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A VALUABLE TOOL IN THE CRIB: AN ANALYSIS OF CANADA'S NEED FOR A FIGHTER CAPABILITY

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JCSP 43 DL

Exercise *Solo Flight*

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CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 43 DL – PCEMI 43 AD
2017 – 2018

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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Word Count: 2909

Compte de mots: 2909

A Valuable Tool in the Crib: *An Analysis of Canada's Need for a Fighter Capability*

1. INTRODUCTION

The acquisition of a fleet of fighter aircraft is among the most expensive purchases a government can make in any lifetime. The Future Fighter Capability Capital Acquisition Project (FFCP) to replace Canada's aging CF18 fleet is poised to be the most high-priced single government acquisition in Canadian history.[1] Although speculative at this time, a short research of twelve esteemed organisations concludes that the average estimate of its worth hovers around $55 billion in initial upfront costs.[2] This is one of the reasons why, the question of whether Canada needs a fighter fleet is known as a "wicked problem", one that is very difficult to solve, of no definitive formulation and which has constantly changing requirements that are challenging to recognize.[3] It is the opinion of this writer that, at the present time and for the next several decades, Canada cannot afford to operate without its own fighter aircraft fleet due to its need to defend Canada and uphold its military agreements. In this paper, Canada's need for a fighter aircraft will be analysed using policies, agreements, the geopolitical landscape and existing technologies as analysis factors.

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[1] Chase, Steven and Clark, Campbell. "Canada's $9-Billion Jet Fighter Deal Raises Questions", The Globe and Mail, Last Updated 2 May 2018, https://www.theglobeandmail.com/news/politics/canadas-9-billion-jet-fighter-deal-raises-questions/article1212443/

[2] Chase, Steven. "F-35 Costs at Least $10-billion higher than Ottawa Estimates, Expert Says", The Globe and Mail, Last Updated 25 March 2017, https://www.theglobeandmail.com/news/politics/f-35-costs-could-double-over-programs-life-expert-says/article18325378/

[3] Morrison, Val. "Wicked Problems and Public Policy." National Collaborating Centre for Healthy Public Policy, June 2013.

2. POLICIES AND AGREEMENTS

a. The NORAD Commitment

In order to properly analyze Canada's need for a fighter fleet, it is important to first understand its relevant military commitments. In Canada, defending the homeland is an imperative federal government function. Being surrounded by oceans except for one militarily strong neighboring country to the south in the United States (US) with whom a friendly relationship has long been fostered, has naturally shaped Canada's defense strategy to be one that is focused mostly on air capabilities. The North American Aerospace Defense Command (NORAD), created in 1958, is a joint Canada/US organization that shares resources to provide aerospace warning and sovereignty for North America.[4] For Canada, this involves maintaining the capacity to deploy an air strike capability (currently using CF-188 fighter jets from Cold Lake, Alberta and Bagotville, Quebec) to the far edges of its airspace at a moment's notice. This construct has been validated on several occasions in the passed few decades when Russian Air Force assets were intercepted in close proximity of Canada's northern airspace.[5]

b. The NATO Commitment

Besides NORAD, another of Canada's fighter-relevant military commitment is that of the North Atlantic Treaty Organization (NATO). It is an alliance, of which Canada was a founding member in 1949, that functions on the premise of accomplishing the common goal of global stability. Canada has long corroborated with NATO operations around the world and is currently

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[4] NORAD. "About NORAD", http://www.norad.mil/About-NORAD/

[5] Berthiaume, Lee. "Russian Bombers Buzz North American Airspace Ahead of NORAD Anniversary", The Canadian Press, Published 14 May 2018, https://www.ctvnews.ca/world/russian-bombers-buzz-n-american-airspace-ahead-of-norad-anniversary-1.3929004

active in Eastern Europe. In 2014 and 2017, Canada was responsible for monitoring the Baltic countries' airspace as the head of the NATO Baltic Air Policing (BAP) mission and is set to return in 2018. In addition, Canada has recently deployed a battalion in Latvia in order to reinforce the country's defenses in the face of an increasingly antagonistic Russian military. Canada has also recently used its CF18s to contribute towards a global anti-terrorism coalition in Iraq and Syria, during Operation Impact. In these missions, Canada was faced with both conventional and unconventional threats in varying weather conditions. The geographic range and threat diversity faced by the Royal Canadian Air Force (RCAF) as a result of its current commitment to NATO and to global stability requires a functional, all weather, air strike capability. These contributions have helped Canada bolster its alliances with other nations.

c. Canadian Policies

In order to properly analyze Canada's need for a fighter aircraft, it is important to first review its relevant policies. Three main policies guide and shape the contents of the RCAF arsenal: The *Canada First* Defense Strategy, the Canadian aerospace shape doctrine, and Canada's defense policy. Firstly, the *Canada First* Defense Strategy, written in 2007 by the Harper government, aims to keep Canada's military relevant by clearly defining its missions and capabilities required to carry them out. It outlines that Canada must deliver excellence at home by identifying and deterring threats in or approaching its territory. It also defines the Canadian Armed Forces' (CAF) missions as including Arctic, NORAD and major international operations in response to crises.[6] Secondly, the Canadian aerospace shape doctrine, written in 2014 by the CAF, aims to define the delivery of kinetic and non-kinetic aerospace power. It outlines the

[6] Canada. "Canada First Defence Strategy", Department of National Defence, 2008.

demands that must be met, namely an ability to control the air and perform air attacks, for Canada to optimize both agile maneuvering and integrated info ops.[7] Finally, Canada's defense policy, Strong Secure Engaged, written in 2017 by the Trudeau government, aims to offer direction on Canadian defense priorities over the next two decades. It includes continuing with Canada's commitment to NATO and NORAD and tools to ensure troops return home safely from operations.[8] In sum, the main aspects of the three policies are that they call for the need for the defense of Canada, Canada's continued participation in NATO, and an air strike capability.

3. THE GEOPOLITICAL LANDSCAPE

In an analysis of Canada's need for a fighter fleet, it is important to first understand its geopolitical landscape. As we look to the future, "factors such as the rebalancing of powers on the international stage and the increasing influence of non-state actors are leading to a world that is… more complex and unpredictable."[9] Although Canada's relationship with the US is closely tied in trade, security and friendship, this should not be taken for granted as the Trump administration, since coming into power, has already shown a willingness to end much of it. Canada has, for a long time, and will continue to, face a sustained pressure to contribute to the global security burden and, if it wants to retain its privileged middle power position, it will want to ensure it contributes. It will remain important for Canada to remain in good standing among its allies as the Russian, Syrian, Iranian and Chinese threats to global stability continue to mount seemingly every year. In this geopolitical environment, the Canadian Government has stated that

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[7] Canada. "Canadian Forces Aerospace Shape Doctrine", Department of National Defence, 2014, p.11.

[8] Canada. "Strong, Secure, Engaged: Canada's Defence Policy", Department of National Defence, 2017, p.11 & 17.

[9] Canada. "Canada's Place in a Changing Geopolitical Landscape: Leveraging our Comparative Advantage", Last Updated 29 September 2017, http://www.horizons.gc.ca/en/content/canada%E2%80%99s-place-changing-geopolitical-landscape-leveraging-our-comparative-advantage.

"Canada must be… true to its word in that it respects its international obligations..."[10] There is no reason to believe that NATO, for example, will not continue to look to Canada's capacities to accept roles within large strategic missions in conflict zones.

One cannot discuss Canada's geopolitical landscape without also addressing the regional dynamics of the Arctic. The A5: Canada, Denmark, Norway, Russia and the US are the five nations that are lodged in a territorial dispute in this region. Results of a US geological survey published in Science in May 2009 reveals that the Arctic accounts for 13% of the world's undiscovered oil, 30% of its undiscovered natural gas and 20% of its undiscovered natural gas liquids.[11] Moreover, in the past decade, global warming has increased the navigability of northern seaways and "…improved technologies are making oil and gas exploration and extraction increasingly attractive."[12] This, along with the survey results, has sparked an unprecedented rise in claim-laying interest in the region by the A5.

Although the Arctic environment remains inhospitable, Russia, a previously identified threat to global stability, has arguably been the most active in it so far. As part of a northern build-up, with plans to build more, it has recently erected its Nagurskoye base which allows, for the first time, the full-time presence of fighter jets and long-range bombers, that are a veritable threat to Canada, inside the Arctic circle. It is thus in Canada's interest to remain active and present in the north, at the very least, within its *own* northern border in order to bolster northern security in Canada's north and in the Arctic.

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[10] Canada. "Canada's Place in a Changing Geopolitical Landscape: Leveraging our Comparative Advantage", Last Updated 29 September 2017, http://www.horizons.gc.ca/en/content/canada%E2%80%99s-place-changing-geopolitical-landscape-leveraging-our-comparative-advantage.

[11] Gauthier, Donald L., Bird, Kenneth J., Charpentier, Ronald R., Grantz, Arthur, Houseknecht, David W., Klett, Timothy R., Moore, Thomas E., Pitman, Janet K., Schenk, Christopher J., Schuenemeyer, John H., Sorensen, Kai, Tennyson, Marilyn E., Valin, Zenon C. and Wandrey, Craig J. "Assessment of Undiscovered Oil and Gas in the Arctic", Science, 29 May 2009.

[12] Canada. "Canada's North: Overcoming the Challenges to Leverage the Opportunities", Last Updated 29 September 2017, http://www.horizons.gc.ca/en/content/canada%E2%80%99s-north-overcoming-challenges-leverage-opportunities

4. SOLUTIONS

As per its policies and agreements, Canada needs a means to ensure the sovereignty of its vast territory, protect itself from potential threats (ex: Russia, China, Syria, Iran and terrorism) and contribute to global security and diplomacy. Are fighter jets the solution? To the naysayers, and there are many, the arguments against having this capability include the following main claims:

a. They can be replaced by cheaper, less risky technology that has similar capabilities.
b. Canada does not *need* to provide fighters to NATO or NORAD.
d. Manned fighters will be obsolete by ~2035.

First off, yes, a new fighter jet fleet, particularly of at least fifth generation technology, is a very expensive endeavor. In 2014, a University of British Columbia (UBC) Global Politics and International Law professor, Michael Byers, estimated the JSF purchase at $56 billion with a full lifetime bill (to include maintenance, parts and upgrades) of $126 billion[13], a colossal price by any standard. It is doubtful that any other type of replacement technology these days would ever equal, let alone surpass, these costs, which may end-up being considered too high for Canada. However, as in any major capital acquisition, the level of *Industrial and Technological Benefits* (ITB) (minus the companies' offsetting research fees), which attenuates the cost drawbacks, plays an important role in obtaining value for money.[14]

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[13] Chase, Steven. "F-35 Costs at Least $10-billion higher than Ottawa Estimates, Expert Says", The Globe and Mail, Last Updated 25 March 2017, https://www.theglobeandmail.com/news/politics/f-35-costs-could-double-over-programs-life-expert-says/article18325378/

[14] Shimooka, Richard. "The Fourth Dimension: The F-35 Program, Defence Procurement, and the Conservative Government, 2006-2015." Vimy Paper, No. 33, Canada: CDA Institute, 2016, p.6.

To address the argument that other suitable technology could replace fighters in Canada, we will analyze the currently existing technology. These include armed drones, Surface to Air Missiles (SAMs), and electronic and cyber warfare tools; however, these technologies cannot match all of the capabilities offered by fighters. Armed drones, arguably the most popular suggestion, can offer a greater range and, conceivably, offer generally less risk to friendly combat forces than fighters by the simple fact of not carrying a person into a combat zone. However, they are not sufficiently agile to compete with fighters in an air-to-air role and, in an air-to-ground role, they are often considered to be "…less accountable and indiscriminate…"[15]. In May 2017, the US Pentagon had estimated that "more than 350 civilians [had] been killed in US-led drone strikes since 2014, …between 64 and 116 of them happening outside of actively hostile areas."[16] Fighter jets minimize this risk of collateral damage by having a human presence in the battle space promoting more reasoned judgment than a remotely-located pilot who is not immersed in his/her aircraft's environment.

SAMs can also deliver lethal strikes, albeit almost exclusively in a defensive role such as the NORAD mission, but have limited range compared to a fighter. They are also comparatively cumbersome to deploy over large distances (especially the larger models which offer the greatest ranges). This would equate to a less versatile contribution to NATO (due to the need to deploy overseas) than fighters and, for NORAD, having to permanently house and maintain them in remote, extreme weather locations (certainly a costly proposition) in order to account for the response time required to counter a northern attack.

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[15] Rogers, James. "Drone Warfare: The Death of Precision", Bulletin of the Atomic Scientists, Published 12 May 2017, https://thebulletin.org/drone-warfare-death-precision10766?platform=hootsuite

[16] *Ibid.*

Electronic and cyber warfare tools would also provide a much cheaper alternative to fighters as they can deliver devastating strategic blows (especially cyber); however, they lack the assuredness of a kinetic strike and, to a lesser extent, the presence of a physical asset. Inversely, considering the cyber threat posed to Canada by others (for example China and Russia), it is not impossible, as stated in a 2016 Harvard cybersecurity seminar, that advanced aircraft technology "…has failed to protect [aircraft] from cyber-attacks in recent years".[17]

To address the argument that Canada does not *need* to provide fighters to NATO or NORAD, we will analyze the factors affecting Canada's current participation in these two organizations. One could argue, on the grounds that Canada has never been the recipient of any serious attack on its territory and considers the US is an ally, that it therefore does not *need* the protection of NATO or NORAD, at least not to the current extent. Be that as it may, the protection of Canada by others, such as the US, would not come at a small price, was Canada ill-equipped to provide an appreciable amount of its own protection. It only takes one economically ruthless US administration, such as the current one, to "tighten the screw" on the cashing-in of such services rendered. And since it currently takes at least a decade to properly stand up a complex new capability such as a fighter force, such deals would likely be for the longer term. However, providing assets to NORAD and NATO is also an act of diplomacy (a service provided in exchange for others) and one of higher virtue (contributing to world stability). Consequently, does Canada's contribution to these two organizations absolutely need to be in the form of a fighter? Perhaps not, but it would provide a considerable advantage over other options.

[17] Duchamp, Hélène, Bayram, Ibrahim, & Korhani, Ranim. "Cyber-Security, a New Challenge for the Aviation and Automotive Industries", Seminar in Information Systems: Applied Cybersecurity Strategy for Managers, Harvard University, Cambridge USA, 30 June 2016, p.18.

Finally, it has been argued that fighters will be obsolete by ~2035 having been replaced, most notably, by drones. However, the counter-argument to that theory is that manned fighter jets will always allow more opportunity for reasoning and moral judgment during air strikes than any other unmanned air attack solution by the simple fact that it has a "local human in the loop". It is perhaps for this reason that in its "Air Superiority 2030 Flight Plan" the US Air Force (USAF) states that in the next two decades, while new capabilities will be developed, "traditional threat systems [such as fighter aircraft] will continue to evolve and proliferate".[18]

5. CONCLUSION

At the present time and for the next several decades, Canada should strive to continue to operate with a fighter aircraft fleet due to its need to defend the homeland and uphold its military agreements. The geopolitical landscape, with the friendly, militarily strong US neighbour to the south and most plausible threat vectors (ex: Russia and China) originating from overseas including the Arctic circle, Canada should focus its defense primarily on air assets. In order to retain its influence as a middle power, it will also remain important in the decades to come for Canada to remain in good standing among its allies as the threats to global stability continue to mount. As per its current policies, Canada should therefore strive to also continue to uphold its military commitments such as NATO and NORAD.

Many technological solutions for the RCAF, namely fighter jets, armed drones, SAMs and electronic/cyber tools, could potentially achieve Canada's defense and diplomacy goals. Armed drones have a greater range, albeit not by much, than fighters. However, fighters have a moral advantage over drones in that the onboard human presence fosters the potential for more

[18] United States. "Air Superiority 2030 Flight Plan", Enterprise Capability Collaboration Team, May 2016.

reasoned judgment during strikes than drones. SAMs also offer a potent strike capability but cannot offer as much versatility to a NATO operation as fighters can. Furthermore, their lack of mobility compared to aircraft, would require Canada to potentially purchase thousands to cover its borders, an action potentially as costly as, but less versatile than, fighters. Electronic and cyber warfare tools can be a great value for money but lack the assuredness of a kinetic strike. Of all these solutions, fighters are the most versatile in the defense of Canada, the most productive in retaining Canada's influence as a middle power, the least risky in the event of cyber attacks however, also the most expensive. In summary, fighters are the best option for Canada but not at any price. They remain a valuable tool in Canada's defense and diplomacy tool crib, however, ITBs should be a major factor in determining their final validity. A mix of the other capabilities mentioned herein (armed drones, SAMs and electronic and cyber tools) would likely be preferable if the price for fighters was ruled to be too high.

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