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## CH-146 GRIFFON CAPABILITY REPLACEMENT: INFORMED BY THE PAST, PREPARED FOR THE FUTURE?

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**JCSP 42**

***Exercise Solo Flight***

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EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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## **CH-146 GRIFFON CAPABILITY REPLACEMENT: INFORMED BY THE PAST, PREPARED FOR THE FUTURE?**

In 1990 Canada was operating three different aircraft types under the Tactical Aviation banner, all due for replacement or upgrade in the same timeframe. Together these platforms covered three of the four doctrinal tactical helicopter roles: utility transport and reconnaissance, leaving a capability gap in the attack category<sup>1</sup>. The Post-Cold War “peace dividend” put significant pressure on replacement and upgrade programs and fiscal realities led to the fleets being rationalized/replaced by the CH-146 Griffon. With military issues taking a backseat following the Cold War the public took little notice of the patronage-based purchase of the Griffon and the obvious capability gaps that would occur. Unfortunately for the Canadian Land Forces, the choice of the Griffon was a foregone conclusion.

This paper will show how errors made in the rationalization of fleets resulting in the purchase of the Griffon are being repeated as the RCAF is looking forward to the requirements of replacing the Griffon. The paper will also provide recommendations on how these errors can be rectified before another critical capability gap is created.

While many communities rely on capabilities provided by the Griffon, including Search and Rescue (SAR), Combat Support Squadrons (CSS) and the Special Operations Forces (SOF), the limited length of this paper will focus examination on Royal Canadian Air Force (RCAF) support to the Canadian Army (CA) through the provision of tactical helicopter support. This paper will look at the procurement of the Griffon to demonstrate the inability to transform

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<sup>1</sup> Department of National Defence, CFP 311(5), *The Tactical Helicopter Squadron in Battle*, (Ottawa: DND Canada, 1971). 62.

lessons identified by the Griffon purchase into the lessons learned for the Griffon capability replacement. It will also identify errors in the procurement process and discuss the negative effect on capabilities. Next, the paper will discuss current plans for the continuation of Tactical Aviation support through the remaining life of the Griffon and analyze how the Canadian Armed Forces' (CAF) current Force Development model grounded in Capability Based Planning has failed to learn from past errors exposing a continued adherence for one-for-one platform replacement. The paper will conclude by looking at our major defence partner's plans for Tactical Aviation and show how CBP can be successfully applied.

The cost-saving efforts and policy reinventions at the end of the Cold War put focused pressure on the Air Force who had four helicopter fleets in desperate need of costly upgrades or replacement, three of which operated under Tactical Aviation, as well as spending requirements to support the new CF-18 fighter and upgrades to the grey-tail fleets. The fiscal reality forced the RCAF to prioritize its funding and Tactical Aviation requirements were prioritized lower than traditional core Air Power capabilities. Eventually due to denied funding for upgrade or direct replacements, Air Command and Mobile Command jointly agreed that reducing the number of rotary wing fleets was necessary to address funding shortfalls and reduce Operations and Maintenance (O&M) costs as action was urgently needed. In November 1991 a study co-sponsored by ADM(Mat) and Commander Air Command was initiated to explore the cost benefits of replacing all utility helicopter fleets with one aircraft type. The study concluded that doing so would be a cost effective measure,<sup>2</sup> however, it did not consider loss of capabilities. The prioritization of funding within the RCAF without adequate consideration of the loss of Tactical

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<sup>2</sup> Department of National Defence, *UTTH Study Directive*, (Ottawa: DND Canada, 22 Apr 1992)

Aviation capability sets was the first error that occurred in the decision process to rationalize tactical aviation assets.

The misguided prioritization of funding left tactical aviation community with a one fleet option; however, minimal military input was accepted regarding what platform should be used. The politicians had decided to purchase the Griffon before the CAF was able to draft the Statement of Operational Requirement (SOR). In April 1992 when the contract for the Griffon was announced two politically favourable outcomes would occur. First, the cries of favouritism towards Ontario would be silenced following the recent large purchase of armored vehicles built in London, Ontario. As well, the future of the fledgling Bell manufacturing facility would be stabilized<sup>3</sup>. The Defence Minister, Marcel Masse, a minister from Quebec with a history of directing favourable defence contracts to his home province<sup>4</sup> announced an untendered \$1.3 billion dollar contract in April 1992 to be awarded to Bell Helicopter for the production of 100 Bell 412CFs, known to the CAF as the CH-146 Griffon. While it was recognized that a utility helicopter purchased under the Canadian Forces Utility Tactical Helicopter (CFUTTH) project would lack capability in the reconnaissance, firepower and transport missions, the Land Force wished to cover as much of the tactical aviation tasks as possible. As well as traditional air mobility tasks the Commander Force Mobile Command (Land Force Commander) specifically mentioned reconnaissance, fire support coordination, command and liaison and surveillance as important aspects to cover. Even though the CFUTTH Statement of Requirements (SOR) was reverse engineered from the decision to buy the Griffon, it still acknowledged the deficits above

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<sup>3</sup> Sharon Hobson, "Canada's Griffon helicopter purchase brings mixed results", *Jane's Defense Weekly*, Vol 30, No 8, (26 Aug 1998): 30.

<sup>4</sup> Canadian American Strategic Review, "RCAF Utility Tactical Transport Helicopter", accessed 5 May 16, <http://www.casr.ca/101-af-ch146-griffon.htm>.

and accepted that “there would probably not be enough aircraft procured to do all tasks (required by Comd Force Mobile Command)... simultaneously”<sup>5</sup> It was clear that the CFUTTH project would not provide the numbers of aircraft or the capabilities required. The second error therefore occurred when the existing procurement process was ignored in favour of a politically directed, one-for-one platform replacement.

Stove-piped decision making and ignoring established procurement processes resulted in the Auditor General reporting in 1998 that the Griffon was more costly to operate than its predecessors, had inadequate lift performance, and a limited reconnaissance capability<sup>6</sup>. The CFUTTH (SOR) stated “the UTTH has neither the maneuverability of the light observation helicopter nor the single aircraft lift capability of the CH147”.<sup>7</sup> *Helicopters* magazine highlighted that the Griffon was “woefully inadequate”<sup>8</sup> in its ability to conduct troop transport and reconnaissance. Additionally, *Jane’s Defence Weekly* correspondent Sharon Hobson added that the Griffon procurement demonstrated how “too often decisions are made on the basis of short-term political opportunism without a view to the long-term implication for the Canadian Forces and the Canadian Public”.<sup>9</sup> The Griffon is a good utility helicopter; however it is only adequate as a one-for-one replacement for the Hueys. It provided a limited increase in utility capability and was incapable of effectively providing the Land Force with the requested transport, reconnaissance, and firepower. Clearly the Griffon did not cover the capabilities that were provided by the helicopter fleets it replaced, the next section will look at what capabilities were lost through the flawed procurement process.

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<sup>5</sup> *Ibid*, 4.

<sup>6</sup> Sharon Hobson, “Canada’s Griffon helicopter purchase brings mixed results...”, 30.

<sup>7</sup> DND, *CFUTTH SOR*...5.

<sup>8</sup> Paul Dixon, “The Perils of Procurement”, *Helicopters*, (15 May 13): 4.

<sup>9</sup> Sharon Hobson, “Plain talk-Who decides?...”, 36.

The operational requirements for the CFUTTH defined the required tasks as 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.<sup>10</sup> An incredibly tall order for one helicopter that would also be required for SAR and Special Operations support. As Sharon Hobson, points out “One could legitimately argue that in 1992 it should have been clear to the senior brass that the CF might be more frequently used in peace support missions than in air-to-air combat, and that it might be useful to hang onto army transport helicopters.”<sup>11</sup> Indeed the CDS at the time showed awareness of this when he spoke to the Standing Committee on External Affairs and National Defence on 8 Oct 1991:

Part of our new policy was to limit the degree to which we centred our operational capability on the high-intensity battlefield, to adopt a general purpose capability that was much more attuned to sending troops anywhere in the world under the aegis of the United Nations or any other organization.

In defining the capability losses incurred by transitioning from three tactical helicopter fleets to one, the concept of balanced helicopter fleets must first be explored. In RCAF doctrine the role of tactical aviation is to “provide support to the land forces through the provision of aerial firepower, reconnaissance and mobility.”<sup>12</sup> The conduct of these missions has highlighted the enduring requirement for tactical aviation to field helicopters that fall under four categories: utility, transport, reconnaissance and attack. In Canada these capability sets have remained constant since the 1980’s when the four required categories of helicopter were described by Canadian Forces Publication 311(5). Before the Griffon the sole capability deficiency was the

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<sup>10</sup> Treasury Board of Canada Secretariat, “CFUTTH Project Update”, accessed 15 Apr, 16, <https://www.tbs-sct.gc.ca/rpp/2010-2011/inst/dnd/st-ts05-eng.asp#acpt>.

<sup>11</sup> Sharon Hobson, “Plain talk-Who decides?”, *Canadian Naval Review*, Vol 2 No 2, (Summer 2006): 37.

<sup>12</sup> Department of National Defence, B-GA-440/AF-000 *Tactical Helicopter Operations* (Ottawa: DND Canada, 1998). 68.

lack of an attack capability set. Great efforts were made to address this problem through the establishment of an attack helicopter exchange with the US Army and standing invitations for US Army attack assets to participate in Canadian field exercises<sup>13</sup>. An analysis in the *Canadian Air Force Journal* showed that out of nine western liberal democratic countries that share a common military doctrine, force development and operational scope, only Canada does not have a balanced helicopter force consisting of at least one helicopter fleet in each of the categories.<sup>14</sup> Furthermore, the Department of National Defence (DND) publication *Laminar Strike* details how future missions both international and domestic will require a balanced helicopter force if requirements are to be met fully. It argues that response to domestic disasters whether natural or man-made disasters (such as floods, forest fires, and oil spills), are missions that the CAF cannot afford to fail on. Given the distance and time difficulties posed by Canada's immense geography, a balanced helicopter force is a critical enabler.<sup>15</sup> In 2009, Defence Research and Development Canada compiled a technical report looking into the composition of a balanced tactical aviation helicopter force. The report noted that bolting on sensors and weapons to a utility platform is not a substitute for an attack helicopter capability. It recommended "that the Air Force continue to consider the option of a dedicated sense-and-shoot capability provided by purpose designed attack/armed reconnaissance helicopters."<sup>16</sup> The procurement of the Griffon to replace utility,

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<sup>13</sup> Randall Wakelam, "A Fine Mess: How our Tactical Helicopter Force came to be what it is.", *The Canadian Air Force Journal*, (Fall 2008): 50.

<sup>14</sup> Thierry Gongora and Slawomir Wesolkowski, "What does a balanced helicopter force look like: An international comparison", *The Canadian Air Force Journal*, (2008) 13.

<sup>15</sup> Department of National Defence, *Project Laminar Strike: Canada's Air Force Post Op Athena*, (Ottawa: DND Canada, 2011), 29.

<sup>16</sup> David Pugliese, "Rotary Assets", *Esprit de Corps Magazine*, (December 2014): 12.



transport and reconnaissance fleets resulted in a situation where “the CF had lost balance in its tactical aviation capability.”<sup>17</sup>

In achieving “balance” our allies have realized that the sometimes false economies associated with fewer helicopter fleets are outweighed by the realities of modern warfare. In the recent conflict in Afghanistan Griffons were initially considered unsuitable. Only when the Chinooks entered the mix were Griffons accepted in the escort role. However, missions involving increased risk required attack helicopters providing cover before being approved. The increased firepower and enhanced survivability of attack helicopters were deemed critical. The acquisition of the Chinooks through an Urgent Operational Requirement followed by the stand-up of a Chinook squadron in Petawawa acknowledged the limitations of a single fleet. The logic that a single platform could not effectively carry out the tasks that the land forces required was simple. Even though the reintegration of Chinooks have moved Tactical Aviation in the right direction risk remains as evidenced in Afghanistan by the Griffon’s escort speed deficit of over 30 knots compared to the Chinook and the fact that it carries the same weight of firepower. The fragile balance Canada had achieved was lost and troops died in Afghanistan due to the lack of air transport. The arrival of the Chinook was an improvement, however, recent discussions of a repeat of fleet rationalization ignore the high risk of moving further out of balance in favour of cost savings. As was noted by the former Directorate of Land Aviation in 2008: “we have recognized from the earliest days of aviation the need for a balanced and complete suite of

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<sup>17</sup> Department of National Defence, *Project Laminar Strike...*, 26.

aircraft categories and capabilities, we have indeed gotten ourselves into a fine mess.”<sup>18</sup> The initial balance that Canada had achieved in its tactical helicopter force has been lost.

For proponents stating that the future CAF will be more concerned with peace operations it should be clarified that peace operations should not be conducted by utility and/or transport helicopters alone. The Dutch realized this in Srebrenica, Yugoslavia when the Dutch Battalion operating under the United Nations and tasked with the protection of the town was overrun, resulting in the death of 8000 Bosnian male civilians. Requests for close air support were not actioned and the Netherlands Institute for War Documentation report of 2002<sup>19</sup> concluded that lack of an attack capability was a critical deficiency. As can be seen in Dutch expeditionary operations since Yugoslavia, they don’t leave home without Apache attack helicopter support.

The requirement for a balanced force is clear and yet in the case of tactical aviation fleet rationalization the Air Force chose to support a course of action that sidelined Tactical Aviation in favour of the traditional air power roles of deep strike and strategic mobility. This decision went against conventional wisdom and public comments from the CDS, but as it was aligned with a political opportunity the outcry was muted. The close association between tactical aviation and the Army eroded as the Army learned that their battlefield mobility and reconnaissance capabilities would have to be derived from integral ground-based assets. CAF deaths on the roads of Afghanistan would prove the inadequacy of this arrangement.

Having discussed the past errors the current situation will now be looked at. The plan to maintain tactical aviation capability in the coming decades currently hinges on extending the life

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<sup>18</sup> Randall Wakelam, “A Fine Mess: How our Tactical Helicopter Force came to be what it is.”, *The Canadian Air Force Journal*, (Fall 2008): 50.

<sup>19</sup> Netherlands, Netherlands Institute for War Documentation, “Srebrenica Report”. Amsterdam: NIOD Netherlands, 2002.

of the Griffon through the Griffon Limited Life Extension (GLLE) project until a replacement can be fielded under the guise of the Tactical Reconnaissance Utility Helicopter (TRUH) project.<sup>20</sup> While it would have been preferable to complete a mid-life upgrade, the window for that opportunity has come and gone. GLLE would not provide any performance improvements. It would only address the connectivity and obsolescence issue of the avionics and radios in addition to adding digital control of the venerable PT6 power pack. In other words GLLE would allow the Griffon to continue flying until 2030, but not provide any increased capability. The stated aim of the TRUH project is to “acquire a replacement capability for the CH-146 Griffon.”<sup>21</sup> The fact that the aim speaks not to effects or capabilities but rather to directly replace the Griffon shows a lack of thought from the outset and a bias towards a one-for-one replacement. The airframe does not represent the capability; the capability is characterized by the mission sets the Griffon performs. Semantics aside, the TRUH project specifications include the requirement to transport a load of 3500lbs in excess of 100km at a minimum speed of 140 knots.<sup>22</sup> For comparison the original Griffon SOR detailed the requirement to transport 3100 lbs with an hour of fuel. If fuel loads are balanced between the two requirements than the load and distance are approximately the same, only a speed advantage of 18 knots would be gained. If the Twin Huey capabilities (similar useful load, 110kt cruise<sup>23</sup>) are included then the TRUH would provide no improvement in lift capability and only be 30 knots faster. This represents very little progress in the 59 years from the entry of the Twin Huey to the required arrival of the TRUH in 2030. Even if the GLLE and TRUH projects are the best options available moving forward, they

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<sup>20</sup> Tony Skinner, “Canada extends life of Griffon and Cormorant”, *Defence Helicopter* Vol 35 No 1 (Jan/Feb 2016): 4.

<sup>21</sup> Defence Acquisition Guide Website, “Aerospace Systems”, accessed 5 May 16, <http://www.forces.gc.ca/en/business-defence-acquisition-guide/aerospace-systems.page>.

<sup>22</sup> Tony Skinner, “Canada extends life of Griffon and Cormorant...”, 4

<sup>23</sup> Naval Air Systems Command Public Affairs Department, “UH 1N Iroquois Fact File”, [http://www.navy.mil/navydata/fact\\_display.asp?cid=1200&tid=100&ct=1](http://www.navy.mil/navydata/fact_display.asp?cid=1200&tid=100&ct=1).

continue to go unfunded and are officially on hold.<sup>24</sup> The compounding factor is that even if they were approved today delivery of GLLE would not be finished until 2025 and current Griffon support and life expectancy only gets us to 2023. So we already have a two year gap widening every day and the backbone of our tactical aviation fleet will be unable to fly outside Canada past 2020 due to non-compliance with foreign aviation authorities' minimum avionics requirements.<sup>25</sup>

Once again the RCAF has made the decision to prioritize Tactical Aviation funding below traditional core Air Power functions, repeating a critical error that occurred in the CFUTTH project. The inability to prioritize the funds for GLLE and TRUH has resulted in discussion once again of rationalization of CAF helicopter fleets. Covering the capability sets of Maritime, Search and Rescue (SAR) and Tactical Aviation fleets with one helicopter is once again expected to bring savings. BGen Philip Garbutt, director general of Air Force Development commented on plans for Tactical Aviation stating "Fleet rationalization is a priority and we would probably try to get away from fragmenting our rotary-wing assets even further."<sup>26</sup> Proponents of Fleet Rationalization highlight what they see as possible savings in training, maintenance, manpower and support and an overall reduction in duplication of effort.<sup>27</sup> It seems the lessons of the Griffon procurement refuse to be hoisted aboard.

There is a mechanism within the CAF that is intended to avoid procurement missteps such as occurred with the Griffon. As part of General Hillier's 2005 Canadian Forces Transformation, Force Development (FD) was intended to ensure that operational research

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<sup>24</sup> Email from Directorate Air Requirements to the author 12 Apr 16.

<sup>25</sup> Ken Pole, "Griffons-Upgrade and Replace", *Frontline Defence Magazine* Vol 12 No 6, (2015): 4.

<sup>26</sup> Chris Thatcher, "Planning for Power", *Skies Magazine* (20 Apr 16): 8.

<sup>27</sup> G. Bristow, "Helicopter Commonality Benefits" (Command and Staff College paper, Canadian Forces College, 1987), 14.

played a pivotal role in high-level decision making, including procurement. The basis of FD is the Capability Based Planning (CBP) process. CBP is an analytical process that provides an objective assessment of capability adequacies and deficiencies to decision-makers. CBP does not begin with a desire to rationalize fleets or save money. CBP begins with consideration of the Future Security Environment (FSE) and Strategic Direction which inform FD scenarios that are evaluated for required force elements and capabilities<sup>28</sup> as shown in Fig 1 below. Fig 1 also displays the relationship between the three main phases of CBP, namely Initiation, Assessment and Integration. Initiation involves strategic direction and analysis including stakeholder input on a framework, FD scenarios, force elements and capabilities. Assessment is based on an examination of the approved FD scenarios as a professional judgement activity in order to provide a report for senior leadership to consider. Integration looks at the Future Force options as steered by senior direction in order to provide viable courses of action that will achieve the FF vision within the limits imposed by internal and external limitations.<sup>29</sup>

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<sup>28</sup> Department of National Defence, *Capability Based Planning Handbook*, (Ottawa: DND Canada, 2014), 16.

<sup>29</sup> Department of National Defence, *Capability Based Planning Handbook...*, 2.

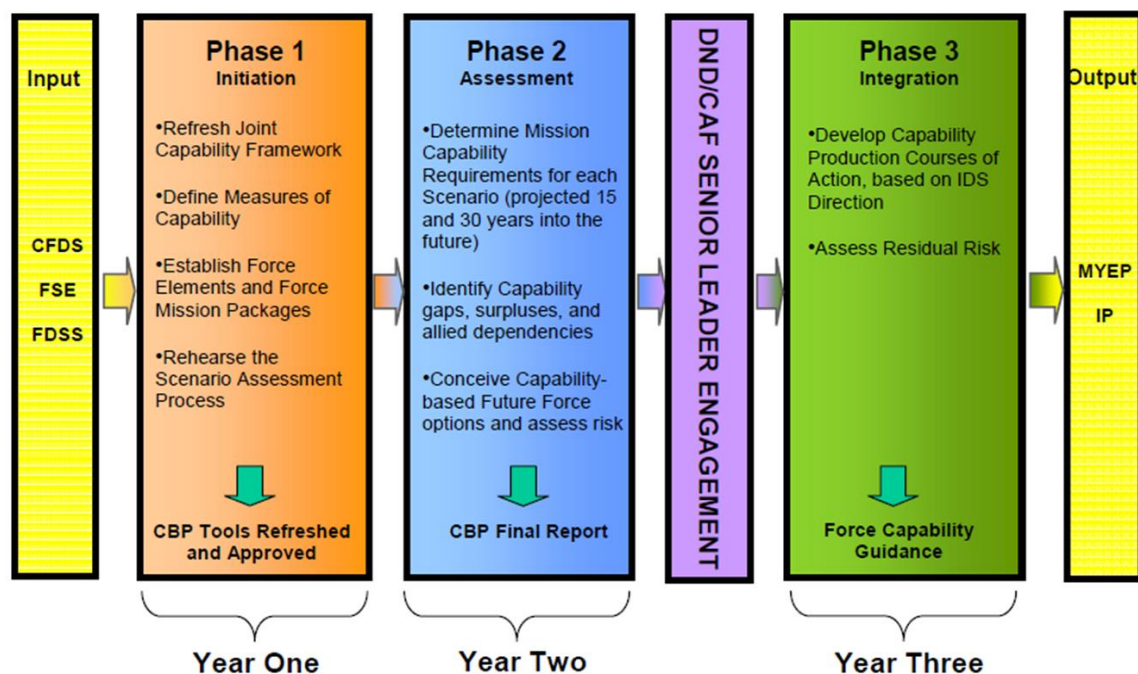


Fig 1 The CBP Process

Source: CBP Handbook, 15.

In applying CBP to the problem of what capabilities Tactical Aviation needs to provide the Army it is clear to see that one-for-one replacement of the Griffon will not address future requirements. Although CBP is designed to address the requirement to “expect the unexpected and imagine a future very different from the current state”<sup>30</sup> the reality is that fiscal pressures and political interference continue to corrupt the process. For Tactical Aviation a CBP process was commenced that resulted in the Capability Development Record (Tactical Aviation) co-written by 1 Wing of the RCAF and Directorate Army Doctrine. This Capability Development Record (CDR) was formally an Army document that took its strategic guidance from the Canada First Defence Strategy and applied FSE analysis as outlined in *Designing Canada’s Army of*

<sup>30</sup> Natalie J. Webb, A. Richter, and D. Bonsper. “Linking Defense Planning and Resource Decisions: A Return to Systems Thinking.” *Defense & Security Analysis* 26, no. 4 (December 2010): 390.

*Tomorrow*. The conclusions stated that support and transport concepts will rely more heavily on aerial options<sup>31</sup> and that enhanced airmobile insertion and helicopter airborne command and control capabilities are required to “deny the enemy options to effectively hold ground or disperse before our more conventional close combat capabilities have been able to engage.”<sup>32</sup> The CDR states that “it is imperative that the Air Force capability development process takes appropriate steps to ensure that the Tactical Aviation requirements of the Future Army will continue to be addressed” and “[t]he tactical aviation force must be properly equipped and available to train with the land forces, with all of its doctrinal capabilities in the areas of mobility, reconnaissance and firepower.”<sup>33</sup> Clearly the mere replacement of current utility helicopter capabilities will not address these basic principles. The Army’s CDR also identifies areas where Tactical Aviation FD should be focused beyond the current capabilities provided by today’s utility and medium-lift platforms. The first three areas of FD requirement as identified in the CDR are heavily technology/network dependent and address specific weaknesses of current platforms. The first area is Communications, where Tactical Aviation is required to be completely interoperable with the Army and be able to provide communications support. The second area is Positional Awareness and Common Operating Picture (COP), where Tactical Aviation is expected to maintain a consistent joint COP. The third area is Connectivity, where Tactical Aviation is required to facilitate the transfer of data and maintain interoperability with Army weapon systems, specifically information must be passed in a timely and seamless manner to enable the firepower network. The fourth area identified is Precision Firepower, Tactical

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<sup>31</sup> Department of National Defence, B-GL-300-000/AG-001 *Designing Canada’s Army of Tomorrow*, (Ottawa: DND Canada 2011), 62.

<sup>32</sup> Department of National Defence, B-GL-300-000/AG-001 *Designing Canada’s Army...*, 81.

<sup>33</sup> Department of National Defence, COS Land Strat, *Capability Development Record (Tactical Aviation)* (Ottawa: DND Canada 2012): 15.

Aviation is requested to provide precision firepower beyond the range of what can currently be accomplished with a crew-served heavy machine gun. Additionally, Future Army FD scenario war gaming activities noted that the effect that an armed helicopter could provide in future conflicts was limited compared to the decisive capability of an attack helicopter. The final area identified was Forward Aeromedical Evacuation (Fwd AE) Support, where the Army has highlighted the deficiencies of using a utility helicopter to evacuate casualties. Adequate Fwd AE requires specialized equipment and trained personnel<sup>34</sup> in addition to increased range, speed, and lift over current utility rotorcraft. The 2012 CDR was comprehensive and acceptable to both the Army and the Air Force at the time. A letter from Chief of the Army LGen Devlin to the RCAF Chief details “with your concurrence, the CDR should serve as the authoritative reference that articulates Army requirements for tactical aviation.”<sup>35</sup> In his response, LGen Blondin replies “I am endorsing your CDR, which will now be used by the RCAF as the document articulating Army requirements for Tac Avn during future Force Development work.”<sup>36</sup> The question remains, therefore, why the TRUH project does not directly address key requirements from the CDR. The project does not focus on future technologies for networking, COP and communications. It does not detail even a robust armed capability, notwithstanding the benefits of an actual attack helicopter. Finally, TRUH does not address the Fwd AE requirement as the requirements for speed, lift and range are inadequate. So where did the process go wrong?

As suggested by the project aim, the TRUH is primarily concerned with a one-for-one Griffon replacement. Once again the procurement process is being circumvented as it was for the CFUTTH project. To understand where problems may have occurred it is useful to understand

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<sup>34</sup> Department of National Defence, COS Land Strat, *Capability Development Record...*, 17.

<sup>35</sup> Peter Develin, Letter to RCAF Commander, “Army Requirement for Tactical Aviation”, 13 Apr 2012.

<sup>36</sup> Yvan Blondin, Letter to Commander of the Army, “Endorsement of CDR on Tactical Aviation”, 7 May 2013.



the context of where the CBP process is being conducted. While the intent is for FD to be driven by the Chief of FD (CFD) in reality each of the services conducts its own process with outputs and inputs coordinated by CFD. In this case although the depth of work was conducted in Directorate Army Doctrine the CDR only served to inform the RCAF process that was occurring in the RCAF FD shop without dedicated Army staff representation. The document's importance was minimized by the RCAF's traditional Air Power lens. Looking at *Air Force Vectors*, the latest version of RCAF strategic guidance developed by the Director General Air Force Development, it is clear that Tactical Aviation is not seen as a core capability by the RCAF. The RCAF's own doctrine may detail that Tactical Aviation delivers firepower, reconnaissance, and mobility to the Army<sup>37</sup>, however *Air Force Vectors* states that Tactical Aviation assets (as a capability of the Air Force) deliver only battlefield mobility. Air Force firepower is delivered by fighters and Reconnaissance by Long Range Patrol in support of an Air Component Commander.<sup>38</sup> Since the lines of operation of the Air Force CBP, developed during the assessment phase, do not recognize Tactical Aviation as a core function the importance of Tactical Aviation to the basic force elements of the RCAF was minimized. Another factor that could have contributed to CBP misdirection is the requirement for the application of professional judgement in the analysis portion of CBP. As the *CBP Planning Handbook* mentions, it is easier to follow the prejudices and preferences of one's service than to consider different perspectives.<sup>39</sup> When cost is analyzed compared to relative value, as per the CBP Strategic

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<sup>37</sup> Department of National Defence, B-GA-440/AF-000 *Tactical Helicopter Operations* (Ottawa: DND Canada, 1998).

<sup>38</sup> Department of National Defence, Directorate of Air Force Development, *Air Force Vectors*, (Ottawa: Canada DND 2014): 9.

<sup>39</sup> Department of National Defence, *Capability Based Planning Handbook...*, 10.

Costing Model<sup>40</sup>, the RCAF would have prioritized core functions against assets designated for Army support, again the traditional Air Power lens would have coloured the result. Finally, it is worth noting that Canada's continental defence partnership, NORAD, has a strong say in FD. The Commander has the ability to "directly influence assessments and recommendations" regarding FD at the highest levels and will always favour RCAF development that relates to core RCAF Act operational functions, namely fighters over choppers. While the endorsed CDR stated that "it is imperative that the Air Force capability development process takes appropriate steps to ensure that the tactical aviation requirements of the Future Army will continue to be addressed", it seems that it has not had an effective impact on the outcome of RCAF FD in this case.

Next the efforts of our main ally will be examined as the tactical aviation community is watching closely while the future aviation capabilities of the United States Army are explored through the Joint Multi Role (JMR) rotorcraft technology demonstration to be followed by the Future Vertical Lift (FVL) program. It has been recognized that US Army Aviation has depended on three main platforms since the Huey series helicopters became obsolete after Vietnam War. The Blackhawk, Chinook and Apache have seen numerous increases in capability since their introduction, however they are reaching design limitations based on the traditional understanding of the properties of rotorcraft. The result is an acknowledgement that lack of capability is having an adverse effect on mission success accentuated by the loss of 400 aircraft and 600 lives in Afghanistan and Iraq, mostly due to platform limitations.<sup>41</sup> The USA realized that it lost troops in contemporary conflicts because its current broad suite of tactical aviation helicopters was inadequate, going further to say that the future of rotorcraft is not in conventional

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<sup>40</sup> Andrew Blakeney, Billyard, L. Kerzner, B. Solomon, and P. Chouinard. "Operational Research Tools Supporting the Force Development Process for the Canadian Forces." *Information & Security* 23, no. 1 (2009): 92.

<sup>41</sup> James Drew, "FVL initiative key to rotary renewal", *Flight International*, (15-21 Mar 2016): 19.

designs. Acknowledging this, Bell Helicopter has said that it will not offer another traditional helicopter to the US military once the current production runs of the Huey and Cobra are complete.<sup>42</sup> Instead of looking at platform replacement the USA is examining required capabilities and maintaining a positive conversation with industry, including the incorporation of technological feedback in program design.

As a goal for FVL, the US Army is looking for future rotorcraft that could be introduced in the 2030s with improved range, speed, and endurance over current systems. Also being emphasized is lower maintenance and operating costs and a comparable or reduced logistical footprint. The aircraft should demonstrate improved survivability and lethality, be able to team with unmanned assets in a networked environment. FVL has benefitted greatly from the only airpower project larger in scope, the Joint Strike Fighter (JSF), which has offered many FD lessons. The F-35 was envisioned to replace the F/A and EA-18, F-16, A-10 and the Harrier with a common platform. The complexity in making one aircraft type perform so many missions has been a main factor in why the budget has ballooned from \$200 billion to over \$400 billion.<sup>43</sup> The intent for FVL is not one of fleet rationalization as the capabilities of the Apache, Black Hawk, Chinook, and Kiowa Warrior will be replaced with four “capability sets”: light, medium, heavy and ultra-heavy. Ultra-heavy would see rotorcraft being scaled up to the size of a Hercules or A400M. The first capability sets to be developed will be the medium utility and medium attack with a combat radius of 229-450nm, cruise speed from 230-310 knots, internal payloads of 3500-

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<sup>42</sup> *Ibid.*

<sup>43</sup> Zachary Cohen, CNN Politics, “Operational Cost of the JSF”, 16 July 2015, accessed 20 Apr 16, <http://www.cnn.com/2015/07/16/politics/f-35-jsf-operational-costs/>.

4000 lbs and external payloads of 6000-8000 lbs.<sup>44</sup> The current technology demonstrators are from Bell and Boeing/Sikorsky. Bell will offer the V-280 Valor tiltrotor concept derived from the V22 Osprey, the main improvements would be simplicity of design and reduction in manufacture costs. Boeing/Sikorsky is offering the SB-1 Defiant, a coaxial compound helicopter based on Sikorsky's successful X2 demonstrator which achieved a speed of 260 knots in flight-testing and won the Collier trophy for achievement in aeronautics. In developing FVL the United States Army was fulfilling the first objective of the 2010 Quadrennial Defense Review: "to further rebalance the capabilities of America's Armed Forces to prevail in today's wars, while building the capabilities needed to deal with future threats."<sup>45</sup> This objective is equally applicable in Canada; however, the difference is that the US investigation is relatively free from political interference at this stage, demonstrating the American understanding of the process. In this way a plan based on capabilities can continue to develop without interference. The FVL project acknowledges that to be ready for future requirements a flexible aircraft that can demonstrate greatly increased capability is the best answer for the future Armed Forces.

The CBP process is a valuable tool in evaluating required future capabilities for the CAF. It is however, limited, by its dependence on various levels of political exposure and support from individual services as a champion of each capability. If the planned capability is owned by one service and used by another then the process does not adequately represent the user as a key stakeholder and the issues seen with the CFUTTH and TRUH result. It is not enough to replace a helicopter with a helicopter; the CAF must replace a capability with a capability while

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<sup>44</sup> James Drew, "US Army begins industry survey for Future Vertical Lift", *Flight Global Magazine*, 23 Feb 16, accessed 22 Apr 16, <https://www.flightglobal.com/news/articles/us-army-begins-industry-survey-for-future-vertical-lift-422310/>.

<sup>45</sup> Natalie J. Webb, A. Richter, and D. Bonsper. "Linking Defense Planning...", 388.

recognizing that a balanced tactical aviation force is key to future flexibility and effectiveness. A measure of accountability is required for cross-service projects as the current arrangement is inadequate. The Griffon has critical obsolescence issues that will prevent full employment in the coming years. A life extension should be initiated immediately that addresses the most critical aspects, namely replacing the unsupported Central Display Unit and providing an updated transponder to meet the basic requirements of Federal Aviation Administration for flight in the United States. While a glass cockpit and digital engine control would be nice to have they would provide no tangible increase in capability. Additionally, integration with NVG and flying in the tactical environment would be problematic and time-consuming. At the same time a fulsome CBP process should be completed with full and continued input from the Army to ensure that this cross-service capability adequately addresses the requirements stated in the CDR. There is no reason to believe that when the Griffon is retired the capability replacement should look and smell the same as the Griffon. The FSE clearly identifies that future will look very different from today. Leveraging the ongoing CBP efforts of the US Army in their quest to define FVL will go a long way to helping the CAF understand the possibilities for the future of Tactical Aviation. If the CAF can conceptualize the future fighter aircraft project's aim purely in terms of capability without mention of even buying an aircraft as a replacement<sup>46</sup> then surely the future of Tactical Aviation and the RCAF's largest fleet deserves a similar level of rigour in planning and a truly enabled CBP cycle. The Army and all Canadians deserve no less.

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<sup>46</sup> Future Fighter Project Aim: "to provide a capability to the Canadian Armed Forces (CAF) to conduct control of Canadian Airspace and contribute to Alliance/Coalition operations where/when directed after the retirement of the CF-188 currently planned for the 2020 timeframe." Defence Acquisition Guide Website, Aerospace Systems, accessed 5 May 16, <http://www.forces.gc.ca/en/business-defence-acquisition-guide/aerospace-systems.page>.

## BIBLIOGRAPHY

- Blakeney, A. Billyard, L. Kerzner, B. Solomon, and P. Chouinard. “Operational Research Tools Supporting the Force Development Process for the Canadian Forces.” *Information & Security* 23, no. 1 (2009).
- Blondin Y, Letter to Commander of the Army, “Endorsement of CDR on Tactical Aviation”, 7 May 2013.
- Bristow G, “Helicopter Commonality Benefits” (Command and Staff College paper, Canadian Forces College, 1987).
- Canada, Defence Acquisition Guide Website, “Aerospace Systems”, accessed 5 May 16, <http://www.forces.gc.ca/en/business-defence-acquisition-guide/aerospace-systems.page>.
- Canada, Department of National Defence, B-GA-440/AF-000 *Tactical Helicopter Operations* (Ottawa: DND Canada, 1998).
- Canada, Department of National Defence, B-GL-300-000/AG-001 *Designing Canada’s Army of Tomorrow*, (Ottawa: DND Canada 2011).
- Canada, Department of National Defence, *Capability Based Planning Handbook*, (Ottawa: DND Canada, 2014).
- Canada, Department of National Defence, CFP 311(5), *The Tactical Helicopter Squadron in Battle*, (Ottawa: DND Canada, 1971).
- Canada, Department of National Defence. *CFUTTH SOR*. (Ottawa: DND Canada, 21 Apr 1993).
- Canada, Department of National Defence, COS Land Strat, *Capability Development Record (Tactical Aviation)* (Ottawa: DND Canada 2012).
- Canada, Department of National Defence, Directorate of Air Force Development, *Air Force Vectors*, (Ottawa: Canada DND 2014).
- Canada, Department of National Defence, *Project Laminar Strike: Canada’s Air Force Post Op Athena*, (Ottawa: DND Canada, 2011).
- Canada, Department of National Defence, *UTTH Study Directive*, (Ottawa: DND Canada, 22 Apr 1992).
- Canadian American Strategic Review, “RCAF Utility Tactical Transport Helicopter”, accessed 5 May 16, <http://www.casr.ca/101-af-ch146-griffon.htm>.
- Canada, Treasury Board of Canada Secretariat, “CFUTTH Project Update”, accessed 15 Apr, 16, <https://www.tbs-sct.gc.ca/rpp/2010-2011/inst/dnd/st-ts05-eng.asp#acpt>.

Cohen Z, CNN Politics, “Operational Cost of the JSF”, 16 July 2015, accessed 20 Apr 16, <http://www.cnn.com/2015/07/16/politics/f-35-jsf-operational-costs/>.

Develin P, Letter to RCAF Commander, “Army Requirement for Tactical Aviation”, 13 Apr 2012.

Dixon P, “The Perils of Procurement”, *Helicopters*, (15 May 13).

Drew J, “FVL initiative key to rotary renewal”, *Flight International*, (15-21 Mar 2016).

Drew J, “US Army begins industry survey for Future Vertical Lift”, *Flight Global Magazine*, 23 Feb 16, accessed 22 Apr 16, <https://www.flightglobal.com/news/articles/us-army-begins-industry-survey-for-future-vertical-lift-422310/>.

Gongora T and Slawomir Wesolkowski, “What does a balanced helicopter force look like: An international comparison”, *The Canadian Air Force Journal*, (2008).

Hobson S, “Canada’s Griffon helicopter purchase brings mixed results”, *Jane’s Defense Weekly*, Vol 30, No 8, (26 Aug 1998).

Hobson S, “Plain talk-Who decides?”, *Canadian Naval Review*, Vol 2 No 2, (Summer 2006).

Naval Air Systems Command Public Affairs Department, “UH 1N Iroquois Fact File”, [http://www.navy.mil/navydata/fact\\_display.asp?cid=1200&tid=100&ct=1](http://www.navy.mil/navydata/fact_display.asp?cid=1200&tid=100&ct=1).

Netherlands, Netherlands Institute for War Documentation, “Srebrenica Report”. Amsterdam: NIOD Netherlands, 2002.

Pole K, “Griffons-Upgrade and Replace”, *Frontline Defence Magazine* Vol 12 No 6, (2015).

Pugliese D, “Rotary Assets”, *Esprit de Corps Magazine*, (December 2014).

Skinner T, “Canada extends life of Griffon and Cormorant”, *Defence Helicopter* Vol 35 No 1 (Jan/Feb 2016).

Thatcher C, “Planning for Power”, *Skies Magazine* (20 Apr 16).

Wakelam R, “A Fine Mess: How our Tactical Helicopter Force came to be what it is.”, *The Canadian Air Force Journal*, (Fall 2008).

Webb NJ, A. Richter, and D. Bonsper. “Linking Defense Planning and Resource Decisions: A Return to Systems Thinking.” *Defense & Security Analysis* 26, no. 4 (December 2010).