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PREPARING TO FIGHT THE LAST AIR WAR: WHY CANADIAN PROCUREMENT POLICY LEAVES THE RCAF BEHIND

Major Stephen Mullins

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INTRODUCTION

At the end of the Cold War a significant number of defence analysts and political pundits foresaw a world free of significant wars and where the leading powers would cooperate to mitigate conflicts; they were wrong! Economic cooperation has resulted in a Globalized economy where trade pacts have become the economic norm but this has also resulted in a significant number of failed states and left global supply chains vulnerable to regional security issues. As a result, Canada has often tasked its military to deploy into these regions to help create a more stabilized environment. Unfortunately, since the breakup of the Warsaw Pact in the early 90s, there has been significant disparity between Canada's Defence White Papers' security objectives and the resources provided to the Canadian Armed Forces (CAF) to achieve those objectives. Instead of the Defence budget increasing over time, or even keeping up with inflation, the purchasing power of the current Defence budget, with the exception of some injection during the Afghan War, continued to decline until 2017[1]. This reduced spending capacity, has seriously limited which and how many resources the CAF has been able to acquire. Additionally, according to Auger's analysis "while many defence products have been acquired in a timely and efficient manner, some high-profile defence procurement projects have faced delays … and raised concerns about the overall efficiency and effectiveness of the defence procurement"[2]. The Royal Canadian Air Force (RCAF) has found it challenging as an increasing number of adversaries have better, and more modern equipment and interoperability with allies has become more constrained by our lack of capability.

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[1] Berthiaume, Canada Military Spending by the Numbers, Ottawa Citizen, 03 Sep 2015

[2] Auger. The Evolution of Defence Procurement in Canada. Parliamentary Information and Research Service, 2016.

As with any air force, timing is a crucial component underpinning how the RCAF operates and how successful it will ultimately become. Timing has several relevant applications within the RCAF, including the management of aircraft packages that can involve over one hundred aircraft. And yet, despite these clear temporal necessities, there is probably no more important timing factor required for RCAF combat success than that of procurement. RCAF training and education is second to none, thus the only thing holding us back is our equipment and the speed with which it is procured. This is a significant constraint that reduces RCAF capabilities and forces us to rely overly on allied nations, and the reason is the bureaucratic procurement process. As with most Western nations, Canada has been focused on counter-terrorism roles and homeland defence since the 2001 bombings on the New York World Trade towers. While this was occurring in the West, China and Russia have spent the last two decades preparing for peer-level conflicts. Additionally, near-peer nations, such as Syria and Iran, have not only increased development of their national defence industries but have also completed significant acquisitions of technologically advanced weapons systems[3].

This paper will demonstrate that the current duration for RCAF Capital Acquisitions under the current military procurement system will inhibit RCAF combat success against peer and near-peer adversaries in future conflicts. While a full assessment of Canada's procurement process is outside the scope of this paper, we will compare and contrast Canada's procurement timeline with those of select allies (United Kingdom and Australia) and adversaries to assess whether the current procurement timeline is sustainable.

[3] Gunzinger, Cohn, Towards a Tier 1 RAF, Center for Strategic and Budgetary Assessments, 2019, p3.

CANADIAN MILITARY PROCUREMENT TIMELINE

Canada's current procurement process makes it difficult for us to be competitive due to the length of time it takes to acquire, test, develop the related procedures, train and finally achieve FOC. Strong, Secure, Engaged (SSE) identified the need to streamline the current process for larger risk acquisitions[4] and PSPC is working with both DND and Treasury Board (TB) however Figure 1 illustrates the acquisition process used by DND:

Figure 1: DND Acquisition Phases for Capital Projects

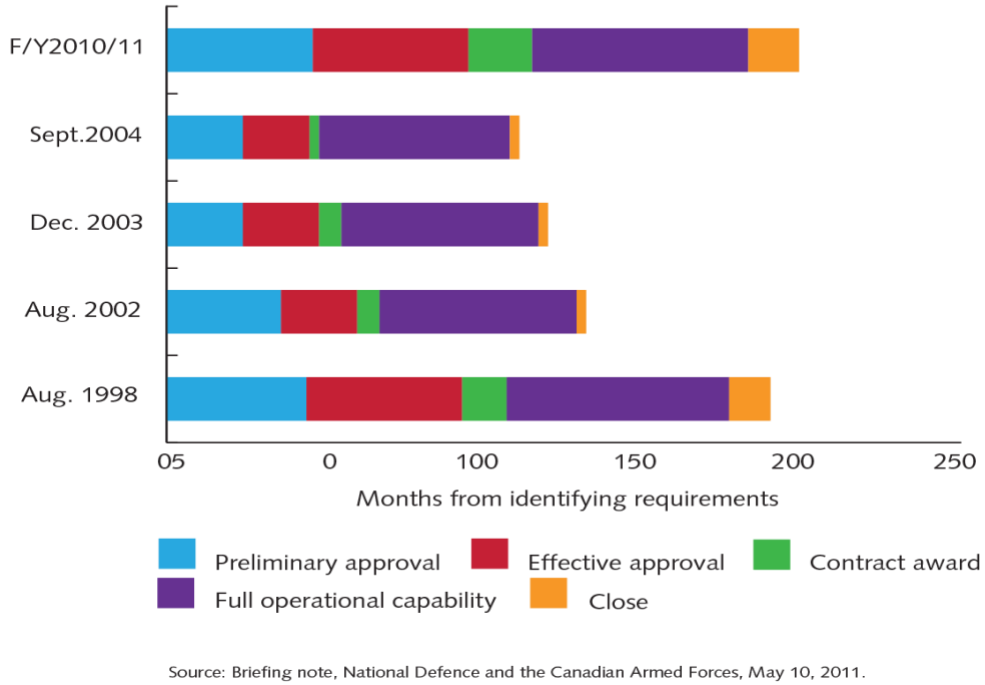
Source: DND Project Approval Guide, 2008/Samson and Associates, PWGSC 2013

Within this process, it is the first three phases where most of the acquisition timeline occurs[5]. During the Identification phase, a Statement of Capability Deficiency (SOCD) is used to identify a gap in military capability related to policy generated by government. The second phase, Options Analysis, consists of a complete analysis of all available options. Detailed estimates are completed for each option. Proceeding to the next phase requires approval from both the Minister for Defence and TB authorization. During the third phase, Definition, results in a finalized version of the SOR, a costing estimate for the favoured option and Project Approval.

[4] Canada, DND. Strong, Secure, Engaged: Canada's Defence Policy, 2017
[5] Canada, DND. Defence Procurement Strategy, 2016

Figure 2 outlines the timeline for large capital equipment acquisitions leading up to and during the Afghan war.

Figure 2: DND Acquisition Timeline 1998 - 2011



Source: Briefing note, National Defence and the Canadian Armed Forces, May 10, 2011.

The timeline for the first three phases, identified by the blue and red colours accelerated during the war but returned to their pre-war level by 2011. This identifies a non-war timeline of approximately eight years to complete the first three phases. We will look at three specific capital projects, the CH-147 Chinook, the CH-148 Cyclone and the ongoing Next Generation Fighter (NGF) projects to assess aircraft acquisition timelines.

The first project we will consider is the CH-148 Cyclone, a project "dubbed by Defence Minister McKay at the worst procurement in history"[6]. The original project started in 1986 and took seven years to reach the end of phase 2. Ongoing delays from the manufacturer caused the Liberal government to cancel the project. The project restarted in 2001, using the work

[6] CBC News. How Canada procured new military helicopters, 26 Oct 2010

previously done for the first two phases and reinitiating the competition with some updates to the SOR. Phase 3 took another 4 four years to complete[7] and additional delays during Phase 4 prevented a fully serviceable aircraft from being delivered until 2015 and initial operating capability (IOC) in 2018. FOC will not be achieved until 2025. Reaching IOC, or limited capability achieved, took a total of 19 years. This timeline resulted in a period of several years where the Navy lacked a mission capable aircraft and resulted in a 2008 Throne speech commenting that Canada cannot afford to have cumbersome processes delay the purchase and delivery of equipment needed by our men and women in uniform"[8]. Surely this would result in changes for the next military helicopter purchase.

In fact, a more streamline approach did take place for the CH-147 Chinook helicopter starting in 2003. Unfortunately, as the Auditor General (AG) indicated in her 2012 review[9]: The method in which "the advance contract notification instrument was applied in the directed procurement of the Chinook helicopters did not comply with the letter or intent of the applicable regulations and policies. In our opinion, the contract award process was not fair, open, and transparent.". Even with this it took five years to complete the first three phases and another eight to achieve FOC, 13 years in total. Technology in the new CH-147 aircraft is considered cutting edge. Had they been acquired more quickly, that technology could have prevented the loss on at least one of the two Canadian chinooks in Afghanistan. This demonstrates the importance of getting new technology sooner, rather than later and this is certainly the case in the world of fighter aircraft.

[7] ibid

[8] Byers and Webb. The Worst Procurement in the History of Canada 2013, p22.

[9] Auditor General's 2012 Audit of DND: report to Parliament

Despite a lengthy and ongoing political debate about the need for a new fighter the formalized process of acquiring a new fighter is the most recent of the three projects we are examining. The development process for the F35 fighter has been ongoing since 1996 and Canada has contributed research funding in order to obtain industrial benefits since 1998. The replacement project formally kicked off in March 2005[10]. As with the CH-147, DND tried to shortcut the process by sole sourcing the acquisition of the F35 after DND assessed that it required a fifth-generation aircraft and it was the only available. Phases 1 and 2 went surprisingly quickly, however a lack of supportive paperwork substantiating why Canada required a fifth-generation aircraft and inaccurate costing models resulted in delays and also contributed to new election in 2012[11]. After further delays, 2 elections, and now the Corona virus, the NGF remains in Phase 2, 14 years later and despite CF-18 modernization efforts, has left Canada vulnerable and completely reliant on our allies for at least another seven years[12].

There are several possible reasons as to why the first three phases take as long as they do. A review of performance measure indicated that time could be saved by avoiding the duplication in roles between the ministers of national defence and PSPC[13] while Howlett states that "governments and policy makers have failed to effectively evaluate policy processes and outcomes and/or have failed to learn the appropriate lessons from their own and other government's previous experiences… that consistently result in unsatisfactory delays[14]. In interviews with CAF officers Hartfield found that suggested that "one of the reasons for the

[10] Fifth Estate, F-35 Timeline, Canada, Sep 2012
[11] Ibid
[12] DND, Fighter Capability Office. Predicted Implementation Timeline Brief, 2019
[13] Williams. A Dedicated Organization, Better Performance Measures and a Long-term Capital Plan Would Improve Canada's Defence Procurement. 2016
[14] Howlett, Michael. "Policy analytical capacity and evidence-based policy-making." *Canadian Public Administration* 52, no. 2

emergence of Canada's commitment-capability gap was their failure to effectively communicate the consequences of budget cuts and procurement delays to politicians"[15]. Regardless of the reason(s), ongoing delays in the RCAF aircraft discussed have resulted in technological degradation which not only fails to keep up with our adversaries but also causes interoperability problems with our allies.

ALLIED MILITARY PROCUREMENT TIMELINE

United Kingdon Capital Project Timeline

In the United Kingdom, defence acquisitions are managed by the Defence Equipment and Support (DE&S) organization. DE&S was formed as part of the 2007 restructuring of defence acquisitions due to an amalgamation of the Defence procurement Agency and Defence Logistics. All capital acquisitions are managed by DE&S and it falls under the Ministry of Defence (MOD), reporting directly to the Minister[16]. Similar to Canada, the UK has had its fair share of procurement issues and delays, however, for the most part, procurement has improved under DE&S and the Defence Reform Act in 2014 however the pre-eminent issue continues to be unknown and unstable funding[17]. Figure 3 provides a good snapshot as to how long recent capital projects have taken to come to fruition., charting the RAF's major equipment projects from when main investment decision for programmes were made (post Main-Gate, indicated by the blue stars) to the time when new equipment was planned to enter service (green stars) and when equipment actually entered service (red diamonds).

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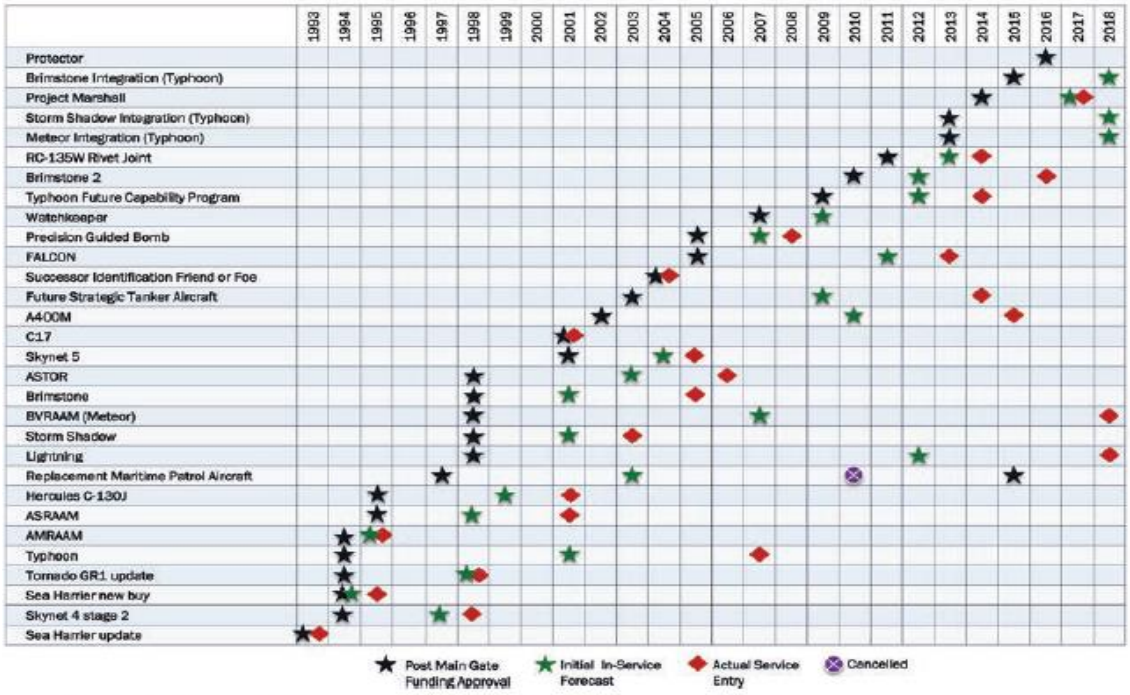
[15] Hartfiel. "Planning without guidance: 1993-2004." *Canadian Public Administration* 53, no. 3 Sep 2010

[16] UK Ministry of Defence, Procurement Policy for the MOD, 2020

[17] Gunzinger, Cohn, Towards a Tier 1 RAF, Center for Strategic and Budgetary Assessments, 2019

Figure 3: RAF Project Timeline 1994 - 2018



Data sourced from the "Major Equipment Projects" section of MoD, *UK Defence Statistics Compendium* (1992–2013); and MoD, *The Defence Equipment Plan* (United Kingdom: MoD, 2012–2018).

Using this chart, the easiest comparable to Canada is to use the F35, which the UK chose as their next Gen Fighter. Like Canada, the UK entered the F35 research program in 1998. In July 2006, the UK and Canada both committed to the third phase of and in 2012, they received their first F35 for the commencement of flight testing. It was not until 2016 that they had their first combat ready aircraft. Still, the 12-year process of acquiring the most complex aircraft in history is less than the RCAF's average acquisition time and was significantly faster than either the Cyclone of the Canadian NGF. However, the greatest contrast and reason for the speed of UK acquisition over the RCAF is their long-term plan that develops requirements compared to the rate of their adversary and identifies long-term spending requirements. For instance, since 2017, the UK has been working with the Italians to develop Tempest, a sixth-Generation fighter. An

initial version of Tempest is expected to enter flight testing in 2025, a year prior to the RCAF obtaining its first NGF.

Australian Capital Project Timeline

Australia's military procurement lead organization is the Capability and Acquisition Sustainment Group (CASG). CASG replaced the Defence Materials Organization (DMO) in 2015 after several DMO projects resulted in 30% cost over-runs between 2006 – 2013. CASG is the single organization involved with all aspects of procurement, is located within the Department of Defence (DoD) and is responsible directly to the Defence Minister. As with the UK and Canada, there have been investigations into whether CASG should remain within the DoD however for the time being there has been no C2 change[18]. Unlike Canada, the ADF/DoD budget is quickly approaching 2% of GDP[19]. There are two comparable Royal Australian Air Force (RAAF) projects that we will use to compare RCAF timelines: the F-35 and the Chinook.

Australia, like Canada, was an earlier signatory to the research and development group planning for a fifth-generation fighter. In 2002, the Australian Defence Minister announced that a flight-competition to decide Australia's next fighter had been cancelled and that the F-35 determined to be the preferred aircraft of the future.[20] As the programmed developed, two Australian research reports indicated that the F-35 would not meet its deliverable timeline, nor its design capabilities but would incur cost overruns[21] caused the Australian government to reduce the number of F-35s to be acquired but not cancel the project. The money saved from reducing the number of F-35s to be purchased and the sale of its a-model Hornets to Canada and an American Red Air

[18] Australia, ADF. Australia Defence Procurement Policy Manual, July 2019.
[19] Watt, Defence Budget Overview. Parliament of Australia, 2019.
[20] Fifth Estate, F-35 Timeline, Canada, Sep 2012
[21] Kopp and Mills, Lockheed-Martin F-35 Lightning II – Assessing the Joint Strike Fighter. Aussie Air Power, 2009.

company, the Australian government decided, without a competition, to purchase twenty-four F-18 Super Hornet fighter aircraft. These aircraft addressed both the time between obsolescence of their F18a model (the same fighter aircraft as Canada) and also filled a niche capability gap by selecting some of those aircraft to be the modified to the Growler Electronic Warfare aircraft[22]. The total time from deciding to reduce F-35 purchase numbers to FOC was four years[23]. The first F-35 was delivered to Australia in 2018 and 3 Sqn will become operational in 2021. An additional timeline factor for F-35 must be considered. During the development process it was determined that Australia, Canada and the United Kingdom would have advanced status dedicated allied unit conducting programming of some of the aircraft systems. The key word is collaborate: they were to work jointly to prioritize the needs of each country and then work together, along with U.S. personnel to complete the work. As Canada has so far not purchased the F-35, Canadian priorities for programming, should Canada acquire this aircraft, will be delayed.

The F-model Chinook acquisition was started in 2007. DMO decided to use a Foreign Military Sales (FMS) to minimize risk and costs. The first two Chinooks arrived at the 5thAviation Regiment in April 2015 and by 2017 the Chinooks were at FOC[24]. The processes used by both Canada and Australia, a non-competitive FMS case were similar. However, due to using DMO vice Canada's multi-agency approach of DND, PSPC, Industry Canada, and TB, the Australians were able to reach FOC four years more quickly. Of additional note, the Australian DoD budget, end-year funding is not subject to the same return to central government that DND is[25]. Contracts

[22] Pittawa, Ten Years of RAAF Super Hornets. Australian Defence Magazine, 26 March 2020
[23] Ibid
[24] Kellner, "Townsville welcomes CH-47F Chinooks into service", 27 June 2016.
[25] Australia, ADF. Australia Defence Procurement Policy Manual, 2019 p44

for the Australian F-model Chinook were structured in a manner that should sufficient DoD end-year money be available, another F-model can simply be ordered from Boeing[26]. This process provided great flexibility for the ADF, ensures flexibility and streamlines acquisitions.

ADVERSARY MILITARY PROCUREMENT TIMELINE

Of all Canada's potential adversaries, none is more concerning than China which has quickly approached peer-level capability to the U.S. and left the rest of NATO behind[27]. To achieve this, China has been able to combine a robust defence industry, with "exploitation of open sources, technology transfer and joint research, the return of Western-trained Chinese students, industrial espionage"[28] and the acquisition of key electronics such as advanced microchips, to enable the production of advanced military equipment at twice the rate of most western countries. The best example of this is the domestic production and readiness of their second aircraft carrier, complete with new and advanced aircraft, radar, and surface –to-air missile systems that rival U.S. capabilities. The most striking aspects of this project are that most of the related work was innovated Chinese progression and that the project, from identification to FOC (phases 1 – 4 in DND procurement) were accomplished in 12 years[29]. In other words, an infinitely more complicated project was completed faster than Canada could procure Chinook helicopters and twice as fast as that of Cyclones. While Chinese ambitions of a true fifth-generation aircraft have fallen slightly short to date[30], they are close, and have also updated/produced a few

[26] A4 ADF, 16th Aviation Bde. Chinook Brief to Canadian Electronic Warfare Officers, March 2018.
[27] Hannas, Chinese Industrial Espionage, Technology Acquisition and Military Modernization, 2013, p246
[28] Bitzinger, Defence industries in Russia and China. European Union Institute for Security Studies, 2017, p43

[29] China Power Project, China's Second Aircraft Carrier, Center for Strategic International Studies, Dec 2019
[30] Xinhua News, 'China Focus: China Targets Better Integrated Military, Civilian Development', 21 July 2016

advanced fourth-generation aircraft that rival those in the West and again are doing so at twice the pace of Western countries.[31]

Russia is a country that only occasionally support this thesis. Outside of their surface-to-air missile capability, their advances in aircraft capabilities are only slightly faster[32] than the RCAF average of 12 years identified earlier in this paper. Russia is further disadvantaged by the combination of Western sanctions and the current price of oil that have both significantly reduced Russia's budget and foreign military sales that prop up their defence industry[33] but this will not last.

Lastly, we must also consider the Middle East conundrum. While not always at war, countries in the region often view themselves as in a state of constant conflict and often this results in an ongoing arms race[34], or at the very least a conscious effort to work towards a modernized military. Most of these nations are not democracies and few of them have a significant defence industry. What they do have, is a desired to spend money and unfortunately nations such as Russia and China, and including the U.S. are willing and able to sell advanced military equipment to them, often fairly quickly[35]. While this equipment is rarely top-of-the-line in terms of modern and is operated by militaries less proficient than the RCAF, their equipment is sufficiently modern to threaten the RCAF's lagging capabilities. The fact that they can acquire these inside of Canada's procurement OODA loop, often within five years[36], is concerning.

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[31] Deptula, Building The Air Force We Need To Meet Chinese And Russian Threats. Forbes Magazine, 2019
[32] Oxford Analytica. Russian Procurement Modernization Brief, April 2015
[33] Bitzinger, Popescu, Defence industries in Russia and China, European Union Institute for Security Studies, 2017
[34] Zenko, US Military Policy in the Middle East, October 2018. p21
[35] Solmirano and Wezeman, Military Spending and Arms Procurement in the Gulf States, October 2010, p2.
[36] Ibid, p4

CONCLUSION

Democratic countries are founded upon the concept of capitalism and underpinning capitalism is a globalized world relying on trade agreements and fair competition. Unfortunately for western democracies, these same concepts applied to military procurement can often result in a disadvantage in combat readiness. It is clear from this analysis that Canada is falling behind both its adversaries and its allies; ask any recent RCAF graduate of the Fighter Weapons Instructor or Tactics and Electronic Warfare Instructor courses and they will tell you that our lagging equipment capabilities are the largest limiting factor constraining our ability to combat our adversaries and integrate with our allies. Building a modern military that is capable of operating against leading adversaries and achieving allied interoperability will take a serious, long-term, bipartisan commitment on behalf of the government. It will require a serious effort by procurement stakeholders to streamline the process and significantly reduce the timeline. Yet, there is hope. Australia and the U.K. have demonstrated that using a single procurement agency and committing to a long term capability and spending can help military procurement. As DND embarks upon a Capability Based Planning process and the Federal Government[37] investigates a CASG and DE&S concept, there is potential that RCAF procurement will accelerate. It has to, failure to do so will result in the RCAF becoming increasingly isolated from our allies who find us struggling to do our share.

[37] Berthiaume. With Billions at Risk, Federal Parties Promise to Fix Defence, Procurement. Global News, 2019

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