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The ROYAL CANADIAN AIR FORCE JOURNAL (RCAFJ) welcomes the submission of articles, book reviews and shorter pieces (which will be published in the Letters to the Editor, Points of Interest, Pushing the Envelope and Point/Counterpoint 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.

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BY LIEUTENANT-COLONEL P. JOHNSTON, CD, PHD

EDITOR'S MESSAGE

Welcome to the second issue of the *Royal Canadian Air Force Journal* for 2023. This will be the final instalment for this calendar year, but there will be more to come in the RCAF's centennial next year.

This issue includes our first ever review of a motion-picture drama, located in our now-not-just-books Reviews section. I hope to include a review of an air- or space-related drama in all issues from now on—so one and all are encouraged to start thinking about your favorite movie, TV show or stage production and submit a review! To get things started, I have written a review of the recent Hulu TV series version of the classic American novel *Catch-22* by Joseph Heller.

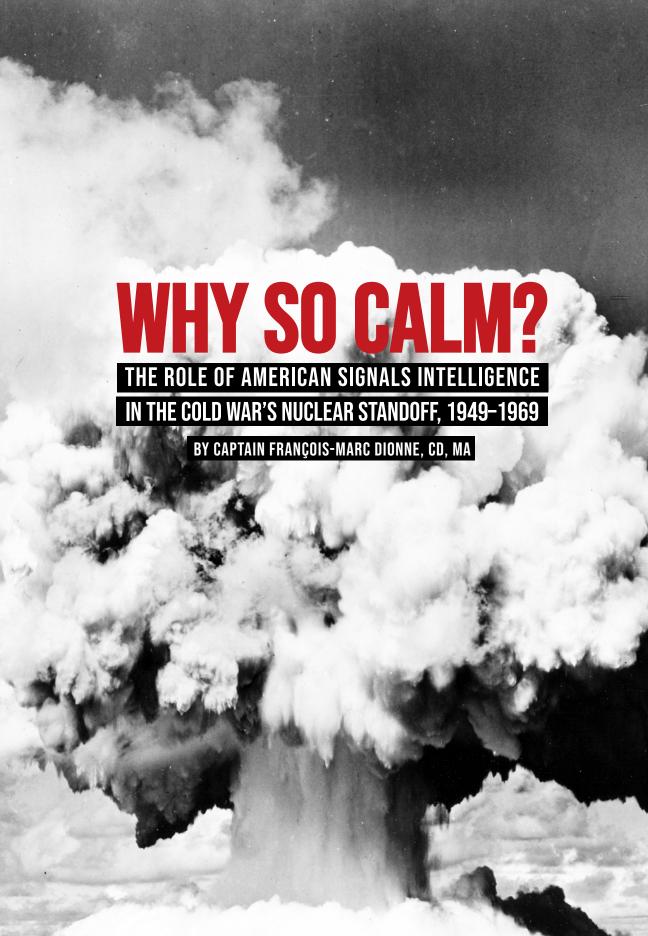
We also have an article on the history of signals intelligence in the early Cold War, an argument for attack helicopters in the RCAF and an explanation of the logistics that lie behind the Air Force Expeditionary Capability Programme. This issue's Point of Interest is a fascinating—and hopefully, for some of our readers, informative—account of some of the hazards related to stratospheric flight and the associated pension implications. Finally, we have three book reviews to go with our new TV-show review.

Enjoy the read.

Sic Itur Ad Astra.

Lieutenant-Colonel Paul Johnston, CD, PhD





A surprise attack is nothing new in military history, as is the use of intelligence to nullify the surprise of an enemy attack. After the atomic bombing of Hiroshima and then the end of the Second World War, the surprise-attack problem took on importance as never before. Not only were nuclear attacks difficult to defend against, but the destructive potential of the bomb also meant that in any such attack—even if only a small number of bombs got through—the results would be catastrophic. All of this made the need for advance warning of nuclear attack specifically, and the need to keep an eye on enemy nuclear readiness in general, a greater imperative than it had ever been in history.¹

On August 29, 1949, the Soviet Union successfully exploded a nuclear device of its own, thus definitively ending the remaining goodwill from the Second World War. Indeed, the two superpowers already nearly came to blows during the Berlin Blockade of 1948–49. On June 25, 1953, the confrontation erupted in an open conflict when North Korean troops crossed the 38th parallel. The terrible destructive capabilities of nuclear weapons, the avowed policy never to strike first with these weapons and the secretiveness of Soviet society created an imperative requirement for the United States (US) to develop the means to *know* whether a nuclear attack was under way. That task essentially fell into the domain of the intelligence community.

This article seeks to address that question (i.e., what role did intelligence play in warning of a potential impending Soviet nuclear attack upon the US?). More specifically, the central focus will be on signals intelligence (SIGINT). First, the question of methodology in the field of intelligence studies will be discussed. This includes previous scholarship in the field, the methodology employed and the problem of sources in an area where classification often proves an obstacle to research. Next, the issue of the Soviet Union as a security threat for the US will be examined to give a picture of the problems faced by intelligence organizations. Next is a description of the inherent problems associated with early warning in principle, followed by detailing the various SIGINT assets devoted to early warning, with a special focus on those of the United States Air Force (USAF) and Strategic Air Command (SAC). The last portion is an analysis and assessment of the place of SIGINT in early warning.

PREVIOUS SCHOLARSHIP, METHODOLOGY AND PROBLEM OF SOURCES

In the waning days of the Cold War, Robert D. Glasser wrote a quick piece giving an overview of the role played by SIGINT in the nuclear standoff between the two superpowers.² It was a fascinating article, in that it gave indications of the scale of the efforts involved. Given the historical juncture at which he wrote, his article drew heavily on the accidental "glimpses" afforded by slipups that made it into the press. His bibliography shows many newspaper reports as sources.

Research in intelligence studies is still complicated because the organizations which were largely responsible for American SIGINT on Soviet nuclear forces continue to maintain a thick veil of secrecy. The National Security Agency's (NSA's) very existence remained somewhat hidden for a time. Matthew M. Aid includes a similar caveat on the scarcity of sources.³ SAC, for its part, maintained a tremendous degree of operations security regarding all its activities, especially its inhouse SIGINT operations.⁴ The thaw of tensions that followed the fall of the Berlin Wall should have entailed massive declassification of documents held by US intelligence agencies in due time. Some interesting primary sources and insider "histories" stemming from within the institutions have made it through the declassification process. It would be a well-educated guess that the recent rekindling of the old Cold War hostility with Vladimir Putin's Russia clamped down on the release. Indeed, Stephen Budiansky's most recent monograph on the issue restates the same observation as to the vast troves of information that were still out of reach in 2016.⁵

However, in the several years since, both USAF and the NSA have declassified a number of documents of interest. Naturally, the mass of newly declassified materials led to better-informed scholarship in the field. Aid and Budiansky are only two examples of researchers who both capitalized on the material and made significant inroads in understanding the impact SIGINT had on history. These new vistas open possibilities in reassessing the role of SIGINT during the Cold War. More than ever, Christopher Andrew and David Dilk's assertion that intelligence represents a "missing dimension" of history⁶ is proving true.

This article makes use of the NSA's recently declassified sources. Thomas R. Johnson's American Cryptology During the Cold War gives unprecedented access to the NSA's own functioning. It also yields some important hints as to operations across the intelligence community. However, it capitalizes heavily on secondary sources. Of note in that respect is Aid's The Secret Sentry: The Untold History of the National Security Agency and the article he wrote on the topic in Intelligence and National Security. Budiansky published Code Warriors: NSA's Codebreakers and the Secret Intelligence War Against the Soviet Union as recently as 2016. That monograph yields the most updated picture not only of the NSA's contribution to SIGINT against the Soviet Union, but also gives a good bird's eye view of the entire intelligence community's involvement.

THE SUCCESSES IN EXPLOITING RADIO TELECOMMUNICATIONS TO DRAW ORDERS OF BATTLE, DESIGNS OF AIR DEFENCE SYSTEMS, AND OPERATING PATTERNS WERE STUPENDOUS.

THE SOVIET UNION AS A SECURITY THREAT

By the end of the Second World War, the major threat posed by the Soviet Union consisted mostly of its massive Red Army-battle-hardened, conventional battalions ready to roll through the plains of Central Europe. The requirements of fighting a land war against the Wehrmacht had relegated Soviet aviation to a support role in land operations.9 Lawrence Freedman makes those observations and adds that, "US Army Air Force planners ... discounted the Soviet Union as a threat because of its [strategic force] technological backwardness and lack of either a doctrine or tradition of strategic air power." Again, the detection of the first Soviet atomic bomb changed everything. The outlook changed completely such that no estimate of enemy strategic potential was detailed enough.¹¹ The race was on to determine the magnitude of the threat. The newly established NSA received the task to help complete the picture. The assumptions that the US had lost its edge, that a "bomber gap" was growing¹² and that the homeland was under imminent threat gained significant ground in American policy circles. Elucidating the precise nature of the Soviet threat would take considerable work. SIGINT proved to be the workhorse for the task. As Aid points out, SIGINT "was by far the best source for hard intelligence about the strength, capabilities and activities of the Soviet armed forces, which was the primary focus of the US intelligence effort during the 1950s."13 The successes in exploiting radio telecommunications to draw orders of battle, designs of air defence systems, and operating patterns were stupendous. Once operators and analysts tapped into that resource, the possibilities grew—continuous monitoring would be only a conceptual step away.

INTERLOCKING ARCS: MANY EYES ON TARGET

The impossibility of infiltration. American intelligence outfits faced dismal prospects of infiltrating societies behind the Iron Curtain. Systems of internal passports, restricted domestic movements, efficient internal-security apparatuses and extensive border control highly limited the possibility of gathering human intelligence (HUMINT). Attempts at infiltration cannot be described other than as complete disasters, if not human tragedies: Soviet authorities "turned," captured or killed *all* personnel who parachuted behind the border. It can be said without controversy that the Soviet Union's closed society made it easy for counter-intelligence services to defeat American efforts. SIGINT and photographic reconnaissance stood as the only alternatives. Aid goes so far in his assessment of the issue as to say that "it can be argued that [SIGINT] was not only the most important source of intelligence—it was practically the only reliable intelligence source for the United States and its Western European allies about what was going on behind the Iron Curtain." 15

Beyond assessment: early warning. The fact that SIGINT remained the nearly exclusive purview of the NSA removed an important intelligence tool from the Central Intelligence Agency (CIA). Famously, the CIA made significant inroads through its U-2 flight programme. The results were valuable in many ways, providing a visual of Soviet installations and proving the viability of the programme during the Cuban Missile Crisis. However, in most cases the intelligence produced by the CIA could not rival that obtained by SIGINT sources. The comparatively scarce U-2 overflights meant significant political risks and they could not provide customers—such as SAC—with near real-time intelligence. ¹⁶



Model "B" U-2 camera on display at the National Air and Space Museum of the Smithsonian Institution, Washington, D.C. Photo: Wikipedia Commons.

HUMINT was not well-suited for early warning purposes, which limited the capabilities of the CIA in that

regard. As Aid and Wiebes note: "[SIGINT] collects and produces intelligence 24 hours a day, 365 days a year, regardless of the weather or other environmental conditions." Even Allen W. Dulles, CIA Director, admitted to the immense advantages of SIGINT over HUMINT in that respect. 18

RESOURCES ATTRIBUTED TO THE NSA'S ACTIVITIES ONLY GREW AS THE COLD WAR HEIGHTENED IN INTENSITY.

The NSA, in contrast, stood at the forefront of hard intelligence collection about the Soviet Union. The full extent of its successes will most likely be unveiled in a much more distant future given the sensitivity of this information. What started out as an amalgamation of service intelligence organizations to cut out duplication of effort grew into the US's prime source of intelligence. Resources attributed to the NSA's activities only grew as the Cold War heightened in intensity. "Between 1950 and 1960," writes Aid, "NSA constructed at a cost of hundreds of millions of dollars a multi-layered network of 70 strategic intercept stations and an equal number of tactical

[communications intelligence (COMINT)] units around the world." By the 1960s, up to 16,000 military and civilian personnel worked out of the NSA's Fort Meade headquarters. ²⁰

The existence of three lines of early warning radar did little to reassure the Pentagon of the possibility that retaliation would be possible. Indeed, even in the age of bombers before intercontinental ballistic missiles (ICBMs), the reaction time to send off SAC's nuclear strategic wings might not have proven enough. That is where the NSA's constant monitoring of radio traffic and emissions within Soviet borders proved absolutely essential. "[COMINT] also tracked Soviet aircraft movements, followed [field activity (FA)] training exercises, and determined the level of experience and capabilities of Soviet fighter and bomber crews." Budiansky even goes so far as to credit the NSA with the near miraculous feat of keeping the president confident that he could know of an impending conventional or nuclear attack "minute by minute." The result is that nothing escaped the US intelligence community and that the highest levels of decision makers could be guaranteed a real-time picture of the Soviet forces' condition. This left little to no guess work for officials.

As it turns out, SIGINT's comparative objectivity enabled staff to evaluate the situation detached from a potential corruption of the information. The extent of the NSA's surveillance network also meant that it could verify data stemming from a particular point with COMINT gathered at another. The list goes on. As Aid states:

The data obtained from NSA's 24 hour-a-day [COMINT] monitoring of these Soviet military targets allowed American intelligence analysts to follow even minute changes in Soviet military strength and capabilities, as well as spot variances from the day-to-day norm which might be indicative of a potential Soviet invasion. NSA analysts watched for any sign of anomalous Soviet military behavior; including dramatic increases in the volume of Soviet military radio traffic; the changing of major code and cipher systems....²³

In hindsight, systems like the Distant Early Warning (DEW) line look like secondary safeguards in case of malfunction compared to SIGINT monitoring. Radar parameters in the North could prove to be important to reassure a population, while the work of the NSA could not be revealed in any portion. As with all SIGINT, if known, the enemy would adapt, the gap would close and the source would dry up.

As impressive as it looks, the NSA did not represent the totality of American SIGINT outfits. Since the Second World War, when it was still known as the Army Air Force, the US maintained organic intelligence assets within its air units. The advent of nuclear weapons and the fact that bombers were the only delivery method meant that the Air Force had a definite need for an independent intelligence capability. Lawrence Aronsen condenses the role in unequivocal terms, stating that "the defining role of A2 [(Intelligence)] was to determine who were to be the potential adversaries and predict when and where an attack would be launched." While the NSA had an extremely broad mandate that covered military as well as diplomatic, government and commercial communication, the USAF's intelligence units could focus exclusively on the Soviet Union's strategic nuclear force and the air defence systems tasked to protect it.

Air Force intelligence gradually built up its own SIGINT collection tools. Airborne systems demonstrated their potential by skirting around borders. That circumvented the political risk of crossing into enemy airspace. As such, a reconnaissance squadron of B-29s stood up in Alaska for the specific purpose of listening in on Soviet air bases.²⁵

The USAF's A2 (Intelligence) bolstered its capabilities throughout the 1950s and 1960s. It is testament to the value of the information obtained. In fact, the branch developed an extensive organization nearly exclusively tasked with SIGINT. The United States Air Force Security Service (USAFSS), a specialized organization, constituted nearly a "miniature NSA." Of course, the USAFSS conducted some photographic intelligence analysis as well as other analogous tasks. The development of dedicated aircraft and large staffing of the organization shows that, within the more specialized domain of air power, it could potentially supplant the NSA.

Beyond Air Force intelligence itself, SAC began constructing its intelligence capabilities as early as 1947, and its Ferret aircraft specifically designed for SIGINT operations took flight by 1949.²⁷ The dates here are important, as they show that SAC began to build up its SIGINT capabilities even before the colourful tenure of General Curtis LeMay (1906–1990). To be sure, SAC bore a lot of the US's strategic-deterrent credibility. With the Soviet acquisition of fission nuclear weapons in 1949, the implied requirement for a force that could strike *after* enemy bombers took off became all too evident. No matter the size of the atomic stockpile, it was a moot point if none of it could leave the ground.

In that context, LeMay proved as dogged in growing the strike capabilities of SAC in terms of megatons as in cultivating his very own intelligence service. True to himself,



General Curtis LeMay. Photo: PBS.org

LeMay kept his intelligence arm so much apart from the rest of the community that Johnson's top-secret history of the NSA dubs it "highly compartmented (and still obscure)." The creation of SIGINT capabilities under his command speaks for itself:

Activated to provide airborne training to electronic warfare officers, the 324th [Wing] was soon given an additional operational role as the USAF's strategic electronic reconnaissance squadron; it was equipped with RB–29 Signals Intelligence (SIGINT) aircraft. SAC would maintain a SIGINT squadron throughout the Cold War, tasking its aircraft to fly the perimeter of "denied" territory to provide the bulk of detailed analysis on communist electronic capabilities.²⁹

The dedicated in-house SIGINT capabilities of SAC were severely cut back for the fiscal year of 1962, only to be later reinstated shortly thereafter.³⁰ The reason for the reinvestment likely lies in the value of the intelligence it generated.

SAC during LeMay's tenure can fundamentally be defined by its steadfast independence and the development of tools to operate independently of the rest of American military establishment. Indeed, it functioned nearly just as independently with respect to the rest of USAF. It aimed at autonomy. General Hoyt Vandenberg (1899–1954), Chief of Staff of the Air Force, blessed the scheme from the onset of LeMay's tenure.³¹

ANALYSIS

The role of SIGINT as an element of early warning can be discerned despite the partial picture of SIGINT history during the Cold War. The NSA released sufficient material to bring to light its capabilities and the assets it employed over the task. Likewise, the USAF, USAFSS and SAC's own set of eyes provided higher command with a complete picture of Soviet strategic forces. What began as a project to gather information on actual enemy assets continued as a surveillance programme.

HUMINT presented significant challenges with respect to intelligence gathering against the Warsaw Pact. The Soviet Union proved no exception to the general rule. Likewise, photographic intelligence gained from overflights of Soviet territory presented significant political risks. The CIA's U-2 programme is a case in point. The misadventures of Captain Francis Gary Powers (1929–1977) in the stratosphere brought tremendous diplomatic complications for the State Department and considerable grief to the CIA's own ambitions. Only with the later development of reconnaissance satellites would visual intelligence regain an edge. Even so, satellites have significant drawbacks, as they are not easily reassigned and many details can be hidden from observation. All visual intelligence presents potential limitations tied to enemy deception, inclement weather conditions, observation windows, visual analysis, and others. SIGINT, on the other hand, usually yielded "more than the customer bargained for." The VENONA project is another good example of this phenomenon, though beyond the scope of the present article. COMINT can also function in spite of the worst atmospheric conditions and, even assuming a change in cryptological methods that place the content beyond analysts, it can provide extremely useful traffic analysis.

SIGINT ASSETS COULD DETERMINE THAT AN ATTACK WOULD BE TRIGGERED EVEN BEFORE THE PLANES TOOK OFF.

The continuous nature of observation left no gap in time as well. The personnel requirements to maintain the operation on a 24-hour basis are considerable. Nevertheless, it is worth the investment not only in terms of numbers, but also quality of talent. In effect, the highest level of confidence was justified by the various SIGINT agencies' successes in their daily operations. The proof, as they say, was in the pudding. Whereas radar installations monitoring the polar route could signal an alert, SIGINT assets could determine that an attack would be triggered even before the planes took off. That made it an ideal "sentry."

ASSESSMENT: LEMAY'S CONFIDENCE DESPITE SAC VULNERABILITY

If one were to believe most of the legend about SAC, pilots stood at the ready to take off within minutes, nuclear weapons in the bay and with a clear strike plan. Even scholarly articles that underwent peer review adhere to this picture of SAC after LeMay's reforms. "'KLAXON! KLAXON! KLAXON! KLAXON! When public address systems echoed these words at Strategic Air Command (SAC) bases across the United States," Deaile dramatically depicts in his article for *Air & Space Power Journal*, "red lights flashed and 'SAC warriors' scrambled to their awaiting bombers."³⁴ A chunk of truth does exist in SAC's hallowed tale of its own greatness. Maintenance of such a tremendous organization requires nothing else than an unparalleled commitment to excellence. It becomes problematic and draining to maintain unceasing alert status over decades—much the same way that revolutionary fervour withers down after some time.

The reality of keeping a high-readiness command in constant alert sometimes broke through the veneer of infallibility. The most striking example came from the investigation process triggered by the Gaither Committee.³⁵ The committee's initial mandate did not really encompass SAC *per se*—it was really about civil defence. However, civil defence being tied in with the problem of early warning, one member, Rowan H. Sprague, had the chance to see a surprise exercise triggered at NORAD from simulated tactical warning only. The results were absolutely dismal. A single wing would have left the ground in time should Soviet bombers really have been on their way.

Fred Kaplan, in his monograph on the RAND Corporation 's involvement in the US nuclear strategy, recounts the incident:

That was appalling enough to the panel. More shocking was that LeMay seemed totally unimpressed by the exercise. He simply grunted, said the Soviets could never coordinate the sort of attack that could bring down all the SAC targets simultaneously, that SAC would always get off the ground in time. Beyond that, he explained no more.³⁶

Right from there, the explanation for LeMay's disconcertingly calm demeanour can be explained by what he knew, but the American public and the near totality of the defence establishment ignored the layers of SIGINT that constituted America's actual sentry on the watch for a nuclear attack. Kaplan writes:

Sprague pointed all of this out to LeMay, who calmly responded that this didn't scare him. He told Sprague that the United States had airplanes flying secret missions over Soviet territory twenty-four hours a day, picking up all sorts of intelligence information, mostly communications intelligence from Soviet military radio transmissions. He offered to take Sprague into the office where this data was sent and stored.... "If I see that the Russians are amassing their planes for an attack," LeMay continued, "I'm going to knock the shit out of them before they take off the ground." Sprague was awestruck by the revelation. This was knowledge that only a very, very small number of Americans possessed or knew anything about.³⁷

In other words, LeMay is confident that he is tapping right into the nervous system of Soviet air power. The level of confidence in the SIGINT capabilities of his organization and the rest of the intelligence community speaks for itself. LeMay can be faulted for many things, but certainly not for creating a vulnerability. Kaplan's nugget about what SAC considered its "real" early warning system is confirmed by other sources. Aid and Wiebes thus conclude that "by the late 1950s the US intelligence community was relying almost exclusively on [COMINT] to provide warning of a Soviet military attack."³⁸

This is why LeMay seemed unfazed by that exercise at NORAD, where not a single SAC plane got off the ground during the entire period of tactical warning, and why LeMay was unimpressed with all the studies—the one that Sprague had worked on for the Senate Intelligence Subcommittee, the Killian [Technological Capabilities Panel] study, Wohlstetter's overseas base study and R-290—that concluded that SAC was devastatingly vulnerable.³⁹

Though Sprague might have been shaken to the core by what he saw and heard that day, it was not an impression he was able to communicate when he briefed President Dwight D. Eisenhower (1890–1969) at the presentation of the Gaither Report. Eisenhower's reaction was in line with LeMay's own during Sprague's visit. The old, retired general had some strategic sense in knowing that a nuclear attack would likely arise in a context of elevated international tensions, but, more importantly, he was keenly aware of the continuous intelligence monitoring of Soviet nuclear forces. 40

The yield of the intelligence community's combined efforts could justifiably reassure the highest echelons in the chain of command. The Soviet Union, despite such bombastic claims, did not possess a vast air armada ready to level the continental US. What it had, anyway, was in bad shape and ill prepared to carry out the mission. Eisenhower, LeMay and intelligence analysts knew that. In no small part, the US's intelligence edge came from its patient and thorough SIGINT programme:

Sigint also revealed that the combat readiness levels of the Russian bomber force was [sic] low, that Soviet bombers did not have the range of their American counterparts, that the flying skills of the Soviet crews were deficient because of a lack of flying time, and that the Russians had no mid-air refuelling capability, which made it virtually impossible for the Soviets to strike targets in the Continental United States.⁴¹

Sun Tzu (544–496 BCE) said long ago that "if you know the enemy and know yourself, you need not fear the result of a hundred battles." In this case, SAC knew its enemy to the fullest. It knew of all its forces, what they were capable of, and exactly what they were up to—this in real time. No surprise was possible and LeMay knew it.

The importance of SIGINT naturally brought about some rivalries with agencies who tried to argue for more diversified sources. The CIA had been hard at work to provide customers with high-value intelligence products. Its efforts should not be underestimated, as it too peered through the Iron Curtain, albeit with different tools. Nevertheless, a clear rivalry existed. Some in the American intelligence community put that reliance on SIGINT under intense criticism. Testimony before the House Committee on Intelligence by the CIA tried to argue that if the Soviets ever decided to go for broke, they wouldn't put anything on electronic communications or do anything visible by satellite. All the orders would go by officer couriers, which was what Hitler did at the Battle of the Bulge and caught us totally unprepared. We were relying too heavily on communications intelligence. ⁴³

With all due respect to the expert testimony quoted above, LeMay might still have had a point in relying on SIGINT. While the order to attack might be sent through dispatch (a dubious assumption), NSA and SAC SIGINT assets would invariably pick up COMINT and electronic intelligence (ELINT) from air bases' control towers. Traffic analysis alone would give out way more than LeMay required to "trigger hell."

If anything, the risk of reliance on SIGINT lies more on the side of an accidental trigger of nuclear hostilities than on the side of passivity during an actual attack. Exercise ABLE ARCHER 83 provides a good example in that particular respect. In his assessment of why the Cold War almost turned hot due to a misunderstanding, Len Scott highlights the role of SIGINT:

Although the Soviets were familiar with the annual exercise, Gordievsky states that there were two departures from past practice: the "procedures and message formats employed in the transition from conventional to nuclear warfare were quite different" and second, "NATO forces were moved through all the alert phases from normal readiness to General Alert."

Analytical rigour can alleviate this problem. Over time, the American intelligence community learned to discern exercise traffic from operational communication.

CONCLUSION

It would be difficult to understate the importance of SIGINT as a form of early warning despite the lack of a complete picture. The NSA, USAFSS and SAC reconnaissance wings gave the highest echelons of American leadership the assurance that Soviet bombers could not take flight unnoticed. As compelling as the argument was that the order to "push the button" would come through courier, it discounts the fact that execution and coordination of such a plan would translate into telecommunications liable to interception. LeMay's unfazed expression at the failure of his aircraft to take flight during a NORAD exercise is easily explained by the extent of the SIGINT network available through the NSA as well as those under his personal command.

It is indeed quite surprising to find what lies behind the veil of secrecy that history could simply not record. The opening of archives shows an altogether new dimension. The DEW, Mid-Canada and Pinetree lines represented the proverbial "tip of the iceberg." LeMay and Eisenhower knew that international events as momentous as nuclear war would not begin unexpectedly. A context of global crisis would develop. Further, NSA stations or SAC airborne SIGINT systems would "see" Soviet bomber wings making the decisive move. By his own account, the bombastic general would give the "go" without express orders from the commander-in-chief should a surprise attack be launched.

Intelligence history in general—and SIGINT history in particular—truly represents a "hidden dimension" to what has until now been studied in textbooks. This article focuses on an extremely narrow breadth of what is now open to study. A study of SIGINT monitoring Soviet conventional forces on the European continent would be in order. Just as important, on the other side of the coin, studying how Soviet SIGINT kept an eye on SAC and other American strategic nuclear forces would be quintessential. Exercise ABLE ARCHER 83, only parenthetically mentioned here, demonstrated that the Soviet Union could also mobilize SIGINT resources efficiently. Beyond the conclusion that SIGINT was the US's de facto early warning system, what this study shows is that there is much more that lies below the surface of military history. Hopefully, scholarship will continue for years to come to dig into documents coming out of the shadows of classified archives.

The author would like to acknowledge the support and advice of Dr. Alexandra Luce, whose generous guidance was not only appreciated but amounted to mentorship by an expert in the field. Appreciation also goes to the *RCAF Journal*'s editorial staff for their input.

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ABBREVIATIONS

COMINT communications intelligence

HUMINT human intelligence
SAC Strategic Air Command
SIGINT Signals intelligence

USAFSS United States Air Force Security Service

NOTES

- 1. The eventual development of the concept of a second strike capability became the counter to surprise nuclear attack, but that did not diminish the emphasis on warning.
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Why Canada Needs to Acquire Attack Helicopters

By Captain Jeff Girard



In a 2017 report entitled *Reinvesting in the Canadian Armed Forces: A Plan for the Future*, the Standing Senate Committee on National Security and Defence (SCONSAD) made wide-ranging recommendations on how to properly equip the Canadian Armed Forces (CAF) to meet new security challenges in the 21st century. During their study, SCONSAD concluded that the CAF needs to acquire attack helicopters in order to protect their fleet of CH147F Chinook helicopters when they are deployed. SCONSAD recommended purchasing a fleet of 24 attack helicopters to fill this capability gap. After conducting a major United Nations (UN) peacekeeping deployment—made up of a contingent of utility and transport helicopters—to Mali, Canada still has no plans to augment its fleet with attack helicopters.

Does Canada truly need attack helicopters? Is there a role for such firepower in the CAF's future missions? This article seeks to answer that question in the affirmative: yes, Canada does need attack helicopters. Employing its own attack-helicopter fleet would give the CAF the airborne firepower it needs to conduct current and future combat operations and would restore much-needed balance to the CAF's tactical-helicopter community. First, this article will briefly examine why Canada does not currently employ a fleet of attack helicopters and why it has not purchased one in the past. Second, it will explore potential missions the CAF could embark on and why attack helicopters would form an essential piece to those missions. Last, this article will examine and update a comparison of nine different allied nations' helicopter fleets to establish what a balanced fleet looks like.

WHILE THERE WAS NO ATTACK-HELICOPTER FLEET IN THE 1970s AND 1980s, THE CAF HAD BETTER CAPABILITIES WITH THE ARMED RECONNAISSANCE KIOWA THAN IT DOES TODAY.

CANADIAN TACTICAL-HELICOPTER HISTORY

Since 1995, Canada has used the CH146 Griffon as its primary tactical utility helicopter employing only a single platform until acquiring a much-needed heavy transport capability, the CH147F Chinook, in 2014.2 In a 2008 study of tactical-helicopter fleets, defence scientists Thierry Gongora and Slawomir Wesolkowski concluded that there are at least four categories of helicopters in a balanced fleet: attack helicopters, reconnaissance helicopters, utility helicopters and transport helicopters.3 Every balanced tactical-helicopter fleet has at least three of the four types of helicopters. Currently, the CAF only has utility and transport helicopters; however, before switching only one platform with the Griffon in the 1990s, the CAF did have a more balanced helicopter fleet. In the 1970s, at the height of the Cold War, the CAF had the CH136 Kiowa reconnaissance helicopter, the CH135 Twin Huey utility helicopter and the CH137 Chinook medium transport helicopter. While there was no attack-helicopter fleet in the 1970s and 1980s, the CAF had better capabilities with the armed reconnaissance Kiowa than it does today. Even when the CAF had three different types of tactical helicopters, Canada's need for attack helicopters was recognized. Colonel Randall Wakelam (Retired) noted that "10 Tactical Air Group, while recognizing that Canada was unlikely to acquire attack assets due to cost and politics, understood well the need for attack helicopters on the Cold War battlefield."4 The CAF also set up an attack-helicopter exchange programme with the United States (US) Army and included attack-helicopter capabilities in all their war gaming.⁵ The CAF recognized the value of attack helicopters on the battlefield, but the political will to purchase them was absent.

As the Cold War came to an end and countries struggled to justify the cost of their defence budgets, Canada reduced its tactical-helicopter fleet to just one utility platform, the CH146 Griffon, delivering a crippling blow to the capabilities of the CAF's tactical-aviation community.

Since then, the Griffon has been the workhorse of the CAF tactical-helicopter fleet, being forced to do the jobs belonging to several categories of helicopters. The Griffon has been used as an armed escort for the Chinook in Afghanistan and Mali, a role it is not really suited for.⁶ It lacks firepower, as it only uses door guns as armament, and it lacks defensive capabilities and armour because it is based on a civilian Bell 412 helicopter that was not intended to fly into combat. It also makes a poor escort for the Chinook, which can fly much faster than its Griffon bodyguard. Any type of attack helicopter would better fulfil the role of escorting the CAF's transport helicopter in hostile environments.



A CH146 Griffon helicopter and a CH147F Chinook helicopter fly in formation following an aeromedical evacuation exercise during Operation PRESENCE (Mali) on June 5, 2019.

ATTACK-HELICOPTER MISSIONS

The CAF could use attack helicopters for three broad categories of missions: conventional battles, counter-insurgency (COIN) operations and peace support operations. Being able to fulfil these types of missions allows Canada to remain strong and engaged on the international stage by supporting its allies and bringing stability to war-torn regions around the world. Of the three types of missions, Canada will most likely participate in COIN operations and peace support operations. Attack helicopters have certainly proved their usefulness in conventional battles during post-Cold War conflicts. US Army attack helicopters used their superior mobility and firepower to guard against armoured incursions during the first Gulf War and were successful in destroying swaths of enemy armour and installations.7 A decade later and in a similar environment, the US had tremendous success using attack-helicopter brigades for deep strikes against enemy forces in Iraq in 2003, albeit after some initial failures due to outdated planning and doctrine. During deep strikes in Karbala and Ramadi, US Apaches destroyed 200 enemy vehicles and 70 weapon systems without losing a single helicopter.8 The UK's Apaches enjoyed similar success during the Libya campaign in 2011, destroying 116 targets, including vehicles, launch rocket systems and command posts.9 The UK's attack helicopters operated over enemy-controlled ground that contained a plethora of surface-to-air missiles, anti-aircraft artillery and portable surface-to-air weapons.¹⁰ This once again proved to the sceptics that modern attack helicopters could still operate successfully in an environment with moderate threat levels caused by enemy anti-aircraft weapons.¹¹ While Canada is less likely to find itself fighting a conventional war against another uniformed military, compared to one of the other two mission types, one cannot argue that attack helicopters have lost their essential role in such conflicts. As a strong supporter of NATO, Canada has often sent its soldiers on major exercises with other member countries to enhance its own abilities, work with allied nations and deter hostile nations from further aggression. Currently, the CAF have a combined contingent in Latvia working with other NATO members under Operation REASSURANCE to show solidarity among the alliance in the face of Russian aggression in the region. While Canada would not be fighting an imagined conflict with Russia alone, any conflict that would arise would put Canadian troops in direct contact with Russian armour. Having their own attack helicopters on a mission like Operation REASSURANCE would both better prepare the CAF as well as its allies for any potential conflict that might arise and further deter Russian aggression through a stronger, more agile show of force.

Canada and its Western allies are much more likely to find themselves conducting COIN operations around the globe to promote global peace and security. Vital in COIN operations, attack helicopters continue to be a critical part of close air support—especially when using precision guided munitions for danger-close strikes. These were used repeatedly by the US Army in both Iraq and Afghanistan. As Canadian soldiers saw in Afghanistan, close air support mostly involved protecting and supporting troops outside the wire on patrols or escorting helicopters that were transporting troops to and from villages to avoid the improvised explosive device—ridden roads. In Afghanistan, the CAF used Griffons with door gunners for their close-air-support role. The Griffon proved to be a capable enough gunship, which was achieved through extensive modification and experimentation. From upgrading the door guns from the old C6s to GAU-21 .50 calibre and M134D Dillon Miniguns to adding intelligence, surveillance and reconnaissance technology, to consulting the manufacturer to operate the helicopter through the safety margins as close as possible to the actual aircraft limitations, the operators of these helicopters had to become incredibly creative to achieve the best possible results.

Despite valiant efforts to modify the Griffon for Afghanistan, it continually struggled to operate in such a high, hot environment; a more powerful helicopter was needed. The Griffon's weapon operators also suffered difficulty in targeting enemy combatants that were hidden by any sort of defensive cover, let alone having to target any sort of enemy armour. Furthermore, the Griffon lacked many defensive mechanisms that were available to beefier, military-made utility and attack helicopters. Canadian soldiers continually had to rely on allied tactical-aviation capabilities while operating in Afghanistan. Given the continued instability in the Middle East, it is not a stretch to imagine that NATO and Western allies will once again intervene in COIN operations in the region. If any of these operations were to face more well-equipped enemies than the Taliban, the CAF's tactical-aviation fleet would be ill equipped to effectively manage the threat. The frequent need to operate in hostile urban environments, as well as the need to quickly identify and engage targets that can just as quickly disappear into the civilian population, is much better suited to an attack helicopter with precision guided munitions, not a utility helicopter outfitted to be a gunship out of necessity. 15 Attack helicopters with more power and speed would also serve as better escorts for transports like the Chinook. Not only do they allow the Chinooks to utilize their maximum speed, but they also have the self-defensive countermeasures and weapons needed to confidently engage and deter a much wider range of enemy weapon systems. Having their own attack-helicopter fleet would allow the CAF to be more versatile and effective in COIN operations, eliminating the need to rely on other nations' tactical-helicopter assets.

In 2016, Canadian Prime Minister Justin Trudeau announced that Canada would make a renewed commitment to UN peacekeeping missions in an effort to shore up Canada's traditional reputation as a peacekeeping country. The result was a nearly year-long deployment to Mali, mostly made up of rotary-wing assets conducting medical-evacuation missions. While the CAF have developed impressive medical-evacuation capabilities with its Chinook helicopters, the deployment to Mali was another mission where attack helicopters could have played a vital role. ¹⁶ Canada's helicopter contingent replaced Dutch helicopters, including four Apache attack helicopters. When the Dutch announced that they were withdrawing their forces from the region in 2016, the UN

scrambled to find a replacement for them. They put great emphasis on the importance of Dutch attack helicopters to the mission, stating, "The four attack helicopters are essential for the mission, to deter and to respond to attacks." The French have also been using their Tiger attack helicopters in the region since 2013, and the Tigers' mobility and firepower have been indispensable to halting the spread of extremists across Mali.¹⁸ SCONSAD also noted in its 2017 report that the Dutch relied on their attack helicopters to protect their forces, as well as those of their allies, and that the Canadians replacing them could not provide the same capabilities with their current fleet.¹⁹ Mali was another example of the CAF using the Griffon as an armed escort for the Chinook, something the SCONSAD specifically said should be done by a new attack-helicopter fleet. Peace support operations allow the CAF to demonstrate their unique and formidable capabilities, like the modified Chinooks used in Mali, on the world stage. Peace support is a role that Canada can fill with niche, specialized forces that forego large, boots-on-the-ground-style deployments; these specialized forces are both more quickly deployed across the world and more palatable to the general public. Many of these types of UN peacekeeping roles are humanitarian in nature and pose little threat to the forces involved. However, other peace support operations—like the one in Mali—operate in dangerous, unstable environments where self-defence and even offensive capabilities are crucial to mission success. If Canada truly wants to commit to more UN peace support operations in the future, acquiring attack helicopters would allow the CAF to be more effective through role expansion and more flexibility in complex or non-permissive environments.

IF CANADA TRULY WANTS TO COMMIT TO MORE UN PEACE SUPPORT OPERATIONS IN THE FUTURE, ACQUIRING ATTACK HELICOPTERS WOULD ALLOW THE CAF TO 3E MORE EFFECTIVE THROUGH ROLE EXPANSION AND MORE FLEXBILITY IN COMPLEX OR NON-PERMISSIVE ENVIRONMENTS.

A BALANCED TACTICAL-HELICOPTER FLEET

Analysing what a balanced tactical-helicopter fleet looks like can also show us that Canada should purchase its own attack helicopters. This article examines and updates the data from Gongora and Wesolkowski's 2008 study, entitled "What Does a Balanced Tactical Helicopter Force Look Like?" Gongora and Wesolkowski examined the tactical-helicopter forces of nine Canadian allies to determine what pieces, if any, the CAF's helicopter fleet was lacking. They chose an array of nations that included large and small militaries of NATO and non-NATO allies. To have a clearer comparison, they chose Western countries of varying military sizes, settling on Canada, Australia, France, Greece, Italy, Netherlands, Spain, the UK and the US (separated into the US Army and United States Marine Corps [USMC]).²⁰ Their study splits tactical helicopters into seven categories: attack helicopter, reconnaissance helicopter, light transport helicopter, medium transport helicopter, heavy transport helicopter, utility helicopter and other aircraft (including combat search and rescue, medical evacuation, wide area surveillance, and vertical-take-off-and-landing-aircraft transport).

This article will narrow those down to four categories by combining light, medium and heavy transport into a single transport category for simplicity and designating the other category as "special." Instead of classifying the helicopters by maximum all-up weight like Gongora and Wesolkowski, this article classifies them by the designated role each country gives to their helicopters. For example, the NH90 multirole helicopter that is widely used among European

militaries has an all-up take-off weight that would put it in the heavy transport category under the old classification system. However, most militaries use it in a beefed-up utility role. Therefore, it is classified as a utility helicopter for this study. This decision caused a reclassification for some helicopters, moving them from one category to another. As reflected in the charts, the US Army appears to go from having a large transport force in 2005 to having a small transport but large utility force in 2020. This is caused by the Blackhawk being classified as light transport in 2005 and moved to utility in 2020, which is a more accurate description of its role for the US Army. Furthermore, this comparison will only focus on helicopters used in land-based, tactical operations. For example, naval or sea-based helicopters, like Canada's CH148 Cyclone, are not included in order to provide a clearer comparison. Figure 1 shows the data from Gongora and Wesolkowski's study, which was captured in 2005–2006. Figure 2 has updated data on each country's tactical-helicopter fleet from 2020. Figures 1 and 2 use abbreviations for each category: attack helicopter (AH), reconnaissance helicopter (REC), transport helicopter (TH), utility helicopter (UH) and special (SPEC).

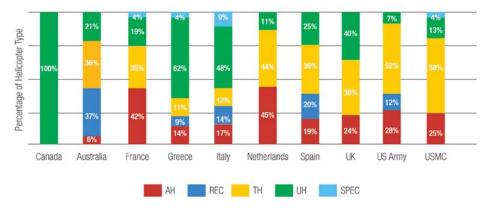


Figure 1. Helicopter type by country, 2005

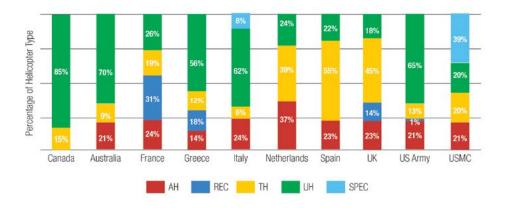


Figure 2. Helicopter type by country, 2020

Right away, it is apparent that Canada is the outlier in this group: It is the only nation, in both 2005 and 2020, to not employ attack helicopters in its tactical-helicopter fleet. Every other nation has a mix of at least utility, transport and attack helicopters, while Canada only has utility and transport helicopters. Canada is the only country that has less than three different categories

of helicopter in both 2005 and 2020. However, Canada does at least have a ratio of utility and transport helicopters comparable to Australia, Greece, Italy and the US Army. Adding the Chinook transport helicopter to its fleet was a step in the right direction towards balancing Canada's force, but adding transport helicopters without a fleet of attack helicopters to complement them leaves Canada's force hazardously unbalanced. The employment of reconnaissance helicopters was overall reduced between 2005 and 2020, and only the largest militaries use special rotary assets. Almost every country compared in this study has opted for a mix of utility, transport and attack helicopters, roughly in equal measure. For 2020, attack helicopters made up an average of 23% of the other nine militaries' helicopter fleets. For Canada to have an average of 23% attack helicopters, it would need to purchase a fleet of 30 attack helicopters, which is 6 more than what was recommended by SCONSAD. It is not just the large militaries in countries like the US, the UK and France that have a balanced force. Both the Netherlands and Spain possess utility, transport and attack helicopters while having overall fewer helicopters than Canada, at 75 and 83 respectively, compared to Canada's 100 helicopters. Meanwhile, Australia, Canada's chief country of comparison, has those same three categories of helicopters with a fleet of 107. Having a balanced fleet is clearly attainable without a massive addition of material.

CANADA'S TACTICAL-AVIATION FORCE IS AND WILL REMAIN UNBALANCED AS LONG AS THIS CRITICAL PIECE IS MISSING.

This study only gives a snapshot in time, as procurement is an ever-changing endeavour. Yet Canada has no concrete procurement plans to purchase attack helicopters. Most large militaries examined in this study have, understandably, had attack helicopters in their fleets since they have been invented. The smaller militaries, like the Netherlands' and Spain's, have purchased theirs in the last two decades. The CAF are in the middle of a mid-life upgrade programme for the Griffon, indicating that they will continue to prioritize using it as their only rotary firepower platform. As we have examined earlier, the Griffon was simply not built for this role. Gongora and Wesolkowski noted that, even among the countries that did add fire-support capabilities to their utility helicopters, all of them also purchased attack helicopters in recognition that "the former [utility helicopters] cannot be a substitute for a dedicated capability." The CAF are, yet again, trying to do more with less. This has been the political reality in Canada for a long time. Canada's procurement bureaucracy is exhaustive and often wrought with delay, especially when compared to near-peer countries like Australia. The myriad reasons behind these complex issues are beyond the scope of this article. What is clear is that Canada's tactical-aviation force is and will remain unbalanced as long as this critical piece is missing.

	CAN	AUS	FRA	GRC	ITA	NLD	ESP	UK	US Army	USMC
АН	0	22	68	28	59	28	19	42	801	149
REC	0	0	86	36	0	0	0	26	47	0
TH	15	10	52	25	16	29	46	83	503	142
UH	85	75	71	112	155	18	18	34	2,523	145
SPEC	0	0	0	0	20	0	0	0	0	277
Total	100	107	277	201	250	75	83	185	3,874	713

Table 1. Number of helicopters of each type per country, 2020²²

CONCLUSION

This article has examined how the CAF's tactical-helicopter community cannot provide adequate combat effectiveness without a designated attack helicopter. It has also examined why Canada does not currently have attack helicopters, why they are critical to the CAF's present and future missions, and how the CAF's tactical-aviation force will continue to be unbalanced without attack helicopters. Canada's allies have continually shown how effective attack helicopters are in COIN and peacekeeping operations, especially using precision guided munitions. They have also shown that smaller militaries are capable of employing attack helicopters without having to enlarge their helicopter fleets beyond what they are capable of maintaining. Canada has a long history of procurement trouble, and adding a new fleet of helicopters will not be an easy endeavour.²³ After massive government spending to combat the COVID-19 pandemic, it is unclear what resources the government will want to spend on any new capital military projects. Plans to address the CAF's lack of firepower in its tactical-aviation force should be of imminent concern. As Canada moves forward with much-needed plans to procure needed equipment for the CAF to ensure it can remain engaged as a middle power on the world stage, attack helicopters should be on the list of essentials.

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ABBREVIATIONS

AH attack helicopter
AUS Australia

CAF Canadian Armed Forces

CAN Canada

COIN counter-insurgency

ESP Spain
FRA France
GRC Greece
ITA Italy
NLD Netherlands

REC reconnaissance helicopter

SCONSAD Standing Senate Committee on National Security and Defence

SPEC special

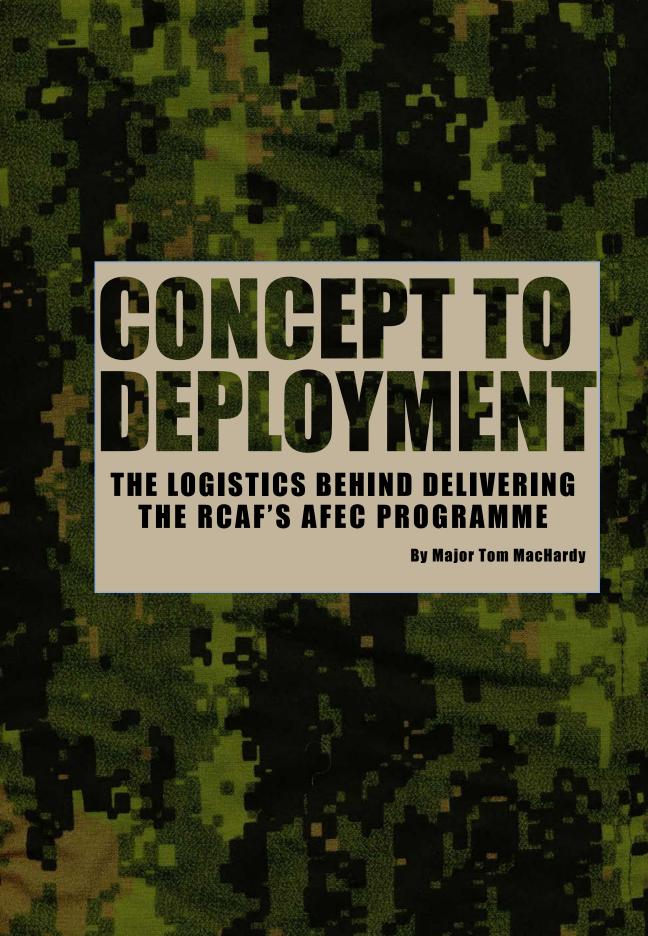
TH transport helicopter **UH** utility helicopter

USMC United States Marine Corps

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Editor's note: This article references Captain McDonald and Major MacHardy, "Air Force Expeditionary Capability (AFEC)... What?," *The Logistician* 11, no. 2 (April 6, 2021).

Since 2008, the Royal Canadian Air Force (RCAF) has been busy developing an Air Force Expeditionary Capability (AFEC) that supports both domestic and expeditionary operations. Developing such a capability is no easy feat, but it is made possible by superior leadership, dedication and teamwork. This article will explain what the AFEC Programme is, the projects involved and—more importantly to this article—the logistics behind the Programme. While much work has yet to be completed, the AFEC Programme is moving ahead on schedule, with some projects already achieving full operational capability (FOC).

AFEC PROGRAMME

The AFEC Programme facilitates the development of a comprehensive and agile air power capability, supporting RCAF expeditionary operations, where "expeditionary" refers to operations being conducted away from main operating bases. Considering Canada's geography and its sparsely populated, isolated regions, RCAF expeditionary operations can be domestic and international in nature.

The AFEC concept of operations (CONOPS) is based on supporting two simultaneous lines of operation (LoOs): LoO 1, which is deliberate, and LoO 2, which is contingency. LoO 1 would normally be a planned operation, while LoO 2 would be a response to a domestic or international contingency operation. Each LoO comes with its own requirement for a deployed operating base (DOB), which is either austere or well found, as shown in Figure 1. An austere DOB could be a damaged airport or a patch of useable terrain requiring significant engineering and logistical support to operate, while a well-found DOB could be a functional airport. The AFEC Programme provides each LoO and DOB with a specific capability based on the materiel and equipment procured under each AFEC project.

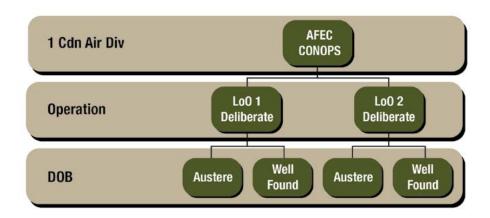


Figure 1. AFEC LoOs

The \$450 million AFEC Programme started in 2008, with the majority of its inherent projects moving from the definition phase to the implementation phase in 2016. Projects are closely monitored, and decisions are made via working groups. The AFEC Programme commenced as a concept-development working group, which changed to an operational implementation working group (OIWG) in 2021. The OIWG meets semi-annually, while sub-working groups meet monthly

or as required. The OIWG is designed to develop action items and give direction to the sub-working groups, while the sub-working groups ensure action items and directions are carried out. Working groups are comprised of multiple stakeholders from the strategic to tactical levels. Figure 2 depicts the primary stakeholders and those comprising the OIWG at all three levels. Note that 2 Wing is the primary tactical stakeholder, as the RCAF's air expeditionary wing (AEW), which supports other RCAF wings during readiness training and deployed operations.

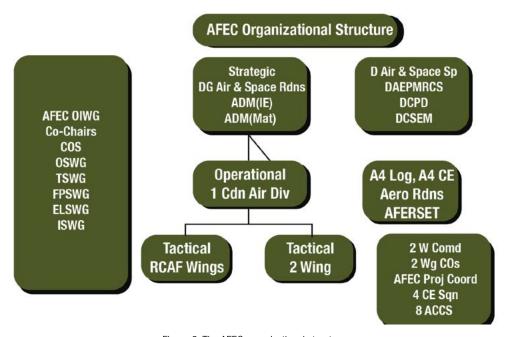


Figure 2. The AFEC organizational structure

The AFEC OIWG has as its two co-chairs the 2 Wing Commander and the 1 Canadian Air Division (1 Cdn Air Div) A4 Logistics (A4 Log) Director. Together, they collect input from the sub-working groups and pass direction on action items. The AFEC Chief of Staff (COS) is currently the 2 Mission Support Squadron Commanding Officer. The sub-working groups are Operations, Training, Force Protection, Equipment and Logistics, and Infrastructure. Each working group's responsibility is captured in an AFEC terms of reference, and these terms are undergoing updates to align with the new OIWG. Detailed minutes are produced as well as approved by the OIWG and published for action by stakeholders in a timely manner to ensure AFEC projects move forward as scheduled.

The AFEC Programme is composed of three main types of projects: infrastructure projects, leveraged projects and material projects. Of these, material projects are the most influential to the AFEC Programme, consisting of five major and three minor capital projects. The subdivision of projects provides better project management and oversight.

Infrastructure projects include building the 2 Wing main facility headquarters at Canadian Forces Base (CFB) Bagotville and a storage facility at CFB Cold Lake. The Cold Lake storage facility is under construction and will store AFEC training and engineering equipment under the care of 4 Construction Equipment Squadron (4 CE Sqn). The 2 Wing Main Facility Headquarters Project is in the definition phase and will encompass the personnel as well as the majority of rapid

reaction package (RRP) materiel and equipment necessary to deploy from CFB Bagotville or CFB Trenton. Together, these two projects account for \$182 million. Any leftover funds will be used to improve commonly used support infrastructure within CFB Bagotville, such as the combined mess and accommodations.



Figure 3. The proposed 2 Wing main facility headquarters. Image courtesy of Major Snoddon, AFEC Project Director,
Director - Air and Space Support.

Leveraged projects include the Headquarters Shelter System (HQSS), Advanced Sub-Unit Water Purification System, Enhanced Recovery Capability, Common Heavy Equipment Replacement and Logistic Vehicle Modernization Projects. Of these leveraged projects, the HQSS has the highest priority, being 90% delivered. Together, these projects account for \$109 million.



Figure 4. The HQSS modular set-up at 2 Wing during HQSS training. Photo courtesy of Captain Lacasse, 2 Mission Support Squadron Construction Engineering.

Major capital projects include the AEW Set-Up, High-Readiness Personnel Equipment (HRPE), Medium Logistics Vehicles, Fly-Away Kits and Beddown Projects. The AEW Set-Up Project provides command and control equipment to facilitate rapid airfield activation, complete with storage- and materiel-handling capabilities. The HRPE Project provides a high-readiness scale of issue for up to 3,800 RCAF personnel, including personal protective equipment, clothing and a personal kit. Of note, fragmentation vests have been procured and are being distributed throughout RCAF wings as operational stock set aside for deployments. The Fly-Away Kits Project provides three fly-away kits to facilitate rapid airfield activation. The Beddown Project includes operational and training suites of equipment as well as vehicles that are sufficient for working in a wide range

of deployed environments. The AEW Set-Up and HRPE Projects continue, while the Medium Logistics Vehicles Project is the second AFEC project to reach FOC and be closed. Together, these projects account for \$103 million.



Figure 5. AFEC medium-logistics-vehicle variants

Minor capital projects include the Satellite Rear Link, Pistol Replacement, and Aircraft Rescue and Firefighting Vehicles Projects. Of these projects, the Satellite Rear Link Project has been delivered and is the first AFEC project to reach FOC and be closed. Together, these projects account for \$11 million.

Once a project reaches FOC, it gets rolled into 2 Wing's conceptual RRP capability. This capability will be fully explained in the next section.

LOGISTICS BEHIND THE AFEC PROGRAMME

As depicted in the AFEC organizational structure, the AFEC Programme is coordinated between all three levels of management: strategic, operational and tactical. The following AFEC Programme phases reflect the progress of AFEC projects, from the concept phase to FOC. For each phase, I will briefly discuss the main logistical effort, followed by a more detailed logistical analysis regarding the AFEC Programme Logistical Continuum.



Figure 6. The AFEC Programme phases

- 1. **Concept phase**. The main logistical effort in this phase is matching the materiel with the capability, then obtaining the materiel.
- **2. Implementation phase**. The main logistical effort in this phase is composed of training, material recording and developing RRPs.

- 3. IOC (initial operational capability). The main logistical effort in this phase is ensuring that enough materiel has been received to test the RRPs in exercises and operations in order to determine whether the packages meet LoO objectives.
- **4. FOC**. The main logistical effort in this phase is ensuring all materiel has been received, recorded and tested as well as ensuring RRPs are ready to support LoOs.

The AFEC Programme Logistical Continuum (refer to Figure 7) outlines ten stages showing how AFEC materiel goes from the concept stage to FOC. The continuum is a cycle that starts with and comes back to the strategy stage. This is meant to capture changes in RCAF policy, ensuring the RCAF has the right materiel to support LoOs now and in the future. Thus, the AFEC Programme is a continuum that changes with RCAF policy and directives.

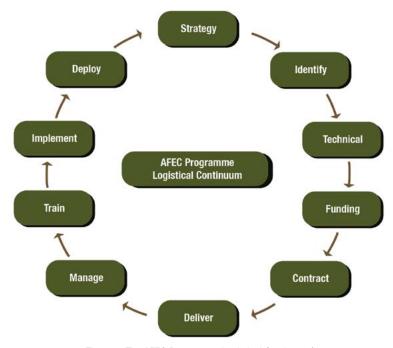


Figure 7. The AFEC Programme Logistical Continuum¹

Strategy. The AFEC Programme is based on the AFEC CONOPS, which is derived from RCAF expeditionary doctrine. This CONOPS states that the RCAF will develop and deploy a rapid-reaction capability that can support two simultaneous LoOs—LoO 1 (deliberate) and LoO 2 (contingency), as described earlier. Furthermore, these LoOs must be able to deploy an austere DOB and a well-found DOB. Each LoO and DOB comes with its own materiel requirement and deployable consideration. From a logistical perspective, this means many things, from materiel identification to materiel deployability.

Identify. Capability identification drives materiel identification; thus, it is essential that the right capability be identified before materiel is obtained. AFEC capability is a strategic decision outlined in RCAF expeditionary doctrine and captured in the AFEC CONOPS via LoOs. Materiel is identified via working groups at the operational and tactical levels to support LoOs. For example, a strategic capability could be the deployment of an AEW to the Caribbean in support of humanitarian assistance. The materiel to support the AEW would take many forms, from materiel

handling equipment to tents. Thus, materiel identification at this stage is generic rather than specific. Such materiel-identification specifics are clarified in the technical stage.

Technical. Once a generic materiel is identified, it is technically analysed to meet the needs of all LoOs for the AFEC Programme. Technical analysis includes topics such as materiel type, quantity, pricing, airworthiness and sourcing. This analysis is generally conducted by end-user subject matter experts at the tactical level, such as 2 Mission Support Squadron's Logistic Flight, which provides feedback to 1 Cdn Air Div and the AFEC Project Management Office. A good example would be the amount and types of materiel handling equipment to be obtained to support simultaneous LoOs. Technical materiel details are also important when it comes to materiel sourcing, as contract support requires the technical analysis to contract the proper requirement on behalf of the end user. Technical materiel analysis also identifies the cost associated with the materiel, which helps the finance department fund the project.

Funding. The AFEC Programme is funded nationally through the AFEC Project Management Office, with annual project reviews to ensure sufficient funding is available in order to proceed with materiel acquisition. Each funding project was identified earlier, alongside its associated cost. Long-term AFEC projects, such as the 2 Wing Headquarters infrastructure, are subject to funding fluctuations based on cost increases and funding pressures. However, the AFEC Programme remains a high priority for the RCAF, and thus, receives sufficient funding to ensure programme success.

Contract. Materiel that is not obtainable through the Canadian Armed Forces supply system is obtained through industry, either by local purchase or contract. Many consumables are acquired locally; however, the majority of larger AFEC projects obtain their materiel through the contract process. A sound technical materiel analysis supports the contract request for proposal via the statement of requirement / statement of work and follow-on bid evaluations, ensuring that industry can support mission objectives and that the end user gets what they need to support mission objectives. Contract support is supplied by the AFEC Project Management Office in close coordination with 2 Wing.

Deliver. The year 2020 marked a milestone year for the AFEC Programme with the delivery of several key pieces of AFEC materiel, reaching various phases in the AFEC Programme, from IOC to FOC. The Satellite Rear Link Project was the first to be delivered that reached FOC, while a number of other projects are on the verge of reaching FOC. Materiel delivery not only represents the tireless efforts of many dedicated personnel, but also starts the process of building and managing the deployable packages that will support mission objectives.

Manage. An AFEC materiel designated for delivery is assigned a physical storage location in one of three areas—Cold Lake, Bagotville or Trenton—depending on the type of materiel and end use. Once complete, the 4 CES Cold Lake storage facility will house the majority of AFEC materiel due to storage capacity. 2 Wing Bagotville will store the RRPs, and 8 Air Communications and Control Squadron (8 ACCS) will store the communications materiel. These delivery decisions are coordinated between 1 Cdn Air Div and 2 Wing to ensure the materiel is managed and deployable as required. Once the materiel is delivered, it is assigned to an electronic storage location (SLoc) and brought on charge in the supply system of record, the Defence Resource Management Information System (DRMIS). SLocs are managed by a SLoc holder who is responsible for the materiel on their charge, ensuring the materiel is added and removed as required and transferred when deployed. Materiel management is a fundamental logistical requirement to good materiel stewardship and cannot be overstated. Ongoing support from 1 Cdn Air Div will see the RCAF transitioning 2 Wing's materiel management of RRPs to handling units that make it easier for the SLoc holder to transfer deployed materiel in DRMIS, as one line of data entry vice many line items, thus reducing materiel processing time and recording errors.



Figure 8. The 4 CE Sqn Cold Lake storage-facility construction on June 9, 2021. Photo courtesy of Uwe Spatling, Storage Facility Project Manager.

Train. Most of the AFEC materiel delivered requires some form of training and standard operating procedures. As such, and to the greatest extent possible, contracted materiel includes contractor training support and operating procedures. Where contractor training is not available or required, other training venues are organized by 1 Cdn Air Div. 2 Wing also has a unique training establishment in 2 Air Expeditionary Training Squadron, which provides high-readiness deployment training and is in the process of expanding its training capabilities by establishing a Training Centre of Excellence. Training on a new piece of materiel is essential to rapidly deploying that materiel in support of achieving mission objectives. Training also highlights deficiencies and gaps in materiel requirements that need further materiel support. Once materiel training is complete, it is time to implement the materiel.



Figure 9. The 2 Mission Support Squadron Construction Engineering Officer Commanding, Major Dumont, oversees the training exercise of the AFEC HQSS. Photo courtesy of Captain Lacasse, 2 Mission Support Squadron Construction Engineering.

Implement. AFEC materiel implementation is planned via RRPs. RRPs are deliberate assortments of materiel identified in a table of organization and equipment that is pre-packaged and strategically placed to support LoOs. RRPs give deployed commanders rapid, flexible capabilities of their choosing that support mission objectives. Once complete, the 2 Wing online RRP capability database will allow a commander to choose their materiel capability by drilling down through LoOs, as well as the associated airlift required. This database continues to evolve as AFEC materiel is delivered and tested. At the moment, the first piece of materiel to be tested and implemented as an RRP is the HQSS, which is being conducted on Operation (Op) CARIBBE. Feedback from the operation will be organized in the RRP database. Furthermore, RRPs will be recorded in DRMIS as handling units so they are easily transferred in DRMIS via one transaction, vice each line of data entry in the RRP. This method embodies and enhances the rapidity of moving materiel into the area of operations. Lastly, RRPs will be strategically placed to further enhance the rapid deployment of materiel. Due to space- and materiel-management requirements, the majority of RRPs will be located in Bagotville, with plans to also locate some in Trenton once a suitable storage location is approved. Once the RRPs are packed up and recorded in DRMIS, they are ready to deploy.

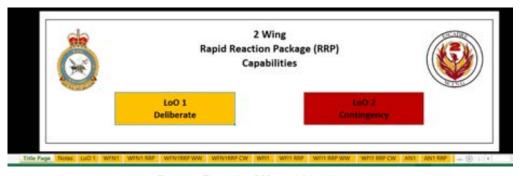


Figure 10. The 2 Wing RRP capabilities title page

Deploy. Once an AFEC project receives a substantial amount of materiel to train and test, it has reached IOC and can be deployed on an exercise or operation, so long as it is capable of supporting mission objectives. As stated previously, materiel is deployed as RRPs to support LoOs. Recall that LoO 1 is deliberate and LoO 2 is contingency, with "deliberate" meaning a **planned** response to a known operation and "contingency" meaning a **reactionary** response to a tasked operation. Deliberate LoOs can be recurring operations for which there is routine business planning, such as Exercise AMALGAM DART. Contingency LoOs can be domestic or expeditionary. Examples of domestic operations are responses to the COVID-19 pandemic, British Columbia forest fires and Manitoba floods. These types of domestic operations are captured under Canadian Joint Operations Command (CJOC) Contingency Plan (CONPLAN) LENTUS. On the other hand, examples of expeditionary operations are responses to humanitarian disasters and non-combat evacuations. These types of expeditionary operations are captured under CJOC CONPLANs RENAISSANCE and ANGLE. Note that these are but a few of the existing CONPLANs and are only referenced as supporting examples. The RCAF may be tasked to support a LoO that has no specific CONPLAN associated with it; this is why RRPs are being designed to support multiple types of operations.

The remaining important part of deploying RRPs is capturing lessons learned to improve future materiel deployments. Given the breadth of possible operations and limited materiel resources, it is important that RRPs support multiple types of operations. The HQSS is a great example of a materiel that has reached IOC, conducted training and testing, and is deployable on multiple types of operations. Thus, the HQSS RRP will be included in both LoOs. Of note, the HQSS RRP is being tested on Op CARIBBE 2021, with lessons learned on how the HQSS RRP was deployed being captured and reflected in the RRP capability database.



Figure 11. The deployed HQSS on Op CARIBBE 2021. Photo courtesy of Major Guerin, Op CARIBBE Air Field Activation and Surge Team Commander, 2 Wing.

The AFEC Programme Logistical Continuum demonstrates the cycle of AFEC materiel, from strategy—which is the foundation behind the AFEC Programme—to deployment. As projects continue and materiel is deployed, change will be inevitable, necessitating new materiel requirements to match changing capability requirements.

Superior leadership, dedication and teamwork across all levels of management continue to work together to bring the AFEC Programme closer to FOC. In the meantime, projects that have achieved IOC will lend themselves to training, testing, deploying and developing lessons learned that will support mission objectives.

Major Tom "Tmach" MacHardy is a logistics officer with a former background as an air combat systems officer with two tours on the CH124 Sea King. He was the 2 Wing AFEC project lead from 2020–2022 and has 19 years of experience in operations and deployments. He has a master of arts in security and defence management and policy from the Royal Military College of Canada, and this article stems from his experience at both 1st Canadian Division Headquarters in Kingston with the Disaster Assistance Response Team and at 2 Wing. He is currently employed at Strategic Joint Staff as the Modernization and Integration of Sustainment and Logistics Training Lead.

ABBREVIATIONS

1 Cdn Air Div 1 Canadian Air Division

4 CE Sqn4 Construction Equipment Squadron8 ACCS8 Air Communications and Control Squadron

A4 CE A4 Construction Engineering

A4 Log A4 Logistics

ADM(IE) Assistant Deputy Minister (Infrastructure and Environment)

ADM(Mat) Assistant Deputy Minister (Materiel)

Aero Aerospace

AEW air expeditionary wing

AFEC Air Force Expeditionary Capability

AFERSET Air Force Expeditionary Readiness Standardization and Evaluation Team

APS Armoured Protection System

CFB Canadian Forces Base commanding officer CONOPS concept of operations

COS Chief of Staff

DAEPMRCSDirector Aerospace Equipment Program Management (Radar and Communications

Systems)

D Air & Space Sp
DCPD
Director - Air and Space Support
Director Construction Project Delivery

DCSEMDirector Combat Support Equipment ManagementDG Air & Space RdnsDirector General Air and Space Readiness

DOB deployed operating base

DRMIS Defence Resource Management Information System

ELSWG Equipment and Logistics Sub-Working Group

FOC full operational capability

FPSWG Force Protection Sub-Working Group

HQSS Headquarters Shelter System

HRPE High-Readiness Personnel Equipment

IOCinitial operational capabilityISWGInfrastructure Sub-Working Group

LHS load handling system
LoO line of operation
MRT mobile repair team

OIWG operational implementation working group

Op Operation

OSWG Operations Sub-Working Group

Proj Coord Project Coordinator

Rdns Readiness

RRP rapid reaction package

SEV special equipment vehicle

TCV troop-carrying vehicle

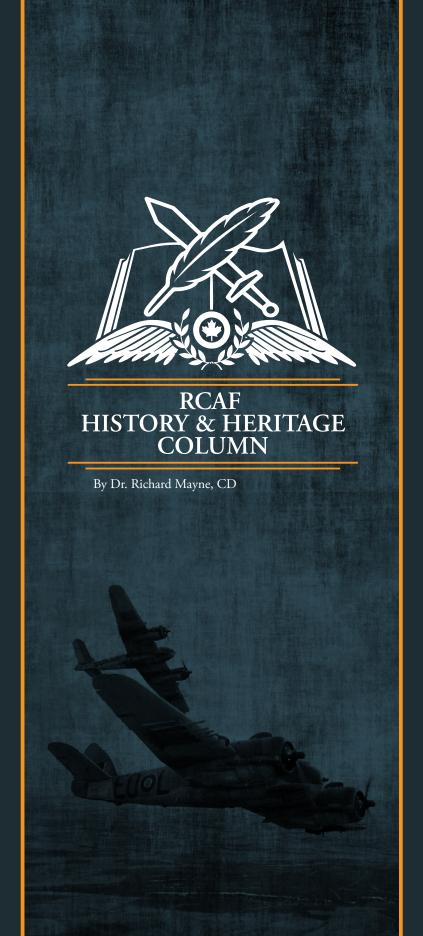
TSWG Training Sub-Working Group

W Comd Wing Commander

Wg Wing

NOTE

1. G. Bennett et al., Fundamentals of Air Force Logistics: Leadership and Application (Borden: University of Toronto Press, 2023), 302.



We would like to announce our recently revamped website on the Defence Wide Area Network (DWAN). The new site includes pages devoted to

- RCAF History and Heritage (H&H) publications and official histories;
- the RCAF Heritage Fund;
- our scholarships and essay contest;
- the RCAF Associate Historian Programme; and
- our Museums programme.

Check it out!1

RCAF HISTORY HIGHLIGHTS

In every "RCAF History and Heritage Column," we include an account from our fascinating history, and for this issue we are covering the RCAF's little-known "deployment" (as we would call it nowadays) of a fighter squadron to the United Kingdom (UK) in 1951. This snippet is drawn from our ongoing research for the planned fourth volume in the <u>series on the history of the RCAF</u>, which will cover the Cold War era up to the unification of the Canadian Armed Forces.

The early 1950s was a time of perceived crisis. NATO had been founded in 1949 in the hopes that a diplomatic pledge would suffice to stabilize post-war Europe, but a series of strategic shocks then convinced the West that it faced a dire and imminent threat: in rapid succession were the Soviets' detonation of an atomic bomb and Mao's victory in China, both in 1949, and then the even greater shock of the North Korean invasion of South Korea in June 1950. Determined not to repeat what they saw as the 1930s' mistakes of appeasement, the second half of 1950 passed in something of a crisis atmosphere in Western capitals. In this context, the Canadian cabinet was originally reluctant to consider stationing forces in Europe with NATO. However, partially in response to the growing pressure for a Canadian military commitment to NATO in Europe, the pending deployment of a fighter squadron to the UK for training purposes would be reconfigured as a NATO contribution.

The idea for such a deployment came from an RCAF suggestion a year before that it would be valuable for fighter squadrons to deploy to the UK for several months at a time as a training experience. Planning for a 10-month deployment by an RCAF fighter squadron began in the summer of 1950, at which time the government was still quite opposed to permanently committing any force overseas to NATO. The thinking at the time was that, in lieu of permanently stationing forces in Europe, a wing of three F-86 Sabre–equipped squadrons would be maintained in Canada, with one of those squadrons deployed in the UK on a rotational basis. The first such squadron deployment would be one of only two post-war Regular Force fighter squadrons then in existence: No. 410 at Saint-Hubert, Quebec, or No. 421 at Chatham, New Brunswick, both flying the RCAF's first jet fighter, the de Havilland Vampire F.3. No. 421 was eventually chosen as the unit to go, and Royal Air Force (RAF) Odiham, home to an RAF Vampire–equipped fighter wing some 50 km southwest of London, was selected as the site.

In mid-January 1951, approximately 250 squadron personnel flew to Odiham in RCAF North Star aircraft, where they joined Nos. 54 and 247 Squadrons of the RAF under 11 Group, Fighter Command, and took charge of 16 brand-new Vampire 5s on loan from the RAF. For the next nine months, they were accommodated on base at Odiham—without family members—and flew almost 4,000 hours in their borrowed jets, including 28 exercises, one with NATO at RAF Celle, Germany, and a fly-past of Buckingham Palace on the King's birthday. Flying ceased in October 1951, and after closing out, personnel were flown back to Canada in November 1951. By this time, the original concept of a training deployment on a rotational basis to gain operational experience had been overtaken by Canada's new NATO commitment to establish an air division of 12 F-86 Sabre–equipped squadrons in Europe that would be maintained as Canadian bases and to which personnel would be posted with their families. No. 421 was not replaced at Odiham; the squadron returned to Chatham, where it converted to Sabres and, less than 12 months later, was transferred back to Europe, this time to Grostenquin, France, as part of No. 2 (Fighter) Wing of 1 Canadian Air Division.

NOTE

1. Unfortunately, this website is only available on the DWAN.



SPACEMINDEDNESS: A NEW WAY OF THINKING

By Brigadier-General Mike Adamson, with Major Jill Lawrence

Brigadier-General (BGen) Mike Adamson, Commander (Comd) of 3 Canadian Space Division (3 CSD), is on a mission to increase the "spacemindedness" of the Canadian Armed Forces (CAF).

Spacemindedness is a term he adopted three years ago when he took the helm of then—Director General Space, which transitioned to 3 CSD last summer. The establishment of the new division under the Royal Canadian Air Force represented a significant shift in how the CAF approached space, by officially recognizing it as an operating domain and dedicating a division to its management.

The inaugural Comd 3 CSD was tasked with educating the CAF about this dynamic and critical domain. Thus, spacemindedness was adopted, and it is a concept that BGen Adamson has been advocating ever since. It was also the core of the *RAWC Talk* speaker-engagement-series presentation he delivered by livestream on June 1, 2023, from the Royal Canadian Air Force Aerospace Warfare Centre at 8 Wing Trenton.

So, what exactly is spacemindedness? It is a mindset that acknowledges the critical dependency that every CAF operation and activity has on space.

It also represents the reciprocal relationship between the Defence Space Enterprise¹ and joint warfighters in the CAF. For BGen Adamson, it is not enough that military warfighters know how space can support them and their activities. Space-based assets are essential to military operations, supporting everything from communications and command and control to navigation. It is the ultimate high ground, giving an advantage to military decision makers.

WHAT EXACTLY IS SPACEMINDEDNESS? IT IS A MINDSET THAT ACKNOWLEDGES THE CRITICAL DEPENDENCY THAT EVERY CAF OPERATION AND ACTIVITY HAS ON SPACE.

This reliance on space, of course, also presents vulnerabilities that can be exploited by the adversary. Simply ask this year's participants in Exercise MAPLE RESOLVE 23, the Canadian Army's largest training exercise. Using handheld jammers and monitoring equipment, the Canadian Space Aggressor Team from 7 Space Operations Squadron, one of our newly created units, established a global positioning system (GPS)—denied environment to exercise the troops' ability to not only recognize when they were operating within a space-denied environment, but also to then adapt their tactics, techniques and procedures to overcome this degradation. In what BGen Adamson noted was a great learning opportunity for the Army, troops were challenged to overcome this GPS-contested, degraded and denied environment.

Considering the CAF has seen GPS jamming used in current theatres of operations, this type of training is fundamental in developing troops' confidence in their equipment and processes. It also, BGen Adamson hopes, enables more critical thinking among members on operations.

The other side of spacemindedness is the warfighter's understanding of the potential denial of space-based systems due to the adversary's efforts to undermine military operations. By feeding this information back to the space enterprise, these observations can strengthen the common space picture of any military operation or activity.

Recently, for example, a Canadian aircrew operating overseas noticed issues with their navigation system in a particular region. While in the past this may have been chalked up to faulty equipment, the aircrew considered the possibility it was something more. They relayed this information back through the appropriate channels, and space operators were able to pinpoint adversarial GPS jamming right down to its exact coordinates. The data was then shared with the broader alliance for their situational awareness, thanks to the spacemindedness demonstrated by the aircrew.

If operators really want to take their spacemindedness to the next level, BGen Adamson urges warfighters to ask themselves the following four questions:

- 1. What can space do for me?
- 2. What can space do against me?
- 3. Am I prepared to operate in a degraded/denied space environment?
- 4. Do I have specified or implied tasks to support space mission assurance? This new way of thinking is key to the future success of CAF operations.

BGen Mike Adamson joined the Canadian Air Force in 1993 after completing his bachelor's degree in political science and international affairs at Carleton University in Ottawa. An air combat systems officer, he has had numerous postings in the long-range patrol community as well as at the joint level in Ottawa. In September 2011, he deployed to Bahrain as Chief of the Air Coordination Element for the Arabian Gulf and Indian Ocean. He has completed a Master of Defence Studies from the Royal Military College and the National Security Programme at the Canadian Forces College. BGen Adamson assumed the dual role of RCAF Director General Space and Joint Force Space Component Commander in 2020, becoming the inaugural Comd 3 CSD in 2022

Major Jill Lawrence is the 3 CSD public affairs officer.

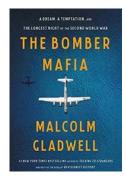
ABBREVIATIONS

3 CSD 3 Canadian Space Division BGen brigadier-general CAF Canadian Armed Forces

NOTE

1. Canada, Department of National Defence (DND), RCAF Strategy for Space Mission Assurance (Ottawa: DND, 2022), v.





THE BOMBER MAFIA: A DREAM, A TEMPTATION, AND THE LONGEST NIGHT OF THE SECOND WORLD WAR

By Malcolm Gladwell

New York: Little, Brown and Company, 2021

256 pages

ISBN: 9780316296618

Review by Mike Bechthold, PhD

The opinions expressed in this review are those of the author and do not represent the views of the Department of National Defence, Canadian Armed Forces, Royal Canadian Air Force or any agency of the Government of Canada.

The Bomber Mafia: A Dream, a Temptation, and the Longest Night of the Second World War is the most recent book by prolific journalist and podcaster Malcolm Gladwell. It is also a case study in form over function. His writing is entertaining, and he is a talented storyteller; however, his analysis is shallow, and the book makes no useful contribution to our understanding of the topic. It is best avoided by all.

Gladwell is a United Kingdom–born Canadian journalist who has published extensively on a wide variety of topics. He was named by *TIME* magazine as one of its 100 most influential people of 2005, and he was awarded the Order of Canada in 2011. His book has received a great deal of attention since it was released; it has appeared at or near the top of best-seller lists in Canada and the United States (US) and has been positively reviewed in the mainstream media. More than 18 months after its publication, it continues to be prominently displayed in bookstores across Canada. Indigo, Canada's largest bricks-and-mortar bookstore, highlights the book as one of "Heather's Picks" with a gold badge on its cover.²

For all of the positive attention the book has received in the mainstream press, specialists have found significant problems with it. Numerous book reviews in print and online have identified issues with the version of history presented by Gladwell. Colin Dickey in *The New Republic* calls it "a nasty, brutish book" and compares reading the book to the famous scene in *Moneyball* in which Brad Pitt's Billy Beane asks, "Would you rather get one shot in the head or five in the chest and bleed to death?"³

Noah Kulwin in *The Baffler* believes that *The Bomber Mafia* is a normal Gladwell product. "By now, the press cycle for every Gladwell book release is familiar: experts and critics identify logical flaws and factual errors, they are ignored, Gladwell sells a zillion books, and the world gets indisputably dumber for it." Similarly negative reviews have been written by John Curatola, David Fedman and Cary Karacas as well as Matt Bone. 5 The book has also been torn apart on social

media. This review will examine the claims made by Gladwell in *The Bomber Mafia* and situate his book in the existing historiography of the strategic-bombing campaign.

At the core of his book is a discussion of the Great Tokyo Air Raid of 9–10 March 1945, which burned 41 square kilometres of the city and killed as many as one hundred thousand men, women and children. Gladwell's book explores how the doctrine of precision aerial bombing employed by the United States Army Air Forces (USAAF) in Europe transformed into the wide-scale firebombing of Japanese cities. The book reads like the podcast that spawned it. It offers engaging anecdotes that meander through a cursory explanation of strategic bombing in the Second World War (WWII). Conspicuous by its absence is any type of context that would allow the reader to situate and understand the big ideas being discussed in the complicated and essential story of strategic bombing in WWII. I expect better work from my first year undergraduate students.

The book centres on two figures. The first is Haywood Hansell, described by Gladwell as "a brilliant young general." He was a member of the Bomber Mafia, a group of USAAF officers who believed that precision attacks by long-range heavy bombers like the B-17 and B-29 could win wars on their own. Hansell and his like-minded colleagues were committed to surgically striking military targets while limiting collateral damage. They viewed what they did as being significantly different from the tactics employed by Royal Air Force (RAF) Bomber Command and its commander, Air Chief Marshal Arthur Harris, who is described by Gladwell as a "psychopath." Gladwell indicts "Butcher" Harris for resorting to terror attacks against civilian targets. To achieve their goal, the Bomber Mafia had the Norden bombsight, a technological wonder that allowed aircraft to hit pinpoint targets from great heights.

On the other side of the debate was General Curtis LeMay, "Haywood Hansell's antithesis." LeMay was a fierce advocate of doing whatever it took to win wars. He famously stated in his autobiography that "we're going to bomb [North Vietnam] back into the Stone Age." When LeMay replaced Hansell as the commander of XXI Bomber Command in the Pacific, he quickly realized that high-altitude, daylight precision bombing was not working against the Japanese. He gambled and completely changed the tactics of his bombers by switching to low-altitude, night area attacks. Rather than the Norden bombsight, LeMay employed napalm, then a newly developed incendiary designed to cause great destruction when dropped on the largely wooden Japanese cities. The result was the attack on Tokyo of 9–10 March. Thus, Gladwell has set up a binary debate between Hansell and the Norden bombsight versus LeMay and his use of napalm.

Gladwell's analysis of the bomber campaigns of WWII is superficial. He takes the theories of the Bomber Mafia at face value as well as their assessment of how their theories were put into practice. For Gladwell, understanding the strategic bombing of Germany is black and white: RAF Bomber Command conducted blunt nocturnal city-busting raids, while the USAAF's 8th Air Force made precision daylight attacks. Whereas Professor Frederick Lindemann and Harris were the bogeymen who flailed at German cities and killed their civilian inhabitants, Hansell and Carl Norden (and his famous bombsight) were the heroes who used technology and precision to hit pinpointed targets and destroy key chokepoints in the German economy.

There is so much detail missing from Gladwell's account of the European bomber war that it is difficult to know where to start. He does not appear to understand the factors that drove the British to adopt the policies that they did. In reference to the RAF's one-thousand bomber raid on Cologne, he offers the simple explanation that it took place at night "because of course they didn't particularly need to see their targets, did they?" 11

Gladwell's brief discussion of the attack on Dresden in February 1945 demonstrates how little he understands. The details of the attack and the firestorm it caused are well known. Harris and the RAF were widely criticized both at the time and since for the seemingly senseless destruction of a German cultural centre that contributed little to the Nazi war effort. Of course, the war was almost over. Why destroy the city? The reality of the raid was much different, and historians such as Frederick Taylor, Paul Addison and Jeremy A. Crang have provided that essential context.¹²

Gladwell forgets (or never knew) that the USAAF was scheduled to attack Dresden before the RAF, but its mission was scrubbed due to bad weather. The morning after, the Americans made an area attack against the burning city and added another 771 tons [700 metric tons] of bombs (nearly half incendiaries) to the carnage. Gladwell subsequently quotes Harris, who said in 1977, "We weren't particularly aiming at the civilian population. We were aiming at the production of everything ... including the destruction of the facilities ... and the people who worked in them." ¹³

Gladwell then expands this to include "the elderly. Nurses in hospitals. Pastors in churches." It is all sets up his point that "the whole argument of the Bomber Mafia, their whole reason for being, was that they didn't want to cross that line." The problem is that the 8th Air Force crossed this line repeatedly. The distinction between American precision attacks and British area bombing existed chiefly in the minds of the Bomber Mafia, their supporters, and their exceptionally good public-relations people and had almost no connection to reality.

This case was made by W. Hays Parks, who concluded that "the difference in [USAAF and RAF] bombing accuracy was not as great as generally has been held to have been the case." ¹⁶ He demonstrated that, given ideal conditions, the US bombers were more accurate than the RAF's, but on average, the British demonstrated a better ability to hit their targets. While the Americans often claimed to be conducting precision raids, a combination of weather, enemy reactions and other factors meant that their attacks were no different than British area raids. Gladwell's view that the British were exclusively city busters while the Americans always employed precision tactics is a vast oversimplification.

Gladwell performs some impressive mental gymnastics in his analysis of the bombing campaigns. Where Harris is the clear villain of the story being described as a psychopath and butcher for his wanton targeting of German cities and their civilian populations, LeMay, employing the same tactics even more ruthlessly, emerges as the hero. Gladwell discusses how LeMay justified his actions and concludes that "it was the responsibility of a military leader to make wars as short as possible." Gladwell argues that LeMay "falls in love with napalm" but that by using those ferocious and brutal tactics the war ends sooner. This is just one example in the book that cries out for a nuanced analysis and an understanding of the levels of grey in the story, but Gladwell sees the issues in only black and white.

The numerous errors and ill-founded generalizations found throughout the text merely serve to confirm that Gladwell was in over his head taking on this topic. He talks about "Royal Air Force general Arthur Harris" rather than using his proper rank; he states that the heavily loaded B-29s "needed a ferocious tailwind to lift off the runway"; he explores the development of aircraft in the First World War with a Snoopy analogy; and he uses the 60-year-old memories of a pilot to explain his point. Napoleon even makes a cameo, as Gladwell opines that the 250-year-old general could ably lead the Allied campaign against the Nazis in Europe with only "one week of training." He is trying too hard to demonstrate a difference in the nature of the fighting in Europe compared to the Pacific.

His book is given a veneer of authority by the group of excellent historians he interviews. Tami Davis Biddle, Conrad Crane, Stephen McFarland and others are experts in the field and have written definitive works on strategic bombing in WWII. They are quoted extensively in the book,

but like the rest of his evidence, Gladwell uses these interviews selectively and in the process loses the nuanced arguments and detailed knowledge these historians demonstrate in their own works.

If you want to learn more about the topic there are other excellent books. At the top of the pile is the recently published *Black Snow: Curtis LeMay, the Firebombing of Tokyo, and the Road to the Atomic Bomb* by Pulitzer Prize finalist James M. Scott.²² It is a well-written and eminently readable book on the same topic as *The Bomber Mafia*, but Scott provides the detail and nuance that is sadly lacking in Gladwell's account. Phil Haun's edited collection of the *Lectures of the Air Corps Tactical School and American Strategic Bombing in World War II* allow you to understand the Bomber Mafia in their own words.²³ Stephen L. McFarland and Wesley Philips Newton's *To Command the Sky*²⁴ provides an excellent discussion of the importance of long-range fighter aircraft for the American daylight bombing campaign, a topic that Gladwell completely ignores. Tami Davis Biddle's *Rhetoric and Reality in Air Warfare* remains the standard for understanding British and American thinking about strategic bombing.²⁵ For an overview of the European bomber war, Conrad Crane, Richard Overy and the official histories should always be consulted.²⁶ For the bombing of Japan, works by Kenneth Werrell, Daniel Schwabe and Barrett Tillman are highly recommended.²⁷

Gladwell's book joins a long tradition of bad and controversial takes about strategic bombing in WWII. In the past, I have explored this topic in some detail with my students. We typically start by viewing the Bomber Command episode of *The Valour and the Horror*, a 1990s National Film Board documentary that infuriated veterans and angered historians. The McKenna brothers opened their episode by stating that:

British High Command knew how few bomber crews would survive and deliberately hid the truth. That's not all that was concealed. The crews and the public were told that the bombing targets were German factories and military installations. In fact, in 1942 a secret plan was adopted. Germany would be crushed through the deliberate annihilation of its civilians.²⁸

This plan was so "secret" that details of the bombing raids could be found in the headlines of Canadian and American newspapers and magazines throughout the war!²⁹ *The Valour and the Horror* spawned a Senate inquiry and numerous books and articles that explored its controversial takes on the strategic-bombing campaign among other Canadian WWII topics like Hong Kong and the Battle of Verrières Ridge.

We also look at the case of the Smithsonian Institute in Washington and the difficulties with its Enola Gay exhibit. Widespread outrage forced the museum to completely rethink the way it presented the famous bomber that dropped the world's first atomic bomb and how that event should be interpreted. A similar situation developed at the Canadian War Museum in Ottawa, where veterans were furious over a panel about the bombing campaign that contained text that they considered to be flawed. At around the same time, the Directorate of History and Heritage released the third volume of its official history of the Royal Canadian Air Force. Its portrayal of the bombing of Germany was also considered flawed by some and generated intense discussions.

These examples are included here to show some of the relatively recent controversies that have been generated as people tried to understand strategic bombing in WWII. It is a complex topic that was central to the Allied war effort against Nazi Germany and Imperial Japan. The attacks on civilian populations were controversial at the time and that view has not changed. Whether one supports strategic bombing and considers it a war-winning tactic or believes that it was a war crime, most will concede that it is a complex and nuanced subject that requires careful and measured study. This review is not the place for a full discussion of the breadth and depth of the debate over the strategic-bombing campaign. Rather, this brief dip into the controversial history of the

study of wartime bombing is included to demonstrate the simplistic and unsophisticated nature of Gladwell's brief foray into the topic. Mark Twain's famous warning to "never let the truth get in the way of a good story" seems particularly apt here.

Gladwell spins an engaging story, but his book fails miserably as history. He describes what happened but is unable to answer or articulate the more important question of why it happened. He cherry-picks his evidence, uses expert commentary out of context and sidesteps a nuanced analysis to arrive at a preordained conclusion that flouts existing historiography on the topic. About the best thing about Gladwell's book is its brevity. I cannot recommend this book to anyone with even a passing interest in the story of strategic bombing in WWII. As an introduction to the topic, it is lacking, and it offers nothing of substance to either generalists or experts in the field.

Mike Bechthold holds a PhD in History from the Australian Defence Force Academy, University of New South Wales, Canberra, Australia, and a Master of Arts and Honours Bachelor of Arts from Wilfrid Laurier University (WLU) in Waterloo, Ontario. Mike is the author or editor of eight books and numerous articles. His most recent monograph is *Flying to Victory: Raymond Collishaw and the Western Desert Campaign* (University of Oklahoma Press, 2017), and he is the co-author of a series of guidebooks about the Canadian battlefields of WWII. He specializes in the fields of military air power (especially tactical air operations in the First and Second World Wars), the Canadian Army in Normandy and Northwest Europe as well as the Canadian Corps in the Great War. Mike is currently teaching courses at WLU and working as a contract historian with the Royal Canadian Air Force History and Heritage office.

NOTES

- 1. Positive reviews have appeared in the *New York Times*, *Wall Street Journal*, *Washington Post* and on the Canadian Broadcasting Corporation (CBC). A positive review of the book also appeared in Volume 11, no. 1 of this journal.
- 2. "Heather's Picks" are books personally selected by Heather Reisman, the company chief executive officer. In 2016, the *Toronto Star* described this as "the Oprah-esque seal (or sticker) of approval that comes with a money-back guarantee and has emerged as a reliable sales driver." Ryan Porter, "How Indigo's Heather Reisman chooses her Heather's Picks," *Toronto Star*, March 19, 2016.
 - 3. Colin Dickey, "Malcolm Gladwell's Fantasy of War from the Air," The New Republic, 4 June 2021.
- 4. Noah Kulwin, "Narrative Napalm: Malcolm Gladwell's Apologia for American Butchery," *The Baffler*, 17 May 2021.
- 5. John Curatola in *Military Review: The Professional Journal of the US Army*, 18 June 2021; David Fedman and Cary Karacas, "When Pop History Bombs: A Response to Malcolm Gladwell's Love Letter to American Air Power," *Los Angeles Review of Books*, 12 June 2021; and Matt Bone, "The Bomber Mafia by Malcom Gladwell," Boney Abroad, 29 April 2021.
- 6. This Twitter thread by historian Alan Allport is just one of many reviews shared by knowledgeable experts online. It is humorous, pithy, devastating and well worth reading.
- 7. Malcolm Gladwell, *The Bomber Mafia: A Dream, a Temptation, and the Longest Night of the Second World War* (New York: Little, Brown and Company, 2021), 5.
 - 8. Gladwell, Bomber Mafia, 71.
 - 9. Gladwell, Bomber Mafia, 7.

- 10. Gladwell, Bomber Mafia, 200.
- 11. Gladwell, Bomber Mafia, 72.
- 12. Frederick Taylor, *Dresden: Tuesday, February 13, 1945* (London: Bloomsbury Publishing, 2004); and Paul Addison and Jeremy A. Crang, eds., *Firestorm: The Bombing of Dresden, 1945* (London: Pimlico, 2006). Addison and Crang edited an excellent collection of essays on Dresden by historians including Hew Strachan, Seb Cox, Tami Davis Biddle and Richard Overy.
 - 13. Gladwell, Bomber Mafia, 73.
 - 14. Gladwell, Bomber Mafia, 74.
 - 15. Gladwell, Bomber Mafia, 74.
- 16. W. Hays Parks, "'Precision' and 'Area' Bombing: Who Did Which, and When?," *Journal of Strategic Studies* 18, no. 1 (1995): 145–74.
 - 17. Gladwell, Bomber Mafia, 178.
 - 18. Gladwell, Bomber Mafia, 195-96.
 - 19. Gladwell, Bomber Mafia, 6.
 - 20. Gladwell, Bomber Mafia, 128.
 - 21. Gladwell, Bomber Mafia, 124.
- 22. James M. Scott, Black Snow: Curtis LeMay, the Firebombing of Tokyo, and the Road to the Atomic Bomb (New York: W.W. Norton, 2022).
- 23. Phil Haun, ed., Lectures of the Air Corps Tactical School and American Strategic Bombing in World War II (Lexington, KY: University Press of Kentucky, 2019).
- 24. Stephen L. McFarland and Wesley Philips Newton, *To Command the Sky: The Battle for Air Superiority over Germany, 1942–1944* (Washington, DC: Smithsonian Institute, 1991).
- 25. Tami Davis Biddle, Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914–1945 (Princeton, NJ: Princeton University Press, 1994).
- 26. Conrad Crane, Bombs, Cities, and Civilians: American Airpower Strategy in World War II (Lawrence, KS: University Press of Kansas, 1993); Richard Overy, The Bombing War: Europe 1930–1945 (London: Penguin Books, 2012); Wesley Frank Craven and James Lea Cate, The Army Air Forces in World War II, 7 vols. (Chicago, IL: The University of Chicago Press, 1948–1958); Charles Webster and Nobel Frankland, The Strategic Air Offensive Against Germany 1939–1945, 4 vols. (London: HMSO, 1961); and Brereton Greenhouse, Stephen J. Harris, William C. Johnston, and William G. P. Rawling, The Crucible of War, 1939–1945: The Official History of the Royal Canadian Air Force, Volume III (Toronto: University of Toronto Press, 1994).
- 27. Kenneth P. Werrell, Blankets of Fire: U.S. Bombers over Japan during World War II (Washington, DC: Smithsonian Institute, 1996); Daniel T. Schwabe, Burning Japan: Air Force Bombing Strategy Change in the Pacific (Potomac Books, 2015); and Barrett Tillman, Whirlwind: The Air War Against Japan, 1942–1945 (New York: Simon and Schuster, 2010).
- 28. The Valour and the Horror, episode 2, "Death by Moonlight: Bomber Command," directed by Brian McKenna, written by Brian McKenna and Terrence McKenna, original release January 1992, (CBC Television and the National Film Board of Canada, 1991). There is also a book version, Merrily Weisbord and Merilyn Simonds Mohr, The Valour and the Horror: The Untold Story of Canadians in the Second World War (Toronto: Harper Collins, 1991).
- 29. For a full discussion of how the media covered Bomber Command raids during the war, see Laurie Peloquin, "A Conspiracy of Silence? The Popular Press and the Strategic Bombing Campaign in Europe," *Canadian Military History* 3, no. 2 (Autumn 1994): 22–30.



HELL TO PAY: OPERATION DOWNFALL AND THE INVASION OF JAPAN, 1945–1947

By D. M. Giangreco

Naval Institute Press, 2017

552 pages

ISBN: 978-1-682-47165-4

Review by Chris Buckham

The last months of the Second World War were characterized by some of the most vicious fighting experienced in the Pacific theatre. Tenacious resistance by Japanese forces on Iwo Jima and Okinawa resulted in the highest casualty rates thus far experienced by United States (US) forces in the Pacific, presaging a struggle for the Japanese home islands that would dwarf all previous battles. Fear of the massive casualties it was anticipated the US would sustain in an invasion of the Japanese home islands, war fatigue among the population and an acknowledgement by US leadership of the continued resistance anticipated from Japanese forces (both civilian and military) led to a decision by President Truman to utilize nuclear weapons in an effort to shock the Japanese into surrender. Ultimately, the two nuclear strikes did prompt the Japanese into accepting unconditional surrender (save for the protection of the emperor from prosecution as a war criminal); however, it also led to future widespread condemnation by some historians and anti-nuclear factions that felt nothing justified the use of these weapons.

D. M. Giangreco's work *Hell to Pay: Operation DOWNFALL and the Invasion of Japan, 1945–1947* looks at the myriad of complex and ethical challenges faced by the US decision makers as they grappled with how to bring the war with Japan to as rapid a close as possible, with a minimum loss of American, Japanese and Allied lives. The book is characterized by a deep and comprehensive analysis and understanding of the planning challenges and political atmosphere within which the senior planning staff operated.

Giangreco has drawn extensively upon the original operational plans of both the US and Japanese for attack and defence as well as primary source intelligence analysis undertaken by both adversaries. Of particular note is his research into and use of what was actually briefed to the decision makers. This is critical, as it speaks to what information they were basing their decisions upon.

The narrative in *Hell to Pay* follows a series of concurrent and mutually supportive tracks:

- An accessible and broad analysis of the international political situation following the close
 of hostilities with Germany. The US, United Kingdom, Soviet Union, Japan, China and
 the Commonwealth all feature prominently in this as the significant remaining players.
 The author looks at the domestic stressors, perceived and real political goals, and what
 capabilities each player has in order to participate in the final engagement with Japan.
- 2. An in-depth review of the situation within Japan itself: what was the domestic political environment like, what were the actual resources that Japan could still draw upon in terms of military forces and their capabilities, what did the Japanese perceive as the possible options for invasion and how were they preparing to respond, what were the Japanese goals in continuing to resist, what were the Japanese operational plans for defence and resistance, what did they anticipate to be the casualties and were they prepared to accept these, and how well prepared were the Japanese for the invasion?

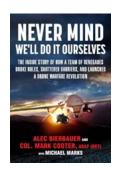
3. A similar but broader and deeper examination of the debate within senior US circles regarding what was the best way to deal with Japan rounds out this interwoven text. Combined with the Japanese perspective, this thread is easily the most engrossing. Again, drawn from predominantly primary source material, it sheds light on the massive undertaking that faced the US both from a personnel as well as materiel perspective. Taking into consideration that the invasion would be far more complex than anything in history (compared with Normandy, which was a "shore-to-shore" invasion with only a short channel crossing, the invasion of Japan would have to be executed and supported exclusively from the sea), the invasion fleet alone was estimated to be over 4,000 ships. The author identifies and discusses the three main options (and the accompanying factors for and against each) available to the Truman Administration: 1) a series of nuclear strikes on designated cities in an effort to shock the Japanese Government into surrender, 2) a siege of Japanese home islands, cutting off all food and resources, thereby driving them into capitulation, and 3) an invasion.

The level of detail and accompanying examination of what information each side had to go on as they struggled with what decisions to take are hallmarks of Giangreco's work. He has approached the subject with the third-person analysis of the consummate historian while adding a degree of humanity and engagement within the text itself. The reader is left with a profound appreciation for the magnitude and complexity of the problem facing the Allies, the degree to which the Japanese were prepared to continue resisting (and their far greater capability to undertake resistance than was previously understood), and the political and societal pressures on Truman that can only be fully appreciated by a society that was suffering between 65,000 and 100,000 casualties per month since June of 1944.

The book concludes with a series of appendices that present the reader with elements of the actual planning documents for Operation (Op) DOWNFALL (invasion of Japan), Op BLACKLIST (occupation of Japan) and the actual G-2 (Intelligence) analysis prepared by both US and Japanese forces during the lead-up to Op DOWNFALL (included in the Japanese portion are post-war interrogation records with key Japanese military commanders and intelligence analysts). Additionally, there is a very detailed notes section and a bibliography.

Anyone who wishes to better appreciate the decision-making environment facing the Japanese and Allied leaders going into 1945 and the struggle to come to the correct conclusion on whether to use the nuclear option must read this book. Whether one is a critic or a supporter of the decision, this work will provide context and information to better help inform the debate positions of each side. Hell to Pay is also an outstanding source book for military logistics professionals as well as naval and air force operators who wish to improve their understanding of a complex operation of this magnitude. It is an excellent work and very strongly endorsed.

Chris Buckham served in the Royal Canadian Air Force (RCAF) as a logistics transport officer for 33 years. Highlights of his career include serving almost 11 years abroad and 5 years with Canadian Special Operations Forces Command as well as assuming the roles of equerry to the Queen and exchange officer with United States European Command. He now works as a project-manager contractor with the RCAF.



NEVER MIND, WE'LL DO IT OURSELVES: THE INSIDE STORY OF HOW A TEAM OF RENEGADES BROKE RULES, SHATTERED BARRIERS, AND LAUNCHED A DRONE WARFARE REVOLUTION

By Alec Bierbauer and Colonel Mark Cooter, USAF (Retired), with Michael Marks

New York: Skyhorse Publishing, 2021 376 pages Print ISBN 978-1-5107-2091-6 e-Book ISBN 978-1-5107-2092-3

Review by Major Rob Butler (Retired)

By now, many of us are comfortable with—or perhaps have operated—one of the many types of uncrewed air vehicles that is prevalent in both military and civilian use in today's skies. The Canadian Armed Forces have even benefited from employing remotely piloted aircraft systems in combat and will certainly do so again. In 2021, few would have argued the authors' assertion that the Predator's introduction was anything short of a revolution in the use of air power. What few of us know is how a small band of brothers pushed on strings and pulled off technical miracles to start the revolution. *Never Mind, Well Do It Ourselves* tells this story.

The story unfolds using the unique perspectives of two mid-level career officers: Alec Bierbauer of the Central Intelligence Agency (CIA) and Major Mark Cooter of the United States Air Force (USAF). The chapters alternate between Bierbauer and Cooter, giving us an immediate sense of how important and intertwined these two organizations were. Although the 9/11 attacks helped solidify momentum on the Predator, the spark of revolution was struck more than a year earlier in a quest to find "actionable intelligence" on Osama bin Laden. Actionable intelligence meant United States eyes on the target and not sole reliance on CIA assets in Afghanistan. At this early point in the story, even ten years out of uniform, I could not help but share the frustration and friction Alec describes in trying to move the bureaucracy beyond its comfort zone of "trolling cocktail parties" and risk aversion for "ambiguous gains."

Although the CIA had been previously involved in experimental aircraft development, including an uncrewed system, the USAF's Predator was easily the better platform. Cooter had experience with the Predator from Operation ALLIED FORCE in Kosovo, so it was a logical choice to lead from the USAF side. As the project moves along, we get a good appreciation of where the Predator was and how its capabilities grew from an in-theatre visual air-surveillance platform to an armed system of systems controlled from half a world away, with intelligence, surveillance and reconnaissance feeds to operations centres at various decision-making points. In what turned out to be a fatal mistake the next year when they failed to take action against bin Laden despite having eyes on him, we see how important it is for the decision makers to keep up with the revolution. In October 2000, the Predator finally achieved eyes on bin Laden, but no one was willing to authorize a shot—this was not primarily a military mission at the time. 9/11 would change the nexus of such calculations and would lead to Hellfire missiles hanging off the Predator's wings.

For those aspiring Royal Canadian Air Force members looking for nuggets of wisdom to guide them in future "string pushing," lessons are found in Bierbauer and Cooter's narrative. A few lessons that I would highlight include the need to bridge stovepipes, knowing and trusting your team's capabilities, the importance of contingency planning, war gaming the decision makers (especially if civilians are in the chain) and knowing how the bureaucracy works (or having someone who does) to get it working for you. Finally, stubborn perseverance can pay off.

Never Mind, We'll Do It Ourselves tells us a success story of individuals that push through adversity to launch a revolutionary leap in air power's reach and persistence. It is a captivating, if at times somewhat Hollywood drama that has lessons about interdepartmental dependence, teambuilding and contingency planning. It is not a tactical study of remotely piloted—aircraft-system operations or an insight into strategic decision-making, but that is what makes it so accessible to those of us uninitiated in this capability. No doubt the book is late to the party, as it was only just published, but that is on the CIA rather than the authors; the CIA refused to sanction the book for 39 months, until legal action forced it to approve the book's publication.

Major Rob Butler is a retired Canadian Armed Forces pilot who served multiple overseas tours, including in Afghanistan. He also served on the Air Staff in the Directorate of Air Requirements and in Strategic Plans. He earned a Bachelor of Military Arts and Science from the Royal Military College of Canada and completed the Command and Staff Course in 2005.



CATCH-22

Miniseries, Hulu TV 6 episodes, original release 2019

Review by Lieutenant-Colonel P. Johnston, CD, PhD

Catch-22 was long considered a classic example of an "unfilmable" novel (a reputation perhaps only reinforced by the uneven 1970 attempt). Hulu's recent miniseries of the same title is a worthy effort that speaks to issues relevant to readers of this journal today. Well acted, interestingly written and lushly produced, the series is well worth watching, not only for viewers in general, but also for those interested in the history of air power.

Joseph Heller's debut novel is often described as anti-war—indeed, anti-military—and those themes are certainly present in the new TV series. But one of this miniseries version's main themes is the psychological toll of combat and what we now call operational stress injuries (OSIs). In fact, the series opens with a dramatic shot of the protagonist gone stark raving mad, screaming and running naked, before flashing back to the beginning and his experiences in training, then working forward chronologically to the point where he snaps.

For anyone unfamiliar with the work, when *Catch-22* came out in the still quite strait-laced America of 1961, it was not the sort of work about the war that was then typical. Surreal, Kafkaesque even, it was critical not just of the horrors of war and the excesses of militarism but also of the very society that had fought the "Good War." The anti-military tone of the work is established early, when the hero, a young bombardier named John "Yo-Yo" Yossarian, and his comrades are subjected to absurd and petty indignities by patently pinheaded instructors, one of whom is actually named "Scheisskopf." That character is played in the TV miniseries by George Clooney, mugging in full-out *O Brother, Where Art Thou?* mode as he berates Yossarian and his fellow trainees.

Escaping such indignities, our heroes are posted to a medium bomber squadron in the Mediterranean theatre, where the surrealism—and horrors—only increases. A young airman killed

on his first mission cannot be checked off the squadron's lists because he never completed checking in, and his bunk space and kit thus sit there untouched. A gung-ho and foolish commander, played with deadpan effectiveness by Kyle Chandler, in hopes of currying favour with the higher command, keeps raising the required number of missions before his aircrew can rotate home. As both the casualties and the surreal inanities mount, Yossarian becomes increasingly unhinged. One of the intriguing features of the TV show is how this tension is visualized on screen by some truly beautiful cinematography of the Italian countryside at the base—particularly glowing golden sunrises—in contrast to the harsh realities of their missions.

The targets of Heller's satirical attacks in his novel are wide ranging, from the absurdities of a military system that mistakenly appoints a hapless and unqualified young man to squadron command simply because his last name happens to be "Major," to medical malingering, to the system for censoring service members' mail, to prying counter-intelligence investigators. But of course, the most famous Kafkaesque absurdity is the titular "catch-22" that has now entered the English idiom.

That catch-22— "the best catch that there is," in the words of the kindly base medical officer—relates to mental fitness, speaks to the book's meditation on psychological themes, but that wasn't Heller's only or even main theme. Among other things, Heller's novel takes shots at class privilege and American economic ideals, the latter addressed through the efforts of Lieutenant Minderbinder, appointed to be the base's mess officer, whose increasingly outrageous schemes to trade for supply items are partly played for comic relief and partly as trenchant criticism of unbridled business interests. The pinnacle of this outrageousness is reached when Minderbinder arranges for a friendly air attack on their own base in return for a fair price from the Germans, explaining that it's all due to market forces.

The TV series includes most of these elements but is far more focused upon the psychological stress issues, perhaps reflecting our modern concern with post-traumatic stress disorder (PTSD) and more openly discussing mental health. Certainly, those are worthy issues for dramatic examination, and it is all too often forgotten just how much combat stress there was associated with the air war, which featured loss rates, bloody injuries and OSIs comparable to those in the infantry.

The great lost opportunity of this TV series is its shying away from attempting the book's infamously non-linear structure. Heller's novel jumps around in time, often looping back to the same incident, revealing more about what happened and giving more insight into these events' effects on Yossarian. The 1970 film hammered that structure out into a straight line, an understandable decision for a movie-length adaptation, but surely a TV series gives the scope to attempt the book's non-linear structure. After all, series like *Castle Rock* and most famously *Lost* have pulled off non-linear timelines.

The ending is intriguingly different from the novel in a way that emphasizes the psychological themes. The book ends with our hero deserting in a run for safe, neutral territory as one of his comrades had managed to do. The TV series ends more ambiguously, suggesting that Yossarian goes insane—while continuing to fly the ever-increasing number of missions. In fact, the show ends with a fade-out of him flying a mission naked and mumbling to himself, apparently a metaphor for his mental state under the strain.

The novel is, of course, if not quite semi-autobiographical, at least informed by Heller's experiences. As a young man in the Second World War, he was a United States Army Air Force (USAAF) bombardier based on the island of Corsica off the west coast of Italy, flying missions in 1944–45. Yossarian is likewise a young wartime USAAF bombardier, supposedly based on the island of Pianosa just off the west coast of Italy—an early clue of the surreal nature of what is to

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follow, as Heller himself slyly noted in the book's foreword that such a small island as Pianosa "could not accommodate all of the actions described." While no records suggest that young Second Lieutenant Heller's airbase on Corsica was ever bombed by his own side as part of a complex deal brokered by their mess officer, he did fly missions to the three targets that feature prominently in the book—Bologna and the Avignon and Ferrara bridges—and survived heavy flak over those targets. For more on the historical background as well as Heller's wartime experiences and how they form the basis for the novel (including some fascinating documents from the time, complete with Heller's name on a crew roster misspelled as "Hellyer"), see the following links:

Catch-22, Joseph Heller and the 340th Bomb Group

Joseph Heller and Catch-22

340th Bombardment Group History

The Story of the Real Catch-22

One final personal note: your reviewer first read *Catch-22* in his youth many years ago, but when I first saw the new series in 2019, I was living in the town of Ferrara in northern Italy (posted to NATO's Deployable Air Command and Control Centre, the DACCC). When the effort to bomb "the Ferrara bridges" came up in the show, my wife and I both exclaimed "Ferrara!" I went back and checked a copy of the novel and, sure enough, while the name had meant nothing to me when I first read it, the novel does indeed name Ferrara—the very town in Italy where we were then living.

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NOTE

1. Check the transliteration of that name in Google Translate.

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