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**AT THE HARD DECK:
A TACTICAL FIGHTER SQUADRON FORCE STRUCTURE RE-THINK**

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AT THE HARD DECK: A TACTICAL FIGHTER SQUADRON FORCE STRUCTURE RE-THINK

AIM

1. The aim of the service paper is to propose an alteration to the current force structure and training model of the Fighter Force (FF). The current structure of four Tactical Fighter Squadrons (TFS) and one Operational Training Unit¹ (OTU) is not suitable to increase the number of total trained pilots and levels of experience on the TFS's. The Fighter Capability Office (FCO) suggests that a minimum Preferred Manning Level (PML) of 100% to ideally 115% of pilots is required to support the transition to the future fighter,² while fulfilling CAF core missions outlined in the Government of Canada's (GoC) defence policy, *Strong, Secure, Engaged*.³

INTRODUCTION

2. As evidenced by the recent top-down directives of Operation EXPERIENCE and Operation TALENT, many initiatives are being explored by the Royal Canadian Air Force (RCAF), and the Canadian Armed Forces (CAF) to address far-reaching personnel challenges. Additionally, the Fighter Force Get Well Program Spiral 2 (Spiral 2), an ongoing bottom-up initiative directed towards senior leadership, is proposing ways to address declining fighter pilot numbers and experience.

3. Three key factors have resulted in the current degraded state of the fighter capability: voluntary departure of experienced pilots, a training model lacking sufficient throughput, and increasingly arduous readiness requirements. Coupled with the introduction of Royal Australian Air Force (RAAF) Hornets into service, prolonged low levels of experience on squadrons, and a fleet transition beginning in the mid 2020s, competing issues are stressing the FF from multiple directions. A further discussion of

¹ 410 Tactical Fighter (Operational Training) Squadron.

² Col R. Konyk, Director Fighter Capability Development, email discussion with author, 22 October 2019.

³ Department of National Defence, *Strong, Secure, Engaged. Canada's Defence Policy* (Ottawa, 2017), 17.

these three factors will lay the foundation for a solution which will address multiple problems simultaneously.

4. If present conditions continue, the decreasing number of trained pilots will negate our ability to meet GoC commitments,⁴ and potentially delay achievement of Initial Operational Capability of the future fighter thereby pushing the Estimated Life Expectancy (ELE) of the CF-18 beyond 2032. In the 2030 timeframe, the CF-18 will be 50 years old, having had its service life extended three times.

DISCUSSION

The Fighter Force Attrition Problem

5. The FF is not experiencing its personnel problems in isolation. Other fleets are experiencing similar issues partly brought on by sustained growth in the civilian aviation industry in Canada⁵ and worldwide.⁶ However, the inability over the last 10 years to recover the FF to a healthy state has made the issue of pilot attrition acute. Between 2007 and 2019, the FF has shrunk from 176 pilots to 133.⁷ It is thus logical to focus on retaining the experienced pilots we do have. This is the impetus for Op EXPERIENCE “which directs the Canadian Armed Forces to implement immediate actions to stabilize and rapidly increase levels of pilot experience.”⁸ The RCAF’s Op TALENT focuses on

⁴ Office of the Auditor General of Canada, *2018 Fall Reports of the Auditor General of Canada to the Parliament of Canada: Report 3 – Canada’s Fighter Force – National Defence* (Ottawa, 2018), para 25.

⁵ Brian Dunn, “Is Canada Facing a Pilot Shortage,” *Wings*, 1 March 2019. <https://www.wingsmagazine.com/is-canada-facing-a-pilot-shortage-16142/>.

⁶ International Aviation Transportation Association, “IATA Forecast Predicts 8.2 billion Air Travelers in 2037,” last accessed 25 October 2019, <https://www.iata.org/pressroom/pr/Pages/2018-10-24-02.aspx>.

⁷ LCol Ryan Kastrukoff, Senior Staff Officer – Fighter (SSO Ftr), “Fighter Force Get Well Spiral 2: Precis 1.0 Addendum – Connections to Other Efforts,” (August 2019), 2.

⁸ Royal Canadian Air Force, “Initiatives Launched to Retain and Increase RCAF Personnel Experience Levels,” last accessed 25 October 2019, <http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=initiatives-launched-to-retain-and-increase-rcaf-personnel-experience-levels/jwmfy5h7.2/11>.

“the quality of life and quality of service of all our personnel and their families.”⁹ These initiatives, released in May 2019, have yet to impact fighter pilot attrition.¹⁰

6. Further making matters worse, there is an increasing trend of experienced pilots releasing from the FF prior to reaching the point where they are pensionable. Half of the Majors who have released since April 1, 2018 were pensionable, and only a third of the Captains who have released were in the same category.¹¹ Combined with abnormally high release rates, the instances of non-pensionable releases are alarming, especially at the rank of Captain. Current rates of attrition are unsustainable and will undermine any and all solutions to the problems at hand.

The Fighter Force Production Problem

7. The attrition of pilots and the attrition of operational experience have been closely followed by FF leadership. The reflexive response has historically been to increase production of new fighter pilots. This singular focus has exacerbated the declining health of the operational squadrons in two significant and compounding ways. First, experienced pilots were consistently posted off the TFS's to make room for new pilots, as well as to fill the OTU which desperately needed instructors to maintain maximum throughput. Secondly, despite the priority, average pilot production has never surpassed the rates of attrition, and has contributed to a steady decline in experience levels on the TFS's as fewer experienced pilots are available to train the growing number of inexperienced pilots.

8. It must be understood that once on a TFS, a newly qualified fighter pilot will undergo further training. The Combat Readiness upgrade will qualify them to carry out real-world operational duty as a wingman. Through the course of their time on squadron, further training will be given to advance them to higher tactical leadership levels, such as

⁹ *Ibid.*

¹⁰ Col Russ Konyk, Director Fighter Capability Development, email discussion with author, 22 October 2019.

¹¹ LCol Ryan Kastrukoff, SSO Ftr, “Spiral 2 Roadmap to Campaign Plan,” (PowerPoint brief, 8 May 2019), slide 18.

leading a formation of two aircraft, and then training to lead a formation of four aircraft. All the while they are being instructed and mentored by the experienced pilots on squadron. Sufficient numbers of experienced pilots thus provides the TFS's with the capacity to absorb newly qualified pilots from the OTU.

9. What constitutes experience is defined individually by each fleet. As every pilot is an aircraft captain, owing to the CF-18 having a single seat, an experienced fighter pilot is defined as one who is a qualified four-ship lead and has accumulated 750 hours on type. Recent data shows that compared to fighter squadrons of foreign Air Forces of comparable size, pilots on RCAF fighter squadrons have less than half of the average time in cockpit.¹² The FF learned painfully late that production alone was not the solution. In its present practice, the training system does not have the capacity to stabilize the downward personnel trends, let alone begin to reverse them.

10. Confounding the issue is that the only practical way to improve experience levels on squadron is to slow production of new pilots,¹³ despite the clear need for more. Spiral 2 argues for reduced production to allow growth of experience, and offers several novel proposals for generating more pilots. Chief among these are to implement non-reciprocal exchanges with other Air Forces,¹⁴ and implement initiatives to reduce the training system failure rate.¹⁵ Reducing production to recommended levels will increase wait times for pilots awaiting training, currently estimated to be between 11-18 months,¹⁶ as well as stop pilot growth overall. The solution space is characterized by impracticality, uncertainty related to effectiveness, and conflicting options.

¹² LCol Ryan Kastrukoff, SSO Ftr, "Spiral 2 Roadmap to Campaign Plan," (PowerPoint brief, 8 May 2019), slide 15.

¹³ *Ibid.*, slide 16.

¹⁴ The idea being to send inexperienced pilots to other Air Forces to gain operational experience.

¹⁵ LCol Ryan Kastrukoff, SSO Ftr, "Fighter Force Get Well Spiral 2: Precis 1.0," (July 2019), 7.

¹⁶ LCol Ryan Kastrukoff, SSO Ftr, "1 CAD Pilot Production & Absorption," (PowerPoint brief, Sep 2019), slide 1.

The Fighter Force Readiness Problem

11. “In 2016, the Government of Canada directed National Defence to have enough aircraft available every day to meet the highest NORAD alert level and Canada’s NATO commitment at the same time.”¹⁷ National Defence had determined that it only had 64% of the trained CF-18 pilots required to meet this new government direction.¹⁸ In its Fall 2018 Report, the Office of the Auditor General of Canada (OAG) found that “there was no plan to increase the number of CF-18 pilots. Consequently, given the shortage of pilots and the limits of the training system, National Defence will not be able to meet the new operational requirement for many years.”¹⁹

12. Concerning aircraft technicians, in April 2018, 22% of positions on squadrons were either vacant or occupied by personnel not fully qualified to do maintenance. This directly contributed to insufficient aircraft available to meet national commitments.²⁰ As the fleet ages, an average of 21-24 hours of maintenance is required for every flight hour.²¹

13. The GoC’s solution was to purchase used RAAF F/A-18 Hornets despite DND and the OAG’s assertion that additional aircraft alone will not assist the FF in meeting the heightened operational requirement.²² The initial two jets were declared NORAD mission-ready in the summer of 2019. More jets are slated to follow, with two more arriving before the end of 2019, and two arriving every quarter until 2021.²³

14. Broadly speaking, two main efforts must happen. First, the RCAF will stand up a new TFS dedicated to NORAD operations. Second, the OTU’s training model will be

¹⁷ Office of the Auditor General of Canada, *2018 Fall Reports of the Auditor General of Canada to the Parliament of Canada: Report 3 – Canada’s Fighter Force – National Defence* (Ottawa, 2018), [para 19](#).

¹⁸ *Ibid.*, [para 24](#).

¹⁹ Office of the Auditor General of Canada, *2018 Fall Reports of the Auditor General of Canada to the Parliament of Canada: Report 3 – Canada’s Fighter Force – National Defence* (Ottawa, 2018), [para 26](#).

²⁰ *Ibid.*, [para 20](#).

²¹ *Ibid.*, [para 22](#).

²² *Ibid.*, [para 32](#).

²³ Author was Project Director for the Interim Fighter Capability Project, from 2017-2019 while posted to the Fighter Capability Office.

augmented to supply NORAD qualified pilots for the new squadron, and traditional multi-role pilots for the multi-role TFS's. These two efforts will simultaneously grow the FF, increase experience on the multi-role squadrons, alleviate the backlog of pilots awaiting training, be YFR neutral, provide an opportunity to increase Reserve Force participation, and potentially increase the quality of life for personnel who desire an alternate work location. This force structure is proposed for implementation in 2021 and lasting as long as operationally suitable, up to and including ELE.

LOO 1 – Activate a New NORAD-Only Fighter Squadron

15. A NORAD-only squadron simplifies training and currency as pilots only perform one mission set, vice five.²⁴ Adversary support for NORAD training is minimal. There is potential to “streamline Command and Control relationships in the NORAD enterprise.”²⁵ A NORAD-only squadron would provide a more stable work / life balance, as squadron TD would largely no longer be required, and short-term deployments are only in response to real-world events. Feedback has been favourable. In a recent Spiral 2 survey of FF personnel, 65% of respondents were interested in working at a NORAD-only squadron for three years, with 23% undecided, and 12% not interested.²⁶

16. Currently the FF will not fly its allocated hours for the Fiscal Year (FY), falling short by 800 hours.²⁷ If we assume a yearly average of 10 Force Generation (FG) sorties per week, at an average sortie length of 1.5 hours, FG requirements would result in 780 hours. Force Employment (FE) assumptions²⁸ of 20 real-world missions would require an additional 400 hours,²⁹ resulting in a total estimate of 1180 hours of generally low structural fatigue missions. Data between hours flown versus hours allocated last FY

²⁴ Defensive Counter-Air, Offensive Counter-Air, NORAD, Close Air Support, and Air Interdiction.

²⁵ LCol Ryan Kastrukoff, SSO Ftr, “Fighter Force Get Well Spiral 2: Precis 1.0,” (July 2019), 14.

²⁶ *Ibid.*

²⁷ LCol Ryan Kastrukoff, SSO Ftr, email discussion with author, 21 October 2019.

²⁸ A sample FE mission would consist of 5 hours for a 2-ship to transit to Inuvik, then conduct a combined 10-hour mission, and fly an additional 5 hours to return to Comox.

²⁹ SSO Ftr, “4 TFS YFR FY19-20,” (Excel spreadsheet, Oct 2019). 4 Wing is currently allocated 400 hours for NORAD duties.

shows a deficit of 1200 hours not flown, suggesting that space exists in the business plan.³⁰

17. Here, the Interim Fighter Capability Project (IFCP) may prove its worth. IFCP will be purchasing 18 used RAAF Hornets, and spare parts, and sustaining operations of those fighters until 2032. Although similar in configuration to RCAF Hornets, the RAAF jets will have some hardware differences which may result in a desire to group aircraft in the same unit. Additional jets and spare parts, coupled with the Fighter Force Maintenance Renewal Plan³¹ should allow the FF to fly its allocated hours, and permit an additional NORAD-only squadron to operate. RAAF Hornet current level of certification, delivery, and modification schedule make it ideally suited for furnishing a new TFS.³²

18. Serious thought should be given to considering 19 Wing Comox as a viable base to operate the new TFS from. It is currently equipped to sustain NORAD flying operations, and is a Deployed Operating Base for NORAD aircraft. Comox facilities are more suited to enable faster reaction times than Cold Lake. Snow and ice clearance operations, which are already strained at both fighter Wings, may require significantly less effort in Comox than in Cold Lake. The route to Inuvik from Comox is 80 nautical miles farther than from Cold Lake, however one tends to experience less headwinds on a route from Comox. Situating a NORAD squadron in Comox would permit Cold Lake squadrons to focus on training for multi-role combat operations without the deleterious effect of maintaining a 24/7 NORAD posture. Requiring further investigation are the infrastructure requirements to hangar aircraft at 19 Wing,³³ in-service support requirements (second-line maintenance for the jets would most likely be conducted in

³⁰ LCol Kastrukoff, SSO Ftr, "Fighter Force Get Well Spiral 2 Roadmap." (PowerPoint brief, 24 June 2019), slide 11.

³¹ An initiative "which will see further use of contracted support for second-line maintenance, enabling [the RCAF] to bring additional technicians to front-line squadrons." LGen Al Meininger, Commander RCAF, "RCAF Commander's Statement on the November 20 Auditor General's Report," Last accessed 25 October 2019, <http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=rcaf-commander-s-statement-on-the-november-20-auditor-general-s-report/jopuexs9>.

³² Authors experience as Project Director IFCP. Up-to-date details available from Project Manager, Director Aerospace Equipment Program Management (Fighters and Trainers).

³³ Temporary space would be available as a result of the Aerospace Engineering Test Establishment's relocation to Ottawa.

Cold Lake), and most importantly the availability of technicians and other support personnel.

19. A recommended PML of 14 pilots³⁴ would permit three crews of four pilots each to conduct a one week on, two weeks off duty schedule, with two additional pilots acting as a buffer. This schedule should also give the required flexibility and consistency needed to employ Reserve pilots as needed. Significantly, 14 new pilot positions would bring the FF very close to the minimum PML required to support the transition to the future fighter.

LOO 2 – Create a NORAD-Only Fighter Pilot Course

20. Implementing Spiral 2's recommendation to reduce pilot production at the OTU will address the core problem of low experience levels on the TFS. Producing six to seven pilots³⁵ per year will yield approximately 1000 hours in savings. The resulting unused OTU capacity will be used to train NORAD-only pilots, which addresses the core problem of insufficient pilots. A simplified training syllabus would include the Alert Force Wingman NORAD syllabus added to the regular Fighter Pilot Course syllabus at the OTU. All of the air-to-surface missions would not be conducted. This will expedite pilot training for immediate employment on the NORAD-only squadron.³⁶ These pilots could be subsequently posted to a multi-role TFS where in-house training would be provided to qualify them for the Air Attack mission, or strong performers could proceed directly to the future fighter conversion course. A simplified visual depiction outlining career progression for these NORAD-only pilots is detailed below.

³⁴ 14 pilots on squadron would result in an average of 85 hours per pilot per year, given an allocation of 1180 YFR.

³⁵ Considering a historical failure rate of 80%, this would equate to 8 starts, roughly half as many ab initio students 410 starts in a given year.

³⁶ Total hours required, including CF-18 support per NORAD student is 94.2, with the six additional students at the OTU costing approximately 565.2 hours.

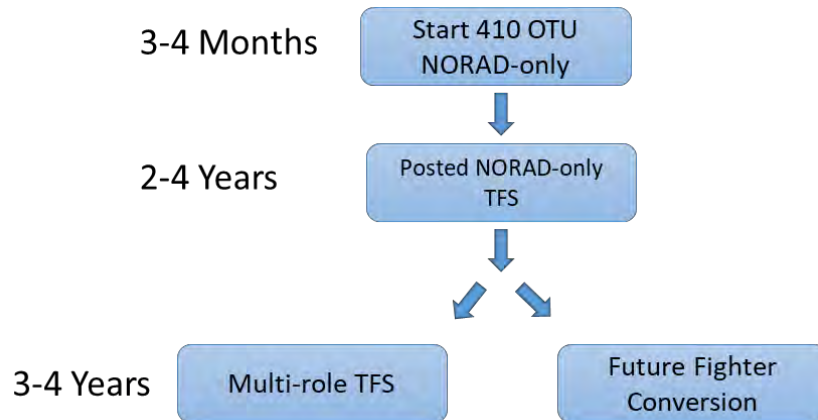


Figure 1: Fighter Pilot Career Progression (NORAD-only)

21. It is recommended to staff a 50/50 ratio of experienced pilots to NORAD-only pilots (not including the Commanding Officer or Deputy Commanding Officer). This would mean a training bill of six NORAD-only pilots be produced concurrently with the six to seven multi-role pilots being trained at the OTU. Those multi-role pilots will be distributed to the multi-role TFS's, who will then in turn supply pilots for the NORAD-only TFS during Annual Posting Season (APS) 2021.

22. Using current OTU forecasts,³⁷ a NORAD-only course could begin in Fall 2020, and graduate pilots in time for APS 2021 to coincide with postings of pilots from the multi-role TFS to fully complement the squadron. By 2021, a sufficient number of RAAF Hornets will have been reconfigured and ready for service in the NORAD role.³⁸

23. It is important to note that all squadrons would retain the capability to conduct NORAD missions. This proposal does not structurally inhibit the RCAF from utilizing all of its assets to meet GoC commitments and policy.

³⁷ Maj Evan Sudul, 410 OTU Training Officer, telephone conversation with author, 22 Oct 2019.

³⁸ Authors experience as Project Director IFCP. Up-to-date details available from Project Manager, Director Aerospace Equipment Program Management (Fighters and Trainers).

CONCLUSION

24. The intent of this service paper is to introduce a solution to address problems which have been up to this point intractable. Improving experience levels and the number of qualified pilots is crucial to meeting GoC commitments and ensuring a successful transition to the future fighter.

25. An additional TFS will improve the core problem of low experience levels on squadrons. It will also create the additional cockpits required to enable an effective transition to the future fighter. A fundamental need to train more pilots persists. Using existing resources this can only be achieved by creating an additional NORAD-only pilot stream. In doing so, the new TFS must be focused solely on the NORAD mission.

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