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CONTRACTED PILOT TRAINING FOR THE RCAF: GETTING IT RIGHT THE SECOND TIME

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Exercise *Solo Flight*

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Introduction

The Canadian Armed Forces (CAF) has a long history of using contracted services for a variety of functions dating to the origins of the organization itself. In recent decades, this trend has increased with significant reliance on contracted services and equipment, in particular to support training and operations of the Royal Canadian Air Force (RCAF). The use of contractors, otherwise known as Alternate Service Delivery (ASD) to provide vital support has risen from fiscal pressure to curb major spending where feasible, in a 'lease vs. buy' comparison. With an annual budget of approximately $2.5 Billion[1], the RCAF has a significant operations and maintenance budget despite its relative small size compared to other NATO air forces. This has driven a need for greater operational efficiency, in some cases at the expense of mission capability.

In the case of pilot training, the CAF transitioned to contracted services beginning in the late 1990's under the NATO Flying Training in Canada (NFTC) program. The RCAF fleet of CT-114 Tutor (and a portion of the CF-5 Freedom Fighter fleet) aircraft were replaced with a much smaller fleet of CT-156 Harvard II and CT-155 Hawk aircraft, and although flying instructors were provided by the RCAF, all other facilities, simulators and training support was under contract with Bombardier Inc. The $3.4 Billion CAD, twenty-year contract[2] was an effort to modernize pilot training while minimizing cost – ensuring consistent pilot production throughout the delivery for primarily the RCAF but also participating partner air forces.

Problems plagued the program from the outset, and continued throughout the next two decades. Only months into operations, the entire Harvard fleet was grounded for several months

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[1] "Canadian Air Force," GlobalSecurity.org, last modified February 21, 2016, accessed May 1, 2016, 2016, http://www.globalsecurity.org/military/world/canada/air-force.htm.

[2] Office of the Auditor General of Canada, *Chapter 3: National Defence - NATO Flying Training in Canada* (Ottawa: Canada,[2006])., 77.

while technical problems with the aircraft were rectified, causing major delays in training while aircraft remained parked on the ramp. With the Tutor fleet already phased out completely prior to the initiation of the NFTC program, there was no overlap in capability. Student pilots began to pile up, and with limited graduate production of the program, it took years to recover from the backlog. The 2006 Auditor General of Canada report (reviewing key findings from 2002) stated that:

> Due to problems during the program's start-up, the amount of training that the contractor was able to provide was well below what the contract had stipulated. As a result, the program could not train the number of pilots National Defence said it needed to train. However, the Department was still making fixed payments called for under the contract. By December 2001, the Department had paid about $65 million for training it missed, largely because of problems with the aircraft.[3]

The RCAF had accepted significant risk in contracting its most critical training delivery program, and from the very beginning encountered considerable shortfalls from the contractor. And yet DND continued to pay for missed training, despite the fact that it was due to major aircraft problems, a responsibility of the contractor. Not only was this hugely wasteful of public funds, it set a precedent for the contract that continued for years. Ultimately Bombardier Inc. sold the remaining portion of the contract to CAE in 2015 for $19.8 million CAD, and with the terms set to end in 2021, the RCAF has begun shopping for a new contractor to train its pilots, currently named Future Pilot Training System (FPTS).[4]

Throughout the next iteration of contracted pilot training, the Federal Government (particularly Public Services and Procurement Canada, DND, and Treasury Board) must determine what financial and existential contract risks are acceptable. The risk of wasted public funds and diminished military capability must be weighed against the benefits of reliance on a

[3] Ibid., 79.

[4] Government of Canada, *Defence Acquisition Guide 2015* (Ottawa: Canada,[2015]). 125.

pilot training contract. The FPTS contract must adequately account for risk in order to ensure RCAF requirements are fully satisfied, securing a solid capability beyond 2040.

As the RCAF looks toward a reset on its ASD contracted pilot training program in 2021, this paper will examine the factors that should be considered throughout the selection and contract process. First, with historical data from the questionable contract terms and particularly the delivery of the NFTC program, key lessons will be identified and linked from the start of the contract to present day. Risk mitigation that was incorrectly applied (or absent) will be critically analyzed to draw a better strategy for future programs. Second, proposed structure and key considerations of a future program will be introduced, factoring in lessons identified from NFTC. The idea of omnibus contracts and the increased risk involved will be discussed. Risk mitigation strategies for DND and the RCAF will be proposed, with the intent of raising concerns from the tactical and operational levels of implementation of ASD pilot training. With an expected $5 billion CAD contract only a few years away from being awarded, and the next 25 years of the RCAF's operational capability resting squarely upon getting this right *the second time*, it is imperative that thorough consideration be given to all second and third order effects of contract decisions well in advance of negotiation of the FPTS.

NFTC: A Contract too good to be true?

NFTC began with an unsolicited, sole-source bid by Bombardier Inc. to DND proposing a modernized model for pilot training in Canada. At the time it seemed like an ideal solution to a complex problem for the Air Force, and with the cost spread out over the life of the contract instead of with up-front procurement of a new training fleet to replace the aging Tutor fleet, it fit the fiscal outlook for DND. The CAF had experienced a series of budget cuts and force size reductions only a few years prior, and with the end of the Cold War still fresh in the governments

mind, funding trends would likely continue downward for the foreseeable future. The contract had a very challenging start, and just five years into the contract delivery, alarm bells began ringing in Ottawa (long after alarms had been ringing for the RCAF). Following a report by the Auditor General in 2002, the House of Commons Standing Committee on Public Accounts published a follow-up report, making several key recommendations to ameliorate the crumbling contract. The report, chaired by Member of Parliament John Williams, summarized:

> In the early 1990s, the Department of Defence was faced with the need to replace its aging fleet of training aircraft. It determined that it could not afford the replacement costs of the aircraft of approximately $700 million. In the fall of 1994, Bombardier Canada proposed that it work with the Department to offer pilot training to Canada and NATO. Bombardier submitted an unsolicited proposal in December 1994. In 1996, Cabinet approved the Department's request to enter into a 20-year, $2.8 billion sole-source contract with Bombardier to provide support for the NATO Flying Training in Canada program. Bombardier would provide and maintain the aircraft, DND would provide students and instructors, and other NATO countries would help offset the costs by purchasing training for their student pilots.[5]

With a long history of various government contracts, Bombardier was not new to this domain. The contract looked good for DND and the RCAF, it looked good for industry in Canada, and it allowed Canada to stand out among her NATO allies in the pilot training business for the first time since World War II. The proposal was almost too good to be true. In fact, in retrospect, it probably was.

One of the major limitations of ASD contracts is the length of time it takes to determine and realize that terms are not being met. In the case of NFTC, it was several years before the issues were addressed in other government departments. By then much of the damage had been done, and blame began passing between DND (including bureaucrats and uniformed senior officers), the Auditor General, and Bombardier. The 2006 Auditor General report stated that

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[5] John Williams MP, *18th Report of the House of Commons Standing Committee on Public Accounts* (Ottawa: Canada,[2003]).

"...although National Defence had paid the fixed fees, the contractor was unable to meet its contracted obligations (about 81 training sorties per day) until December 2002."[6] In fact, the 2002 Auditor General report (the first to deal with NFTC's shortcomings) highlighted the detailed numbers and how it affected pilot production. With delayed acquisition of the Harvard II aircraft, four courses were cancelled. After just two months of flying, the fleet of 16 aircraft was grounded for major engine problems causing a three-month delay and an additional course cancellation.[7] With low production rates, in 2001 three more courses were cancelled. "Overall, 8 of the 17 courses planned for 2000-01 were cancelled and only 3 of the 9 courses that did take place were fully loaded with the contracted number of students (16)."[8] Student pilots awaiting training began to pile up at an alarming rate as most had been recruited many years prior based on expected throughput rates of the program. "By September 2001, 161 student pilots were awaiting basic flying training…on average students were waiting 18 to 22 months before starting pilot training."[9] This had numerous second and third order effects for the RCAF, which continues to resonate even today.

Without a continuous stream of graduate pilots from Phase II (basic flying training), students were not available for advanced flying courses which also were part of the program, leaving additional unfilled course slots that still had to be paid for by DND. The notion that training slots were unfilled on Phase III and IV of NFTC because of a shortfall of the Phase II

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[6] Office of the Auditor General of Canada, *Chapter 3: National Defence - NATO Flying Training in Canada*, 75-90, 81.

[7] "T-6's Grounded Over Engine Faults," Flightglobal Aviation Connected, last modified September 12, 2000, accessed May 4, 2016, https://www.flightglobal.com/news/articles/t-6s-grounded-over-engine-faults-120152/.

[8] Office of the Auditor General of Canada, *Chapter 4: National Defence - NATO Flying Training in Canada* (Ottawa: Canada,[2002]). 6.

[9] Ibid. 9.

program and yet DND was still obligated to pay for the unused training is rather puzzling. Ultimately, the bottleneck of students took years to push through training, causing human resource management problems for hundreds of junior officers.[10] Many Operational Training Units (OTUs – the squadrons were pilots were trained on the aircraft to which they were assigned) were often left with shortages of suitable candidates to fill courses, which in turn left squadrons without replacements for posting and retirement of existing pilots. Once NFTC caught up with the backlog, it was followed by another bottleneck, this time at the OTUs. Many of the same students who had waited 18-22 months for Phase II were once again waiting for OTU training for extended periods of time, adding to the HR policy problems.

There were significant risks of delays in delivery with contracted training provided by NFTC. Although many of the effects were not recognized for years following the disastrous start-up of the program, there are valuable lessons to be learned which must be diligently applied to any future ASD contract. Delays in training were not the only shortfall that the program encountered; this was just a symptom of a greater problem. The contract called for a fixed rate of aircraft sorties per day (81 to be exact) based on expected serviceability rates (of both the Harvard II and Hawk fleets).[11] This allowed a consistent and predictable model of pilot production based on expected sortie rates. This however did not account for fluctuations in production based on instructor training times and availability (a DND acknowledged shortfall), lower than expected aircraft serviceability rates, fleet groundings and so on. Just a few years

[10] DND policy did not permit a full posting until completion of pilot training, which resulted in consecutive 6 month attach postings. This left many students pilots awaiting training moving several times to follow suitable employment, which was often at operational Squadrons where they were used for basic administrative and menial tasks. Further, as paid commissioned officers, terms of service were effected by delays in training as during that period pilots were on a period of restricted release for 7 years after graduation with pilot wings (completion of phase III). For many these added an additional two years of pensionable service that was not revenue generating for the RCAF.

[11] Office of the Auditor General of Canada, *Chapter 3: National Defence - NATO Flying Training in Canada*, 75-90, 85.

later, attention shifted to DND as the party unable to fill training slots that had been contracted. Although the numbers reported by the Office of the Auditor General (OAG) demonstrate this to be true,[12] it was declining pilot enrollment that resulted in a shortage of students awaiting pilot training.[13]

The RCAF had intentionally controlled course loading at NFTC at reduced rates in an attempt to meter pilot production at a consistent and predictable level. This essentially created a self-imposed margin for excess capacity, although it was less than what had been contracted by DND. It diminished the credibility of DND and the RCAF, as services requested and paid for were not being used (albeit for good reason). It was the RCAF's attempt to retake control over production rate instability and allowed a built in surge capacity without any contract change should unforeseen circumstances arise. This is a key lesson that can be applied to a future training contract structure, however it ought to be built into the contract instead of retroactively induced by the customer.

Once the initial obstacles of the NFTC program were largely overcome, there appeared to be a sustainable and predictable operation with acceptable provision of services. Unfortunately for all involved, it was not long before more problems occurred with NFTC. On 14 May 2004, A CT-155 Hawk ingested a bird into its engine following a touch-and-go landing.[14] Fortunately, the student and instructor ejected successfully, although the latter sustained significant injury on

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[12] The 2006 Auditor General Report determined that by October 2002, the contractor had demonstrated that it could provide all the training that DND required, and it was in fact DND who was not utilizing the training capacity. Of 654 student pilots positions DND had paid for between December 2002 and December 2005, DND used only 509 (78%). Ibid.

[13] It is not simply a matter of enrolling a student pilot and sending him or her to Moose Jaw within a few months for pilot training. Pilot candidates enrolled through a variety of entry plans, such as Regular Officer Training Plan (ROTP), which took over 4 to 5 years before a candidate was eligible for pilot training.

[14] Director of Flight Safety, *Canadian Forces Flight Safety Investigation Report - CT155202* (Ottawa: DND,[2007]).

landing. The aircraft was destroyed. Although not a preventable occurrence, it was the first loss of a Hawk aircraft for the program. In April 2008, another significant set-back for Bombardier put the program at risk, this time due to a problem with the Low Pressure Turbine (LPT) of the Hawk's jet engine. During a training flight in Moose Jaw, aircraft 155215 experienced an engine failure, and during an attempt to glide to the field, the instructor and student ejected, this time sustaining significant injuries. A second Hawk was destroyed. The Flight Safety report indicated:

> The engine failed as a result of an LPT blade loss and associated collateral damage due to a fatigue crack that had developed between the LPT blade root and platform. The unsatisfactory finishing of the LPT blades was a known deficiency that was addressed under a RARM [Record of Airworthiness Risk Management] at the time of the occurrence.[15]

In June of 2011, a second engine failure and subsequent aircraft crash was attributed to the same problem with the LPT. Once again both pilots ejected successfully. As the flight safety investigation concluded, "…the Hawk CT155 Adour Engine [LPT] blade, which had a history of fatigue cracking at the trailing edge rear acute corner, failed prior to reaching its design life."[16] Thankfully the pilots involved survived all of these ordeals. But these incidents did irreparable damage to the reputation of the program and other setbacks continued to accumulate. Three Hawks had crashed, two of them attributed to mechanical defects in the engine.[17] Following each of the latter incidents, a slow and deliberate return to flight operations, including major changes to engine maintenance, added delays to an already backlogged training system. The Royal Danish Air Force (RDAF) who had been a strong participant in all phases of NFTC pulled out of

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[15] Director of Flight Safety, *Canadian Forces Flight Safety Investigation Report - CT155215* (Ottawa: DND,[2011]).

[16] Director of Flight Safety, *Canadian Forces Flight Safety Investigation Report - CT155201* (Ottawa: DND,[2014]).

[17] None of the Hawks that were lost were replaced. The Harvard fleet had 2 additional aircraft added only a few years into delivery in an attempt to meet contract requirements.

the program completely by 2010[18]. Soon after, even the RCAF began to outsource training to keep up with the demand for pilot production to provide a continuous stream of graduates to the OTU.[19] RCAF students were sent to the United States where training slots were purchased for dozens of student pilots to train on United States Air Force training aircraft (T-38s) before continuing on to the CF-18. NFTC could not seem to get caught up and the participating countries, including Canada, were forced to find creative solutions.

In January of 2015, with six years remaining in the contract, Bombardier sold the remaining NFTC commitment to another aerospace company, CAE, for $19.8 million CAD.[20] As published military correspondent David Pugliese quoted in his National Post article, CAE had an opportunity to position itself for future contracts by apparently saving the NFTC contract from failure. "CAE will use that Bombardier expertise to pursue international training contracts, said Mike Greenley, vice president and general manager for CAE Defence and Security - Canada."[21] Other analysts have deduced that CAE will use the acquisition of the remaining NFTC contract to leverage future contracts, within Canada and abroad. As security and defence journal *Vanguard Canada* explains in an on-line article also published in January 2015:

> The addition of the training division not only enhances CAE's core capabilities as a global training systems integrator, it also brings the company into support for live flying training of future military pilots at a time when many NATO members are about to introduce so-called fifth generation fighter aircraft.[22]

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[18] "Military Flight-Training Centre to Lose Danes," Bell Media, last modified May 18, 2012, accessed May 3, 2016, 2016, http://www.ctvnews.ca/military-flight-training-centre-to-lose-danes-1.222668.

[19] David Pugliese, "Canadian Fighter Pilots Sent to U.S. for Training After Repeated Problems at Home: Documents," *National Post*, sec. Canada - Politics, July 29, 2014, 2014.

[20] "CAE Acquires Expertise with Bombardier Buy," 2016 www.defensenews.com, last modified January 31, 2015, accessed May 1, 2016, http://www.defensenews.com/story/defense-news/bizwatch/2015/01/31/cae-acquires-new-expertise-bombardier-unit-buy/22604917/.

[21] Ibid.

[22] "In Acquisition of Bombardier's Military Aviation Training Unit, CAE Takes Over NATO Training Program," Vanguard Canada, last modified January 27, 2015, accessed May 4, 2016, 2016,

Clearly CAE is posturing for major contracting moves for the future, using Bombardier's diminished capacity as an opportunity to secure future contract contention for FPTS. With simulation contracts already in place for a number of RCAF aircraft fleets, CAE has also submitted a partnered bid with Draken Industries on the Contracted Airborne Training Services (CATS) contract, due to be announced in late 2016. The 10-year contract, estimated to be worth $500 million to $1.5 billion CAD:

> …provides the armed forces with a range of realistic combat training services which include airborne simulation of hostile threats for fighter pilots, airborne support for Forward Air Controller training, simulated threats to naval crews and land forces, targets to training operators of radar, electro-optical and infrared-guided weapons systems, as well as electronic warfare training for aircrews, land forces, aerospace weapons operators and navy frigates.[23]

Discovery Air Defense Service, and subsidiary company Top Aces[24] currently fill the contract, which remains in interim status. Until CAE/Draken submitted the competitive bid, Discovery Air was the only submission for the new contract. Another pilot training ASD contract is the Contracted Flight Training System (CFTS) currently supplied by Allied Wings (Led by Kelowna Flight Craft Ltd) which provides primary flying training, as well as multi-engine and helicopter training to RCAF pilots in Portage La Prairie, Manitoba.[25] The 22-year $1.77 billion CAD

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http://www.vanguardcanada.com/2015/01/27/in-acquisition-of-bombardiers-military-aviation-training-unit-cae-takes-over-nato-training-program/.

[23] "CAE Partners with Draken in CATS Bid," Vanguard Canada, last modified February 17, 2016, accessed May 4, 2016, http://www.vanguardcanada.com/2016/02/17/cae-partners-with-draken-in-cats-bid/.

[24] "Located in Point-Claire, Quebec, Canada, Top Aces, a subsidiary of Discovery Air Incorporated…is the exclusive supplier of combat airborne training services to the Canadian Forces. The firm furnishes joint terminal attack controller training to Canadian special operations and ground forces, electronic attack training to aircrews of the McDonnel Douglas CF-18 Hornet, and live-fire target practice to all branches of the Canadian military. Top Aces also contracts to supply integrated logistics, maintenance, and engineering services to the Canadian Forces." Alan Axelrod, *Mercenaries: A Guide to Private Armies and Private Military Companies* (Thousand Oaks, Calif: CQ Press, an imprint of SAGE, 2014), 413, 146.

[25] "National Defence has two pilot training streams. All pilots take primary flying training in the [CFTS] and basic flying training in the NFTC program. Fighter pilots, who eventually fly the CF-18 fighter aircraft, proceed

contract was awarded in 2005, and folds into the overall pilot training system with NFTC. Ironically Bombardier held the contract previous to 2005, but they were not selected during renewal in 2005.[26] A further CF-18 simulation contract in Cold Lake, AB and Bagotville, QC, first held by Bombardier,[27] has also been sourced to other aerospace companies. Sélect Global International Limitée of Laval, Quebec, now holds the 10-year contract valued at $19.6 million CAD.[28] With several major ASD contracts for the RCAF, a potential omnibus mega contract can be foreseen, although that introduces a unique set of benefits and challenges.

Bombardier's venture into the realm of military pilot training began with great aspirations and good intentions but ended poorly. Soon after the contract began, major flaws in the contract began to reveal that perhaps it was not what the RCAF and DND had hoped for and 15 years in, it had to be bought out by another company. With so many complex problems to be addressed as a new contract is developed, it is imperative that DND and the RCAF not make the same mistakes again. Admittedly, some of the problems encountered with NFTC could not have been anticipated. However, the FPTS contract must account for contingency planning to mitigate the financial and operational risk assumed by the RCAF in partaking in such a massive ASD program.

FPTS – Getting it right the second time

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onto basic, advanced, and lead-in fighter training in the NFTC program. All other pilots proceed onto advanced CFTS training…Once they complete their flying training, pilots join operational training units." Office of the Auditor General of Canada, *Chapter 3: National Defence - NATO Flying Training in Canada*, 75-90, 84.

[26] "Canadian Forces Seek to Build Excellence in Foreign Flight Training," Defense Industry Daily, last modified February 22, 2011, accessed May 4, 2016, http://www.defenseindustrydaily.com/canadian-forces-seek-to-build-excellence-in-foreign-flight-training-01537/.

[27] Ibid.

[28] "Government of Canada Invests in CF-18 Fighter Pilot Training and Canadian Jobs," DND, last modified February 17, 2013, accessed May 4, 2016, http://www.forces.gc.ca/en/news/article.page?doc=government-of-canada-invests-in-cf-18-fighter-pilot-training-and-canadian-jobs/hie8w7od.

The lessons of NFTC must be applied to the contract process for the FPTS in order to mitigate risk and make the ASD solution viable for the RCAF and the Government. FPTS has been included in the Defence Acquisition Guide (DAG) for 2015 with expected delivery beginning in 2021. The DAG lists all major military projects including procurement and services available for private bids and states the very generalized objective as "[to] find a relevant, flexible, effective and affordable means of implementing and optimizing the training system to meet [CAF] pilot training objectives."[29] Further analysis of the stated requirements of the program reveals some inherent application of lessons drawn from the NFTC experience. The DAG states the requirements as follows:

> The project must ensure a seamless transition with existing pilot training programs and an agile and flexible production level to meet future needs. Risk will be managed and control of pilot production will be maintained by the RCAF. The training must meet the unique challenges of the Canadian environment, adapt and optimize to meet future requirements, exploit technical advances to maintain relevance, maximize simulation and emulation to create efficiencies and provide value for Canada. All training options are being considered, from DND acquisition with Industry sustainment to full Industry service contract.[30]

The first observation, and an important part of the process for this particular case, is that the contract is open for proposals from multiple bidders. This will allow a competitive selection process among companies, each who will seek to provide a model best suited for the RCAF training needs. As NFTC was sole-sourced, it did not have an evaluation process to weigh advantages and disadvantages of the contract structure. That will be avoided for FPTS, as there are multiple aerospace companies expected to submit bids for a project of this size.

The second observation is that the requirements state the need for seamless transition with existing programs. A number of implied meanings can be derived from this statement. The

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[29] Government of Canada, *Defence Acquisition Guide 2015*, 1-255, 125.

[30] Ibid.

model must overlap in some way with the current operation, in order to ensure that there is no break in training production as was the case with NFTC. That could mean either continuing a contract or beginning one at an entirely new location, requiring an aircraft fleet and support system (or somewhere in between those extremes). Complexity increases in this case as depending on the personnel required for the project (for example, flight instructors and maintenance technicians) there would be an initial requirement to obtain a critical mass of qualified personnel that would likely be derived from the NFTC program. A phased introduction and overlap would add cost and time but would ensure that the existing system was continued until the new system reached a sustainable level of pilot production.

Third, terms like *agile, flexible, maintain relevance,* and *adapt and optimize to meet future requirements* are significant in the statement. Open to a wide range of interpretation, the terms all generally mean *ability to change after commencement.* A contract for FPTS cannot be so rigid that it has no capacity to be significantly altered when things are not going as planned or the needs of the RCAF have changed.

Finally, the notion that *risk will be managed* and *control of pilot production will be maintained by the RCAF* are the most noteworthy of the requirements. The risk that must be managed is quite broad in scope, but considering what materialized with NFTC it becomes clearer what kind of things DND and the RCAF considers risk in this context. Key risks are loss of capability/mission effectiveness, loss of credibility, and loss of resources/money. Institutional reputation and credibility must be maintained – meaning quality of the training and support services provided must be consistent with standards and expectations of the RCAF. The challenge is in identifying what exactly constitutes risk, and then determining what actions or precautions can mitigate or eliminate that risk. The RCAF deals with risk every day, but

manages it by determining how much risk is acceptable in order to accomplish the mission. A balance must be found where risk can be calculated and managed. In the case of a fleet grounding due to maintenance problems, the RCAF has experienced this many times with military aircraft. But at some point, strategies are developed to facilitate a return to operations without putting personnel or resources at *unnecessary* risk. Civilian owned aircraft (particularly those that are leased) do not enjoy the same flexibility. And so that leaves limited options – one of which is to remove all risk by grounding a fleet.

A potential option is to have multiple fleets of different aircraft that allow a level of redundancy should one fleet encounter serviceability problems. A more cost effective option would be to procure an aircraft that has an established and proven reputation (with similar conditions and rates of employment) over several years that still has upgrade options for the future. A third option would be for DND to procure an aircraft fleet itself, and take full control of risk, although this may not reduce the risk of serviceability issues at all. It also may be cost prohibitive and defeat the entire purpose of seeking ASD.

Mitigating risk also involves knowing when things are not functioning as planned, facilitating decision making to enact contingencies. A critical part of the FPTS must be performance monitoring and measurement. As outlined by Public Services and Procurement Canada, there are four key project performance indicators that are common to all government contracts: on time, on budget, on scope and overall project status.[31] Individual projects have customized Key Performance Indicators (KPIs) tailored to the specific circumstance of the contract. These may include criteria such as "client satisfaction, procurement, stakeholder

[31] "Public Works and Government Services Canada - Performance Monitoring," Government of Canada, last modified November 20, 2014, accessed May 4, 2016, http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/ti-it/suivirend-perfmonitor-eng.html.

communications, human resources and risk, [and] may be reported on as determined by branch practice or based on the project's complexity, risk and purpose."[32] Determining the appropriate KPIs for FPTS will be critical to the success of the contract, as missing the mark could leave shortfalls undetected until it is too late to rectify them.

The critical consideration that follows performance monitoring is that the contractor must be held to account for the services agreed upon – as much as the government should be held to account for rendering payment. Additionally, the frequency at which the performance monitoring is conducted must be consistent, and should establish clear goals and milestones that are time based, as well as productivity based. For example, if the FPTS contract states that 100 students must be produced annually, the precise measurement must be calculated annually to monitor trends early enough to influence change or make compensation as required. Further, the performance monitoring report must be elevated to sufficient government oversight (i.e. Treasury Board, House of Commons, PSPC etc.) commensurate with the size and nature of the contract. Making FPTS a Crown project could provide the required level of oversight. The 2002 Auditor General report made specific mention of insufficient performance measurement, citing continued disagreement on the terms:

> Although the [NFTC] program has been providing training to students since June 2000, the prime contractor and National Defence have never reached an agreement as to how they will measure the performance. There is still a disagreement between the parties as to what constitutes availability of the aircraft. While the prime contractor may have the required number of aircraft operational on a particular day, factors such as slow turnaround of the aircraft may cause the schedule to slip such that it results in the cancellation of sorties. These missed sorties lead to differences between the required and actual number of sorties provided and it also raises questions as to the level of contractual compliance. This issue has been outstanding since the beginning of the program and while

[32] Ibid.

> progress has recently been made, there is still no agreement on what constitutes successful performance by the prime contractor.[33]

Such a lack of standardized performance measurement is incomprehensible and would certainly anger any taxpayer, considering contested delivery of services that DND continued to pay for. It is a clear lesson that performance monitoring, measuring and reporting may in fact be the centre of gravity of a training contract such as FPTS, and a thoroughly developed and specific set of criteria (KPIs) must be developed to ensure compliance, and ultimately, to validate whether payment is warranted. In extreme cases the contractor could even be held in default and the contract terminated. As the Auditor General observed in the 2002 report on NFTC:

> 4.55 National Defence's payments under the contract are based on schedule rather than performance milestones. In the event that the prime contractor is non-compliant with the terms of the contract or where the prime contractor does not provide the specified levels of service, there are no financial incentives that can be used by National Defence. Conversely, there are no performance incentives to reward or encourage the prime contractor for exceptional service.
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> 4.56 The only remedy available to National Defence under the contract would be to place the prime contractor in default of the contract. Short of putting the contractor in default, National Defence may not withhold payments regardless of the quality or quantity of the service provided. A National Defence study of the Alternate Service Delivery program (May 2001) concluded that for the NATO Flying Training in Canada program "the only real financial incentive [to ensure that the prime contractor provides full delivery of services] is the threat of termination of the contract."[34]

DND holding a contractor in default would bring its own significant consequences – which DND would likely avoid if possible. But if the contract for FPTS does not have built in contingency models for when things go horribly wrong, DND must be fully prepared to put the contractor in default, and to assume responsibility for the services, without financial penalty to itself. Also the notion of contractor performance incentives should not be discounted. Exceeding contracted

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[33] Office of the Auditor General of Canada, *Chapter 4: National Defence - NATO Flying Training in Canada*, 1-26, 14.

[34] Ibid.

expectations could be grounds for increased monetary benefits within limits of a contract. Conversely, fixed costs must have reasonable basis for payment. There should be inherent baseline requirements that the contractor must meet in order to qualify for fixed costs. It could be considered a *probationary* or *warning* phase of the contract, where the former would be during start-up, and the latter in the event of unforeseen contingencies.

The concept of built-in excess capacity in the FPTS contract should be considered. This would allow flexibility for contingency in the event of serviceability problems with aircraft, but would also allow for increased (or periodic) surges of pilot production. The structure of such a contract would be increasingly complex, and would also be in contravention of the Auditor General's recommendation from the 2006 report:

> National Defence should take immediate action to resolve pilot enrolment limitations to ensure it makes the best use of the NATO Flying Training in Canada contract and trains the number of pilots it needs. The Department should ensure it is not creating a new basic flying training program that provides added capacity it may not use.[35]

But as previously mentioned, the 'excess capacity' may not have been as excess as it may have seemed, as performance measures could not even determine what defined aircraft availability. And it would seem that no country that has outsourced pilot training has found the ideal solution. The Royal Air Force (RAF) has paid £3.2 billion for a pilot training consortium contract has fallen 6 years behind schedule. "If left to continue, the delayed programme could leave British forces struggling to train enough aircrew for military operations, auditors said."[36] The consortium, called Ascent, is made up of Lockheed Martin and Babcock International. Ascent

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[35] Office of the Auditor General of Canada, *Chapter 3: National Defence - NATO Flying Training in Canada*, 75-90, 86.

[36] "£3.2bn military Pilot Training Scheme Falls Six Years Behind Schedule," Guardian News and Media Limited, last modified June 12, 2015, accessed May 4, 2016, http://www.theguardian.com/politics/2015/jun/12/military-pilot-training-delays-army-navy-raf.

was awarded a 25-year contract in 2008 but the program lacked oversight and the contractor was not held to account on the terms, much like NFTC experienced. The Lockheed Martin outlook certainly looked favourable in 2008 in the press release that followed the signing of the contract.[37] Much like the RCAF experienced, a lack of performance measurement enforcement and oversight ultimately has been the downfall of the program. The Australian Defence Force (ADF) has most recently among the five eyes communities signed a contract with Lockheed Martin for pilot training, in December 2015.[38] Despite the problems the RAF experienced with a similar contract, it seems that the ADF is confident that Lockheed Martin is best for the job. Training commenced for the initial cadre of PC-21 instructor pilots in Switzerland in January of 2016,[39] and so without any student production as of yet, it is too early to determine whether the ADF contract will have greater success than the RCAF or RAF. The ADF contract will certainly be one to watch for Canada, as Lockheed Martin will most certainly be on the short list of contenders for the FPTS bid in the near future. DND and PSPC have much to learn from our own history of pilot training contracts, and can avoid making the same missteps as our allies with similar failed or underachieving contracts. It is clear that this venture will require careful consideration and oversight in the bidding phase, selection, implementation and monitoring in order to ensure efficient and effective use of valuable resources and financing for the RCAF.

Conclusion

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[37] "Ascent Signs Contract with MoD for New UK Military Flight Training System," Lockheed Martin Corporation, last modified June 2, 2008, accessed May 4, 2016, http://www.lockheedmartin.ca/uk/news/press-releases/2008-press-releases/ukmfts.html.

[38] "Lockheed Martin Selected to Help Australia's Future Pilots Take Flight," Lockheed Martin Corporation, last modified December 9, 2015, accessed May 4, 2016, http://www.lockheedmartin.ca/us/news/press-releases/2015/december/151208-mst-australia-future-pilot-training.html.

[39] "Australian Pilots to Begin PC-21 Training in Switzerland," Kable, last modified January 20, 2016, accessed May 4, 2016, http://www.airforce-technology.com/news/newsaustralian-pilots-to-begin-pc-21-training-in-switzerland-4788921.

RCAF use of ASD is not likely to diminish any time soon. When used correctly, it can have tremendous advantages for the CAF in terms of maintaining modern capability and training, and avoiding huge up-front procurement costs. It does however, come with tremendous risk. The risk for the Government is wasteful use of public funds. The risk for the CAF is a loss of capability that could otherwise have been prevented with thorough planning and performance measurement. A temporary gap in pilot production does not pose an existential threat to the defence of Canada, as it is not necessarily realized until several years later when the gap has surfaced in the training cycle of personnel. It does however have enduring consequences for the CAF and is unacceptable for a contract in the future. As seen with NFTC, and also with the Ascent contract in the UK, contracts that look promising on paper do not necessarily translate into positive results during delivery. A failure to monitor and enforce performance standards is a common theme among the ASD contract failures in the past two decades. This can be attributed to incomplete contract terms that do not adequately protect the customer in the event of non-delivery of service. KPIs must be clearly defined and persistently monitored to determine the earliest signs of faltering service provision. It is ultimately the RCAF's responsibility to do this and as such must carefully determine the best means and personnel for providing this vital feedback to PSPC.

As Canada is on the verge of a major ASD contract for the FPTS, the lessons of the past must be applied to the concepts for the future. Risk must be balanced with reward as contracts are formulated and finalized. The key stakeholders involved are not only the government departments and the taxpayers, but also the members of the CAF who must interface with the contractor. The FPTS contract must adequately account for risk in order to ensure RCAF requirements are fully satisfied, securing a solid capability beyond 2040.

As CAE has demonstrated, the company is posturing to build a monopoly on aircrew training in Canada by gradually acquiring smaller contracts and linking them into an omnibus large-scale contract. Although this can have wide spread benefits for interoperability and seamless integration with industry, an omnibus contract must be carefully implemented to avoid catastrophic failure, or even gradual 'domino effect' of failures. As the primary stakeholder for FPTS, the RCAF must be the custodian of its own fate, and ensure that what is accepted is what will work for the next twenty-five years or more. If ASD is here to stay for the RCAF, future leaders of the institution must apply the lessons of the past two decades. The benefits of ASD can only be realized with careful contract implementation and diligent performance monitoring. The RCAF cannot risk a second abysmal contract failure on such a large scale, or it runs a greater risk of marginalizing itself and losing key capabilities.

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