingo: Rhodesian Raid on Chimoio and Tembué, 1977




By Dr J. R. T. Wood

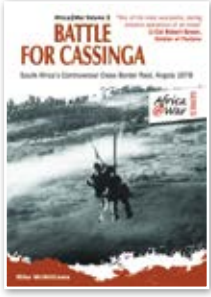
Solihull: Helion & Company / Pinetown, South Africa: 30° South, 2011
64 pages
ISBN 978-1-907677-36-6

## AFRICA @ WAR SERIES VOLUME 2 France in Centrafrique: From Bokassa and Operation Barracuda to the Days of EUFOR


By Peter Baxter

Solihull: Helion & Company / Pinetown, South Africa: 30° South, 2011
64 pages
ISBN 978-1-907677-37-3

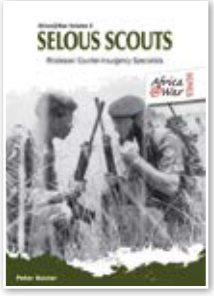
## AFRICA @ WAR SERIES VOLUME 3 Battle for Cassinga: South Africa's Controversial Cross-Border Raid, Angola 1978




By Mike McWilliams

Solihull: Helion & Company / Pinetown, South Africa: 30° South, 2011
64 pages
ISBN 978-1-907677-39-7

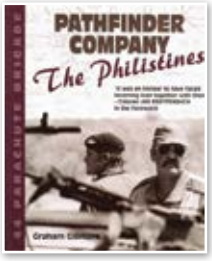
## AFRICA @ WAR SERIES VOLUME 4 Selous Scouts: Rhodesian Counter-Insurgency Specialists




By Peter Baxter

Solihull: Helion & Company / Pinetown, South Africa: 30° South, 2011
64 pages
ISBN 978-1-907677-38-0

## PATHFINDER COMPANY: 44 PARACHUTE BRIGADE – 'THE PHILISTINES'




By Graham Gillmore

Pinetown, South Africa:
30° South, 2010
160 pages
ISBN 978-1920143-48-0

Review by **Major Chris Buckham CD, MA**

Africa has been witness to a myriad of colonial and domestic military operations that have served as the basis for much of the joint and asymmetric doctrine used by Western powers today. Battles and places such as Cassinga, Dingo and Chimoio are not well known in the West. They are, however, very well known to the Rhodesians, South Africans, Angolans, Cubans and others who fought and died in these conflicts. Why this is relevant to the West, other than as a footnote of history, is easily discernible when one considers the nature of warfare in the modern world and the methodologies necessary to combat it. The authors of these books experienced first-hand the environments within which the paradigm and doctrinal changes necessary to combat these new adversaries were developed. In many cases, they were directly involved in the development and implementation themselves. This is important to note, as it lends additional credibility to the observations put forward.

In effect, these changes may be broken down into the following distinct facets:

1. development of joint operational doctrine and execution involving multiple elements within the military (i.e., army and air force);
2. streamlined command and control structures involving multiple departmental agencies (i.e., police, intelligence and military);
3. significant improvisation utilizing homegrown technological developments; and
4. development of specialized units for intelligence gathering and infiltration activities.

A clear example of these changes is in Wood's book, *Operation Dingo*, where he traces the actions of the Rhodesian military as it grapples with an increasingly violent insurgency supported by neighbouring countries providing safe havens to the insurgents. Additionally, Rhodesia was hamstrung by an international embargo and threatened by adversaries supported by the Warsaw Pact. These circumstances demanded innovation to address and overcome unexpected operational and strategic challenges. As a result, they rapidly developed light, extremely mobile infantry centred on a joint doctrine involving fast air as well as parachute and rotary-wing infiltration and exfiltration supported by flying columns of fast-strike, heavily-armed jeep convoys; the so-called "fireforce" concept. Overseeing these operations was the joint operations centre, an ad hoc organization consisting of senior local members of the security and intelligence community that was mandated to determine viability and scope of response or action. A joint operations centre was only stood up during the period of the action and was responsible only for activities within their designated geographic area of the country.

Baxter's book *France in Centrafrique* focuses on the events surrounding the post-colonial experience of the Western powers in Africa and, in this case, the Central African Republic. It is of interest to readers because it sheds light on the changing role that France played in Africa, from colonial power to economic and military realpolitik in her dealings with local dictators and governments. The book offers an insightful and eye-opening appraisal of the difficult and challenging transitions that followed colonial rule.

McWilliams' book, *Battle for Cassinga*, highlights many of the techniques and doctrinal advances that were made during the African wars and were brought to very high states of effectiveness. Concurrent to (and in conjunction with) the Rhodesians, the South Africans honed their skills at vertical envelopment using parachute and rotary-wing insertion supported by fast-air assets, culminating in a deep strike on insurgent training bases within Angola over 1000 nautical miles (1852 kilometres) from their mounting airfield.

Baxter's book *Selous Scouts* investigates the development of new and innovative units and techniques in the field of intelligence gathering. The Scouts were a highly trained unit specialized in operating both domestically and within neighbouring countries well "off of the grid." Proactively recruiting "turned" insurgents, centring efforts on experts with local knowledge, conducting deep penetration observation operations and infiltrating insurgent organizations formed the basis of their modus operandi. All point towards a change in focus from traditional conventional war and the unique capabilities that this unit brought to the fight.

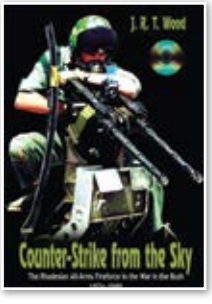
Gillmore's book, *Pathfinder Company*, goes into detail regarding the special South African operations group, 44 Parachute Brigade. Formed following the raid on Cassinga and the identified need for a specialized pathfinder capability, this unit conducted deep penetration attacks into Angola utilizing modified jeeps as their primary means of insertion. This mobility allowed for operational flexibility and independent action that served to undermine the confidence of insurgent organizations in the invulnerability of their safe havens.

Each of the books is a well-documented and well-researched synopsis of the events that it is focused upon. The layouts and presentation are logical and of a very high quality. Each provides a solid overview of the regional and international climate of its respective topic area in order to provide the reader with context. The narratives are balanced, with credit and criticism being given in equal parts where deserved. Replete with photos and colour maps, these books serve to provide readers with a strong introduction to the subjects explored. While they do leave some questions for the readers, this, in my opinion, in no way detracts from their focus or quality. There are definitely books available on these topics that go into greater depth and detail on the units and operations discussed here; however, as an introduction to this field of operation, these books are outstanding. I recommend them as a definite asset for those wishing to improve their knowledge and understanding of the development of successful, multifaceted doctrine in the field of insurgent/asymmetric war.

---

Major Chris Buckham is a logistics officer in the Royal Canadian Air Force. He has experience working with all elements including special operations forces. A graduate of the Royal Military College of Canada, he holds a BA in political science and an MA in international relations. He is presently employed as an integrated logistics control officer with the multinational branch of United States European Command J4 in Stuttgart, Germany.

## COUNTER-STRIKE FROM THE SKY: The Rhodesian All-Arms Fireforce in the War in the Bush 1974–1980




By J. R. T. Wood

Johannesburg, South Africa:
30 Degrees South Publishers, 2009
248 pages
ISBN 978-1-920143-33-6

Review by **Colonel Bernd Horn, OMM, MSM, CD, PhD**

Few remember, if they even knew of, the bitter struggle waged in southern Africa, specifically in Rhodesia (now known as Zimbabwe) between 1965 and 1980. The counter-insurgency waged by the Rhodesian government at the time was a desperate, costly struggle against a numerically superior foe who proved to be a savage and unrelenting enemy.

In response to this threat, the Rhodesian forces proved themselves courageous, extremely effective, and absolutely innovative. But then again, they had no choice. Counter-Strike from the Sky is an account of this forgotten struggle and it focuses specifically on one aspect of the aforementioned Rhodesian courage, effectiveness, and innovation—namely, its all-arms "fireforce" concept.

The book is written by an eminent expert. Dr. Richard Wood is the leading military historian and researcher on Rhodesia in the post-Second World War period. Moreover, he had exclusive access to the personal papers of the former Prime Minister, Ian Smith, and he has published several books on the period in question. Finally, Wood also served as a territorial soldier in the 1st and 8th Battalions of the Rhodesia Regiment, thereby having a first-hand appreciation for the profession of arms and the difficult operating terrain of the country.

Importantly, Wood brings all of this knowledge and expertise to the book. The volume begins with an exciting combat vignette that brings to life the drama of front-line action. The author then provides background as to how Rhodesia and its forces found themselves in counter-insurgency.

Wood is very skilled at providing relevant political context and background without overpowering the book. The path from Britain's refusal to grant independence to a white dominated government of Rhodesia, where whites represented five per cent of the population, to Ian Smith's unilateral declaration of independence in 1965, and the subsequent counter-insurgency of a number of diverse nationalist groups supported by the Soviet Union was explained extremely clearly and succinctly.

The book then furnishes an overview of the Rhodesian security forces, giving the reader a sound understanding of its make-up, organization, and effectiveness. Importantly, it also provides a synopsis of the decision-making bodies such as the Operations Coordination Committee and the Joint Operations Centres. Wood also lays out the three specific periods of the counter-insurgency campaign from 1966 to 1980.

At this point, having provided an excellent background, the author begins to focus on the core of his subject matter: the joint air/ground component of the counter-insurgency struggle. Throughout, he makes a clear case that the effectiveness of the Rhodesian effort was due to excellence in the joint application of military power.

What is unique in this book is its dominating focus of the "air contribution" to counter-insurgency. He makes a compelling case that air power was a critical component to the Rhodesian success. He begins by imparting insight into the innovative sourcing, equipping, and arming of Rhodesia's air force, an important area of concern since the country was under an international arms embargo. As such, Wood devotes considerable time to the Alouette helicopter, with a description of its history, configuration, and roles.

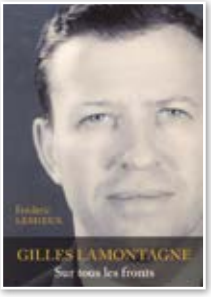
Clearly, the most fascinating aspect of the volume is the actual account of the fireforce operations. Wood explains the evolution from limited heli-borne operations to its aerial assault stage to its full maturation of stand-by forces supported by close support aircraft. He also delves into the Rhodesian

Special Air Service (SAS) pseudo-terrorist operations, which are simply fascinating. Of great value are the outstanding examples and accounts of the air/ground cooperation during actual operations such as Operation DINGO, the strike at a Zimbabwe African National Liberation Army (ZANLA) base in Mozambique in November 1977. This was a complex assault against 17 entrenched, well-defended camps at New Farm, which were scattered over a 25-square-kilometre area. In total, they held 4,000 recruits, trained insurgents, and support staff. This operation, which was only one of the examples furnished, allows a window into how the Rhodesians overcame complex logistical, technical, and command issues stemming from the long range of the operation from any support base, and from the limited airframes available. For instance, the battle repair and refueling of helicopters was noteworthy.

Significant to the telling of the stories is the rich array of 125 black and white photographs and numerous colour graphics that bring the text to life. Importantly, they highlight unique and innovative equipment and techniques that make it easy for the reader to understand the application of the fireforce concept, as well as personalities and terrain. The volume also boasts 13 excellent maps that walk the reader effortlessly through the key operations described in the book. Additionally, the volume has detailed endnotes, index, and bibliography, which provide excellent support to those who wish to dig deeper.

In summary, this is a great book. It is one of the few sources that actually focuses on the air component and the invaluable contribution it can make to the counter-insurgency fight. Beyond that, it is an insightful book into one counter-insurgency experience in particular, but on a larger level, it speaks to the effective ground/air cooperation necessary to succeed at counter-insurgency. This book is a must read for military professionals, historians, and anyone with an interest in military history.

Colonel Bernd Horn, OMM, MSM, CD, PhD, is the Chief of Staff Strategic Education and Training Programmes at the Canadian Defence Academy. He is also an Adjunct Professor of History at the Royal Military College of Canada and Norwich University.




## GILLES LAMONTAGNE: SUR TOUS LES FRONTS

By Frédéric Lemieux

Outremont :
Del Busso Éditeur, 2010.
666 pages
ISBN 978-2-923792-04-0

Review by
**Lieutenant Jean-François Landre**

From 1867, the year of Confederation, to 2012, 39 ministers have served in the Department of National Defence. Of this number, only 12 have had military careers and only 2 have served in the Royal Canadian Air Force (RCAF): James Armstrong Richardson (Minister of Defence, 1972–1976) and Gilles Lamontagne (Minister of Defence, 1980–1983). Given the rarity of individuals who have garnered both these life experiences, this biography also gets credit for being the first of its kind published in Canada in the French language.

An initial observation: this book is edited by a small publishing firm with only nine titles under its belt, but one directed by Antoine Del Busso, a respected figure in the Quebec publishing network. Second observation: this work was written by Frédéric Lemieux, a historian at the Bibliothèque de l'Assemblée nationale du Québec (Library of the Quebec National Assembly), which leads one to expect a content richly illustrated with facts and life experiences, both military and civilian.

Basically, the chapters are organized in chronological order. The author carefully annotates Lamontagne's life experiences, while offering an evolving vision of the social, economic, and political environment in which his subject lived his life. We learn that Lamontagne was born in 1919, that he lost his mother when only six years old, that he became a pilot in the Royal Canadian Air Force (RCAF), and that he fought in the Second World War and spent 1943–1945 as a prisoner of war in Sagan camp. We find out that he took over the family business on returning from the war, got involved in politics and successively became city councilman (1962–1964), Mayor of Quebec City (1965–1977), Member of Parliament for Langelier (1977–1983), Postmaster-General (1978–1979), Minister of Defence (1980–1983), and, finally, Lieutenant-Governor of Quebec (1984–1990).

From a military standpoint, the book provides a documented historical review of the eventful origins of the RCAF. It accurately depicts the courage, humility, and resilience of a Francophone who successfully met the challenges of war along with his contemporaries, to whom he pays homage, both officers and non-commissioned members, Anglophones and Francophones.

As well, this biography focuses on politics, taking great care to detail Lamontagne's vision, both "honest and human," of a united Canada during a difficult period when everything converged, "on all fronts": sovereignty, the cold war, and the atomic threat. From this emerges a work in the image of Lamontagne: believable and, above all, human. With a life this rich and exceptional in experience, it is not surprising that Lamontagne, in 2011, was the subject of another biography originally written in English (Nethanel Willy at Culp Press).

In sum, this work by Lemieux contains many elements of interest to Canadian Forces members that relate not only to history but to sociology as well, since it clearly depicts the consensus-building spirit with which Lamontagne made his decisions, a spirit that continues to mark the politics of today, and which, in a "human and informal style, endeavours to understand people and, in particular, not to judge them."[1] [Translation]

---

Lieutenant Jean-François Landre, a Health Care Administration officer, is the Assistant Adjutant – Staff at 41 Canadian Forces Health Services Centre in St-Jean. He holds a Bachelor of Science in Biology and a Master of Business Administration from l'Université Paris-Dauphine, France. Additionally, Lt Landre was trained in advanced negotiations at Harvard Law School and recently completed a NATO's Partner Operational Staff Officer course.

## Notes

1. Frédéric Lemieux, *Gilles Lamontagne : Sur tous les fronts* (Outremont : Del Busso Éditeur, 2010), 578.

## JOHN WARDEN AND THE RENAISSANCE OF AMERICAN AIR POWER

By Dr. John Andreas Olsen


Washington, DC:
Potomac Books Inc, 2007
349 pages
ISBN 978-1-59797-084-6

Review by **Lieutenant-Colonel Doug Moulton, CD, MBA**

Since my time at Command and Staff College in Toronto, I have had the opportunity to read and reflect on a variety of air power advocates, from Douhet to Trenchard to Mitchell. But if

one wants to discuss the developments in air power within the timeline of current operators, one is really only left with one air power champion: Colonel John A. Warden III, United States Air Force. *John Warden and the Renaissance of American Air Power* is a biography covering the events of Warden's career and the impact they had had on air power thought. An outstanding read, I recommend the book to anyone with an interest in air power or the events of Gulf War I and the planning of Operation DESERT STORM.

The book, written in a chronological fashion, examines the life of Warden and his rise as an air power advocate. Although his childhood and family are covered, the author, Dr. John Andreas Olsen, focuses on four main areas in Warden's career: his early United States Air Force Academy days and operational tours, his time as a commander, his imposition of his air power theories on Operation DESERT STORM, and finally, his time as Commandant Air Command and Staff College.

An extensively researched book, Olsen has relied on four main sources for his information. Firstly, he has made extensive use of written accounts of Operation DESERT STORM, in particular the Gulf War Air Power Survey (GWAPS). Secondly, he has drawn on source documents from Operation DESERT STORM itself. Thirdly, material was derived from the *Desert Story Collection*,[1] including a large number of recorded interviews. Finally, Olsen has taken the time to interview over 200 officers who worked with Warden throughout his career; he also conducted extensive interviews with Warden himself. The result is a balanced view of Warden's career and the influence he had on air power thought.

Olsen presents this biography from two different directions, the first involving Warden and his interactions with his colleagues and superiors. Let there be no doubt that Olsen has caught the intensity of Warden's relationships and the fallout, both positive and negative, that occurs as a result. This should not be unexpected from such an air power advocate who had no doubt in the validity of his ideas and the conviction and opportunity to see them through to fruition. Secondly, Olsen spends considerable effort in presenting Warden's views on air power and its appropriate use in operations as well as the colonel's approach to getting the senior leadership to ingrain his views in the planning of Operation DESERT STORM.

The addition of Warden's PowerPoint presentations on "Instant Thunder" and the "CENTCOM Air Campaign Plan" are both useful and relevant to the discussion of Warden's career. The extensive bibliography is a gold mine for those interested in further reading on the subject of Warden's career and the use of air power in Operation DESERT STORM.

*John Warden and the Renaissance of American Air Power* is a well researched and well written biography that will prove an enjoyable read for the air power enthusiast.

---

Lieutenant-Colonel Moulton, a Sea King pilot, is currently Deputy Chair - Department of Exercise and Simulation at Canadian Forces College, Toronto.

**Note:**

1. The *Desert Story Collection* is not footnoted within the book; however, based on numerous other footnotes, the *Desert Story Collection* seems to be a United States Air Force repository of documents relating to Operation DESERT STORM.