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TACTICAL AVIATION: AN OPPORTUNITY FOR CORRECTION

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Service Paper

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AIM

1. The aim of this service paper is to make recommendations to address the aviation gap brought about with the commercial off the shelf (COTS) procurement of the Bell CH-146 Griffon Multirole Utility Helicopter. The Griffon procurement project replaced three platforms, namely the CH-136 Kiowa, the CH-135 Twin Huey and the CH-118 Iroquois. The CH-147 Chinook fleet was divested during the same period. This capability gap has been reduced somewhat with the recent procurement of 15 CH-147F Chinook medium – heavy lift transport helicopters, yet a tactical aviation gap still exists due to the limited lift capability of the CH-146 Griffon.

INTRODUCTION

2. The Department of National Defence (DND) and the Canadian Armed Forces (CAF) have an opportunity to address the aviation gap that exists within tactical aviation with the recently announced Liberal Government's commitment to undertake a comprehensive defence policy review. This review is strongly supported by the McDonald Laurier Institute (MDI) and noted in their statement:

> Canada exists in a dangerous world. Russian adventurism is threatening democratic governments in Eastern Europe. ISIS is terrorizing Iraq and Syria. New threats such as cyber terrorism are emerging. The need for a robust policy has never been more apparent – which is why the Macdonald –Laurier Institute is outlining the steps the government can take to put national defence policy on a strong footing.[1]

[1] Speer, Sean and James Cox, *From a Mandate for Change to a Plan to Govern: A New National Defence Policy for a Dangerous World.* Macdonald-Laurier Institute Publication Commentary January 2016, last accessed 2 February 2016, http://www.macdonald-laurier.ca/files/pdf/MLICommentaryCoxSpeer-01-27_F.pdf

3. These steps include prioritization, proper funding, and fixing procurement. It was these three areas where MDI noted the Canadian Forces Defence Strategy (CFDS) had three major weaknesses as a "how" document: (1) a lack of prioritization, (2) a deteriorating fiscal environment, and (3) delays in the procurement process.[2] It is this last point where this paper will focus attention based on the historical lessons/pitfalls in aviation procurement, the recent procurement of the CH-147F Chinooks and the future requirement to replace the CH-146 Griffon. To this end, the future of air power is defined in the Canadian Forces Aerospace Warfare Centre's study of the future security and operating environments. "Projecting Power: Canada's Air Force 2035", according to Colonel Dabros, former Commanding Officer Canadian Forces Air Warfare Centre (CFAWC), offers a first look at how the Royal Canadian Air Force (RCAF) will be conducting future missions and what capabilities will be required to operate in this environment.[3]

DISCUSSION

4. Canadian Forces doctrine describes the role of tactical aviation as supporting land forces by providing aerial firepower, reconnaissance and mobility.[4] There are four types of helicopter identified to carry out these missions, namely attack, light, utility, and transport. Canada has never had an attack helicopter fleet but did have the CH-136 Kiowa in the observation role, the CH-135 Twin Huey in the army tactical role and the CH-118 Iroquois in the base rescue role and the CH-147 Chinook in the heavy lift role.

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[2] *Ibid.*,

[3] Department of National Defence. *Projecting Power: Canada's Air Force 2035*. Edited by Dr. Andrew Godefroy. (Canadian Forces Aerospace Warfare Centre, Trenton, Ontario. 2009), iv.

[4] B-GA-403-000/FP-001, *Canadian Forces Aerospace Shape Doctrine.* (Canadian Forces Aerospace Warfare Centre, Trenton, Ontario, 2014), 53.

5. The strategy was to fill the light, utility and transport with one single aircraft fleet as a cost saving measure.[5] The CH-146 Griffon procurement project, known as the Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) was approved by Cabinet 7 April 1992 at which time negotiations began with Bell Helicopter Textron Canada (BHTC). The $1.293 billion contract was awarded to BHTC in September to deliver one hundred helicopters. This purpose of the CFUTTH was to acquire helicopters in support of national and international tactical aviation roles.[6] The Bell helicopter was purchased as a single role multi-mission helicopter capable of supporting a majority of the tasks previously undertaken by the fleets it replaced. [7] The operational requirements of the CFUTTH included the tactical lift of troops, logistical lift, reconnaissance and surveillance, direction and control of fire, aeromedical support, casualty evacuation, command and liaison and communications assistance. These mission capabilities are to be employed in support of Defence operational commitments, UN peacekeeping missions, and support to other government departments (OGD) and agencies, including aid to civil power.

6. The procurement strategy made the decision to purchase the CH-146 a controversial one. Criticisms arose, that being the political objectives that prevailed over the standard acquisition protocols. "The west received the TCCS and the LSVW projects in 1991 and 1992 respectively, Quebec received the CH-146, and Ontario the LAV in 1992….This period of Canadian policy entailed a greater emphasis on ensuring the spreading of defence dollars across the regions."[8] Achieving Industrial and Regional Benefits (IRB) has historically however, outweighed the

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[5] Office of the Auditor General, *1998 Report of the Auditor General of Canada,* (Ottawa: Minister of Public Works and Government Services of Canada), April 1998, 15.

[6] Department of National Defence, "Canadian Forces Utility Tactical Transport Helicopter Project,", last accessed 2 February 2016, http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2012-section-iv-status-report-major-crown-transformational-projects.page.

[7] *Ibid.,*

[8] James Fergusson, "In Search of a Strategy: The Evolution of Canadian Defence Industrial and Regional Benefits Policy", Harwood Academic Publishers, Amsterdam, Netherlands, 1996, 124.

statement of requirement resulting in the procurement of equipment that is not ideally suited to provide the operational effect. The controversy originates from reports from the Office of the Auditor General, the media, and military news agencies such as Jane's Defence Weekly.

7. The 1998 Auditor General Report focused on the limitations of the CH-146 in certain roles which included inadequate lift, a limited reconnaissance capability, defensive systems that remained under development and a lack of communication assistance capability. Specifically the report refers to the statement of requirement (SOR) which contained the requirement for the helicopter to have a lift capability of 3,100-pound payload over a distance of 100 kilometers. This was a specific requirement to transport the army's lightweight howitzer.[9] "Because the howitzer actually delivered is heavier, it can be carried only about 25 kilometres instead of 100 kilometres expected."[10] There is a clear lack of lift capability with the Griffon. However, blame should not rest entirely on the performance of the aircraft. The increased weight of the gun was also a significant contributing factor. The counter measure to overcome this deficiency that was implemented was to reduce the fuel on board that would provide the additional lift capability to reach the distance of 25 kilometres. Critics often compare the lift capability and performance of the Griffon to the superior utility helicopter UH-60 Black Hawk, an unequalled comparison of two helicopters which do not fall within the same category. However, from a capability defining perspective, the UH-60 Black Hawk would be of value to consider when conducting the capability analysis, but not necessarily as a solution.

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[9] Office of the Auditor General, *1998 Report of the Auditor General of Canada,* (Ottawa: Minister of Public Works and Government Services of Canada), April 1998, 15.

[10] *Ibid.,* 15.

8. The limited reconnaissance capability, according to military officials is due to limited capabilities as a utility helicopter, the direction and control of fire, and conducting observation operations in a hostile environment. [11] The third major criticism according to the Office of the Auditor General is the defensive systems that were under development at the time of delivery and if there were a sudden deployment, allies would be called upon to fill the gap. When the government announced the procurement of the CH-147F Chinook to deploy to Afghanistan, the RCAF wanted to acquire armed reconnaissance helicopters to accompany them. According to former Chief of the Air Staff, General Lucas, said "the sensing package [for the escort helicopter] is going to…include a long-range, forward-looking infra-red sensor, a low-light day TV camera and an integrated laser rangefinder and designator." [12]

9. The reconnaissance deficiency was realized long before the acquisition of the CH-147F. The decision to replace four platforms with the Griffon meant "tactical aviation had done away with the assets that provided the army with a medium lift and aerial reconnaissance capability."[13] The Canadian Army (CA) and the Royal Canadian Air Force (RCAF) recognized the deficiency and worked on a project to procure a "state-of-the-art Electro-optical Reconnaissance, Surveillance and Target Acquisition (ERSTA) system for the Griffon."[14] This initiative was to "bring the Griffon closer to the original statement of requirement and allow tactical aviation to take an active part in Information Operations and combat functions such as the provision of fire support."[15] With this capability brings about the opportunity for the Griffon to further enhance its utility by arming it. "If the crew of an ERSTA Griffon can acquire, identify and designate a

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[11] Office of the Auditor General, *1998 Report of the Auditor General of Canada,* (Ottawa: Minister of Public Works and Government Services of Canada). April 1998, 16.

[12] Jane's IHS, "Canada wants armed escort helos to protect new Chinooks," lasted accessed 31 January 2016, https://janes.ihs.com/Janes/Display/1154606

[13] Danny Houde, "The CH-146: An Armed Helicopter for the Canadian Army", *The Army Doctrine and Training Bulletin*, Volume 3, No. 4, Winter 2000/Spring 2001, 37.

[14] *Ibid.*, 37.

[15] *Ibid.*

target, the next logical question request from a ground force commander will be 'can you engage the target.'"[16] This forms a central example of the inadequacies of the Griffon and how they were addressed with follow-on enhancements.

10. Houde, a CH-135 Twin Huey helicopter pilot, argues that in order to be effective in the modern battle space, the Land Force must be supported by armed helicopters. Furthermore there are three key issues that would need to be satisfied in order to proceed. These include the type of weapon, the missions the Griffon would complete with this added armament and the finances to support the acquisition.[17] This example further supports the effects the Griffon can provide but how it was not initially equipped to fulfill all the roles of the former helicopter fleet.

11. Optimistic perhaps, the expectation the Griffon could adequately fill all the roles of the four fleets it replaced was in reality, not feasible. Furthermore the cost saving measure to purchase non-military equipment may also not have fulfilled all of the roles and to the same extent as the Griffon's predecessors. The operational history shows how the 100 Griffon fleet has been deployed in various operations since being brought into service in 1995. Domestically, they have been deployed in OP SAGUENAY in 1996 (Saguenay floods) and OP ASSISTANCE (Winnipeg floods) in 1997. Griffons have also been used in two G8 summits (2002 and 2010) and during OP PODIUM, support to the 2010 Vancouver Olympics. Griffons were deployed to the Balkans from 1996 to 1997 and to Haiti in 2004 as part of OP HALO and again in 2010 as part of OP HESTIA in response to the earthquake that struck that area in January 2010. In addition, Griffons have been deployed to Bosnia and Kosovo during OP KINETIC (1999 – 2000) and OP PALADUM (1998 – 2004). Canada has not been limited in its participation of

[16] *Ibid.*
[17] *Ibid.*

expeditionary and domestic operations as a result of obtaining the Griffon, however, its ability to fulfill some of its assigned roles may not be as robust as desired. The Canada First Defence Strategy outlines the requirement for the defence of Canada and in the history of the performance of the Griffon, it demonstrated it has been used extensively to meet the needs of Canada. Yet the expanding trend in military missions however, will underscore the requirement for a robust tactical aviation capability as part of the modern battlefield. Compounding this trend is the excessive procurement timelines that have historically plagued the process in bringing forth new capabilities. In the end, a review of the operational history confirms that a gap existed between what the Griffon could bring to the table as a capability further exacerbated with the disposal of the Chinook fleet in the mid-1990s.

12. With the return of the Chinooks came the requirement for armed reconnaissance helicopters to serve as escorts in Afghanistan. The Chinooks were purchased to insert troops and/or equipment into hostile territory and according to former Chief of the Air Staff, Gen Lucas, the Griffon was selected to provide that capability.[18] In an interview with the Canadian Broadcasting Corporation (CBC), former NORAD Deputy Commander, LGen (retired) Lou Cuppends, stated in a CBC interview "the decision to use the helicopters [Griffon in Afghanistan] was made after careful technical analysis."[19]

> When the discussions took place about Afghanistan it was very quickly determined that when you do the weather analysis, that the aircraft could not carry the same combat load of troops that it could in Canada and land in a temperate climate. But all you do then is, you use more of them to do the same mission.

[18] Jane's IHS, "Canada wants armed escort helos to protect new Chinooks," lasted accessed 31 January 2016, https://janes.ihs.com/Janes/Display/1154606.

[19] Canadian Broadcasting Corporation, "The CH-146 Griffon Helicopter", last accessed 2 February 2016, http://www.cbc.ca/news/canada/the-ch-146-griffon-helicopter

> Looking at operations that we've done elsewhere in the Middle East, with similar aircraft, they all have limitations of some sort and you work with the limitations.[20]

13. The capabilities of the Griffon fleet have not limited or prevented Canada from participating in domestic and/or expeditionary operations however, upgrades and the complications which come with them have confirmed the limited capability of the airframe. The advantages to the single platform reduced the training burden and warehousing of spare parts for multiple fleets as originally intended. However, the procurement process took precedence over meeting the equipment requirements of the CAF. The Griffon has proven its worth as a single platform for multi-role missions but not to the same degree operational requirements would dictate and not without controversy and criticism.

14. The aviation gap has been reduced with the purchase of fifteen Chinook helicopters. Yet the gap can be further reduced with a more robust utility helicopter to replace the Griffon. Possible contenders are listed at Annex B and only provide a starting point for which the analysis would need to consider. Another element, and equally important which will not be addressed in this paper is the consideration of UAVs and the role they play in Intelligence, Surveillance and Reconnaissance (ISR) role. Any analysis that is completed to reduce the tactical aviation gap must include UAVs and the capabilities they bring to the equation.

CONCLUSION

15. The future security and operating environments remain unpredictable and dangerous at best. Canada must adapt and advance its capabilities to defend against threats and define what it wants of its military forces. The government's comprehensive defence review will be the first

[20] *Ibid.*

step in that process. From there, DND will have the opportunity to correct procurement errors that have previously plagued the process and that have resulted in what Fergusson calls Provide the summation of the argument, summarizing the previous discussion before listing the conclusion(s) achieved. The conclusion should closely reflect the problem as laid out in the aim/intro sections.

RECOMMENDATION

16. The DND and CAF should anticipate the government will implement a defence policy by years end that will define the future role of the CAF in the defence of Canada and the role it will play on the world stage. Based on the experience of recent aviation procurement projects that have both succeeded and failed i.e. extended beyond consecutive governments (procurement contracts cancelled with a newly elected government), the CAF should look at the CC-177 and CC-130J procurement projects that have recently delivered platforms and contrast these with the Maritime Helicopter Replacement project, that was initiated in 1986 and has just in the last 12 months started to deliver replacements. Furthermore, a review of the present day controversial F-35 Joint Strike Fighter can also provide information on how to avoid pitfalls and outline a process that is set up for success. The analysis is to define the capability and the degree or extent to which the Government of Canada is willing to fulfill that capability. Only then should a selection be completed to obtain the appropriate platform. The capabilities of the existing aircraft fleet should be included in the analysis (listed at Annex A). As the government seeks to answer "what defence policy will allow Canada to make the biggest difference in the world"[21]

[21] Speer, Sean and James Cox, *From a Mandate for Change to a Plan to Govern: A New National Defence Policy for a Dangerous World.* Macdonald-Laurier Institute Publication Commentary January 2016, last accessed 2 February 2016, http://www.macdonald-laurier.ca/files/pdf/MLICommentaryCoxSpeer-01-27_F.pdf

the DND and CAF must be prepared to contribute its part in what the Minister of National Defence terms the "how part." [22]

Annexes: A. RCAF Inventory of Aircraft Comparison Chart
B. Comparative Capability Chart of Tactical Aviation Helicopters

[22] *Ibid.*

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Annex A to
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Rotary Wing /Fixed Wing	Quantity in the CF	Year put into service	Existing Capabilities within the RCAF Fleet
CH-124 Sea King	27	1963-1969	Surface/subsurface surveillance and control, utility transport and SAR
CH-145 Griffon	85	1995-1997	Utility Transport Tactical Helicopter (UTTH) and SAR
CH-148 Cyclone	28	2015-ongoing	Surface/subsurface surveillance and control, utility transport and SAR
CH-149 Cormorant	14	2001-2003	SAR
CH-147F Chinook	15	2013-2014	Medium to heavy lift, primary mission is tactical transport of personnel and equipment
CF-188 Hornet	77	1982-1988	Air-to-air (air defence, air superiority, combat air patrol) Air-to-ground (CAS, battlefield interdiction) combat
CC-115 Buffalo	6	1967	SAR
CC-130J Hercules	17	2010-2012	Troop transport, tactical airlift, air-to-air refueling, and SAR
CC-138 Twin Otter	4	1970	SAR, transport and support roles
CP-140 Aurora	NA	1980	Long range patrol, anti-submarine warfare and C4ISR platform
CC-144 Challenger	4	1982-1985 and 2002	Long range VIP transport
CC-150 Polaris	5	1992-1993	Passenger, freight or medical transport and air-to-air refuelling
CC-177 Globemaster III	5	2007-2015	Strategic airlift

Source: rcaf-arc.forces.gc.ca

Annex B to
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SPECIFICATIONS	CH-146 GRIFFON	CH-148 CYCLONE	CH-149 CORMORANT	CH-47F CHINOOK
CREW	3 (pilot/co-pilot/flight engineer)	4 (2 pilots, 1 tactical coord, 1 sensor operator)	5 (aircraft comd, 1st officer, flight engineer, 2 x SAR techs	3 (pilot, copilot, flight engineer)
CAPACITY	10 troops or 6 stretchers	6 in mission config, up to 22 in utility config	30 seated troops or 45 standing troops or 16 stretchers with 2 attendants	33 seated troops or 55 standing troops or 24 stretchers with 3 attendants
LENGTH	56 ft 1 in	56 ft 2 in	74 ft 10 in	98 ft 10 in
HEIGHT	15 ft 1 in	18 ft 4 in	21 ft 10 in	NA
EMPTY WEIGHT	6,789 lbs	15,600 lbs	23,148 lbs	22,454 lbs
MAX TAKE OFF WEIGHT	11,900 lbs	28,650 lbs	32,187 lbs	49,092 lbs
POWERPLANT	2 x Pratt & Whitney Canada PT6T-3D Turbo Shaft engine	2 x General Electric CT7-8A7 Turbo Shaft engine	3 x General Electric T700-T6A1 Turbo Shaft engine	2 x Lycoming T55-Ga-714A Turbo Shaft engine
MAXIMUM SPEED	260 km/hr (161 mph, 139 knots)	306 km/hr (190 mph, 165 knots)	309 km/hr (192 mph, 167 knots)	315 km/hr (196 mph, 170 knots)
CRUISE SPEED	220 km/hr (136 mph, 118 knots)	254 km/h (158 mph, 137 knots)	278 km/h (172 mph, 151 knots)	240 km/hr (149 mph, 130 knots)
RANGE	656 km (354 nm, 405 mi)	450 km (245 nm, 280 mil)	1,018 km	741

Source: rcaf-arc.forces.gc.ca and Canadian Defence Matters Helicopters webpage.