



DISARMING ARCTIC SECURITY

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Fighter Aircraft and New Canadian Defence Imperatives

That the Liberal election campaign could make unequivocal promises not to buy the F-35 fighter and to withdraw Canadian CF-18 fighter aircraft from their current mission in Iraq and Syria, without triggering any significant blowback from Canadians or the Canadian defence community, testifies to the declining relevance of fighter aircraft, both to North American security, including the Arctic, and to Canadian military operations and peace support missions beyond our borders.

The F-35 continues to be vigorously promoted by influential security analysts and former military officers,¹ some pundits, and many in the Department of National Defence (DND) itself, but the new Government will probably have little difficulty making good on its campaign promise not to buy it, largely because DND has never been able to convincingly portray it and its “fifth generation” attributes as integral to, never mind an urgent requirement for, meeting Canada’s defence needs in North America. Indeed, it’s hard to characterize any fighter aircraft as absolutely essential – in the way, for example that coastal radars are absolutely necessary if Canada is to effectively monitor the approaches to Canadian air space, or in the way that helicopters, patrol ships, and ice-breakers are essential for meeting the basic search and rescue, public safety, and frontier monitoring responsibilities of a northern sovereign state. Not since the Soviet manned bomber threat gave way to the missile threat in the post-Sputnik late 1950s have fighter aircraft occupied a place of fundamental or critical importance in Canadian security strategy.

And the promised withdrawal of the CF-18s from the Middle East also turned out to be uncontroversial, despite some calls for second thoughts after the attacks in Paris on November 13. Again, that’s because there is in fact no international consensus, and scarce evidence, that the bombing campaign of the US-led coalition, with Russia’s bombing added to the chaotic mix, is making a critical contribution, either to the defeat of the Islamic State or, especially, to ending the civil wars and restoring some semblance of order in Iraq and Syria. While it is certainly possible to point out specific targets destroyed and tactical defeats handed ISIS² by Canadian or other fighter aircraft bombing missions, and while the Canadian presence is welcomed by coalition partners as a statement of political solidarity, there is no sense in Canada or apparently among our coalition partners that the Canadian combat presence is seriously consequential.

That said, no military leader is likely to argue that Canada should no longer be in the fighter aircraft business, nor did the Liberals, or the NDP for that matter, promise that in their campaign commitments. So the new Government has now established an office – designated the Future Fighter Capability project³ – to oversee the procurement of aircraft to replace the CF-18 fighter. The general guidelines to be followed seem clear enough (though hard to meet): the purchase is to “match Canada’s defence needs;”⁴ the primary mission of the replacement aircraft is to be the defence of North America;⁵ the decision is to be made following “an open and transparent competition;”⁶ the F-35 is not a suitable option;⁷ and the replacement aircraft should be significantly less costly than the F-35.

That new office notwithstanding, there are other signs from the new Government that point to a reduced emphasis on fighter aircraft. The chapeau sentence to the policy very briefly summarized in the Minister of National Defence Mandate Letter⁸ calls for structuring the Canadian Armed Forces “to protect Canadian sovereignty, defend North America, provide disaster relief, conduct search and rescue, support United Nations peace operations, and contribute to the security of our allies and to allied and coalition operations abroad.” Domestic responsibilities include “surveillance and control of Canadian territory and approaches, particularly our Arctic regions,” and for overseas operations the emphasis shifts from coalition operations, though those are included, to a renewed “commitment to United Nations peace operations.” Couple that with the intended switch in the current Middle East mission from air combat to training ground troops and humanitarian support, and it becomes clear that fighter aircraft are of declining relevance.

Fighter aircraft in North America

To the extent that such aircraft are seen to be needed at all, the Liberal election platform points out that “the *primary* mission of our fighter aircraft should remain the defence of North America” (emphasis added) – in other words, the capabilities of the CF-18 replacement are to be responsive to North American requirements, where, by the way, successive Governments have agreed that there is no military threat, rather than to potential engagements overseas. In the Arctic in particular, the surveillance, reconnaissance, and search and rescue priorities in an environment of no military threats push fighter aircraft further to the margins.⁹

Fighter aircraft have nevertheless been regarded as a normal component of Canadian national and continental security arrangements. At the same time, official threat assessments have for decades now consistently concluded that Canada faces no military threat. For example, a 1995 foreign policy statement by the Government of day emphasized that “direct threats to Canada’s territory are diminished,” noting that future challenges to Canadian security would, as Prof. Joel Sokolsky of Royal Military College summarized the statement, “likely be of a nonmilitary nature, economic, environmental and demographic.”¹⁰ That same basic assumption prevailed in the 2005 defence policy statement, in which the threats of terrorism and failed and failing states received the top billing and North American military roles, in addition to traditional sovereignty assertion, focused on aid to civil authorities and public safety, not on external military threats.¹¹ The Harper Government’s “Canada First” Defence Strategy continued the focus on global uncertainty and the threats of terrorism and failed states. The “challenges on the home front” were focused on non-military threats and assistance to civil authorities in response to natural disasters, threats of terrorism, human and drug trafficking, and other public safety issues.¹² In other words, the long-term consensus has been that there is no foreseeable direct military threat to Canada.¹³

That decades’ long and overarching reality ought to have significant consequences for military planning and procurement. Security forces in the foreseeable absence of direct military threats ought surely to be structured and equipped differently from forces facing active threats. It doesn’t seem overly rash to suggest that the absence of direct military threats could alter procurement plans and lead to the possibility of acquiring fewer fighter aircraft, or even, as some prominent defence analysts and practitioners have suggested, of foregoing them altogether. The possibility of not incurring the extraordinary costs of acquiring

and operating modern fighter aircraft (among the costliest of modern weapons systems) is an opportunity that can be seriously explored if Canada truly faces no military threats.

There are domestic defence roles which jet fighters can certainly perform, such as tracking and intercepting unauthorized aircraft entering into Canadian air space or sovereignty flights over the Arctic, but far from being essential for such roles, fighter aircraft are ill-suited for them. In monitoring approaches to Canadian air space, coastal radars identify aircraft in approaches to or entering Canadian airspace, and by linking detected aircraft to officially filed flight plans, unauthorized aircraft are identified and tracked on behalf of civilian authorities to their destination, where local law enforcement is engaged. Some 200,000 flights per year are monitored through the Canadian Air Defence operations centre at North Bay, Ontario. In some circumstances fighter aircraft are mobilized to force the intruder to land. These intrusion scenarios do not involve military aircraft or supersonic aircraft – rather they are typically small and slow flying aircraft. Fighter aircraft can track them, but they are not ideal in that role. Aircraft that can fly low and slow would be better suited – a point made in an oft quoted article by a Canadian Forces College academic. He points to military turbo-prop aircraft, agile and still relatively fast, available at less than a tenth of the cost of supersonic jet fighter aircraft.¹⁴

Continental defence also rightly assigns high priority to monitoring and identifying bomber aircraft near or approaching the air space of Canada and the US – and, of course, the only aircraft in that category are Russian strategic range bombers with nuclear weapons capabilities that make regular flights off North American coasts – although, always in international airspace. These are Russian aircraft on training flights. They fly into sections of international airspace that they know are NORAD identification zones and then they wait to see how long it takes NORAD to detect them and then to come and meet them. The Russian bombers and NORAD fighters then essentially acknowledge each other and everyone heads for home. Some insist that those flights put Canadian sovereignty under threat,¹⁵ but they don't. North American frontiers and adjacent areas certainly need to be monitored to make defence managers aware of any military activity or, more to the point, to confirm that continued absence of any military threats, but there is nothing that makes fighter aircraft an essential component of that role. Initial detection of air activity is by radar, but identification of slow flying long range bombers could also be accomplished by smaller and slower aircraft, or some suggest drones, based closer to the three coasts – and such aircraft would also be more suited for tracking civilian aircraft and for assisting in maritime patrols (including of the kind now conducted by the civilian National Aerial Surveillance Program operated by Transport Canada), search and rescue, and other concrete contributions to public safety in Canada. These are the kind of dual purpose aircraft that would be especially useful if based in the Arctic.

The primary rationale for acquiring sophisticated fighter aircraft is the prospect of being drawn into combat operations along other state-of-the-art fighters in coalition operations. But if the new Government's directive that CF-18 replacement aircraft are primarily for the defence of North America is taken seriously, and if there is also acknowledgement of the absence of direct military threats to North America, then it seems clear that a capacity to confront hostile fighter aircraft ought not to be a major part of the calculation in selecting new aircraft.

Fighter aircraft and overseas operations

Reports of Canadian CF-18s fending off Islamic State forces in northern Iraq have experts and pundits urging Ottawa to reconsider its pledge to withdraw the fighter jets from the US-led coalition,¹⁶ but any reading of the post-election accounts of “successful” Canadian CF-18 strikes against Islamist forces¹⁷ really needs to be tempered by the experience of Afghanistan. As a Canadian Armed Forces official put it almost ten years ago: while the Taliban were losing every battle with Canadian or other international forces, they were managing to turn every tactical loss into a strategic gain.¹⁸

That Taliban focus on the long-term has now left them strengthened to the point where they control or maintain a dominant presence in a third of Afghanistan,¹⁹ in a civil war that shows no signs of winding down.

As for the forces bent on establishing and expanding a caliphate in Iraq and Syria (variously known as ISIS, ISIL, Islamic State, or Daesh), while they are currently enduring real tactical defeats, some helped along by Canadian CF-18 fighters, they too continue to entrench their presence. Overall, the so-called caliphate’s territory shrank during 2015, especially through losses to Kurdish forces in northern Syria, but there were also gains in the east-central region around the city of Palmyra.²⁰

The bombing campaigns certainly impact ISIS and threaten its hold on particular locations, but whatever strategic vulnerability it faces owes less to foreign bombers than to the fact that it really has but one concrete advantage to offer the populations of Iraq and Syria – namely, determined Sunni defiance of Shia-dominated regimes. And that’s an advantage that will vanish, not in the face of coalition bombing, but when those regimes and their international supporters turn their attention to the long-term job of building genuinely inclusive governments and societies and address the repressive social, economic, and political conditions that spawned the 2011 “Arab Spring” revolts in the first place.

In the meantime, many analysts argue, the tactical losses visit upon ISIS by the West’s bombers also generate strategic gains for ISIS and similar groups as their recruiters exploit the narrative of Western infidels on a crusade against Islam. There are certainly other security analysts, and perhaps some coalition partners, who will continue to press Canada’s new government to keep Canadian CF-18 fighters on duty in Iraq and Syria, but you won’t see any sense of urgency or worry about the consequences of a pullout. And that isn’t only because the overall Canadian presence is small and necessarily marginal. It’s because of two basic realities. The first is that the threat of terrorism in Canada, whether from ISIS or any other sources traceable to the region, is very small and best countered through policing and other public safety measures. The second is that there is in fact very little confidence that the “war on terror” in the Middle East contributes effectively to the security of the people of Iraq and Syria.

The international community does have a huge and daunting responsibility to meet in Iraq and Syria, but it’s not the responsibility to determine the region’s winners and losers or to try to militarily re-engineer its politics. That’s been tried for well over a decade with disastrous results that are now on full display. Those military interventions manage primarily to create ungoverned spaces that feed the chaos, prevent accountability, and aid recruitment by ISIS and similar groups.²¹

Fighter aircraft are no help in meeting the responsibility that weighs most heavily on the international community, the responsibility to come to the aid of the victims of the current chaos. It's a humanitarian responsibility, of which welcoming and supporting refugees is one essential but small part (even if it is a very big and welcome effort by Canadians and profoundly life-saving and life-altering for those who make it to Canada). But the primary humanitarian imperative is to find ways of supporting displaced persons where they are in the region. One gets an idea of the size of the challenge from the UN Office for the Coordination of Humanitarian Affairs, which reports at the end of 2015 that "since 2011, an average of 50 Syrian families have been displaced every hour of every day."²²

A former supreme allied commander of NATO notes that the US was not long ago spending \$1 billion per day in Afghanistan, and that similar levels of support are now needed to pursue political accommodation, effectively ameliorate social and economic conditions, and rebuild the infrastructure in Iraq and Syria.²³ The decision to bring the CF-18s home is the right one, but it will only make sense in the context of heightened attention these imperatives,²⁴ and, most especially, to helping the UN and other humanitarian organizations reach populations in desperate need.

If the Government indeed intends to refocus Canada's international military engagements in support of a renewed commitment to UN peace operations, and if Canadian combat contributions to international coalitions of the willing are by definition comparatively modest and thus optional, it seems clear that overseas operations are not a compelling reason for Canada to operate fighter aircraft.

An air force without fighter aircraft?

Withdrawing Canadian fighter aircraft from the anti-ISIS coalition and the decision not to buy the F-35 fighter may not lead immediately to the end of fighter aircraft in the Royal Canadian Air Force, but there are elements of the Canadian defence policy community for whom that is not an unthinkable proposition. With air defence roles in North America focused on aid to civil authorities in law enforcement, and given the intention to refocus overseas engagements on UN peace support operations, military planners are hard pressed to justify expenditures of the vast sums required by modern fighter aircraft. And key voices are making the point.

A former, and formerly very prominent, Deputy Minister of National Defence, Charles Nixon, wrote an op-ed for the Globe and Mail in 2014 in which he said plainly, and without qualification, that Canada does not need fighter aircraft. "Fighters," he said, "simply cannot contribute anything substantial toward the achievement of the six Canadian defence objectives."²⁵ The Conservative Government's "Canada First Defence Strategy" identified six core missions that the Canadian Armed Forces should have the capacity to carry out in North America and globally:

1. Conduct daily domestic and continental operations, including in the Arctic and through NORAD;
2. Support a major international event in Canada, such as the 2010 Olympics;
3. Respond to a major terrorist attack;
4. Support civilian authorities during a crisis in Canada such as a natural disaster;
5. Lead and/or conduct a major international operation for an extended period; and

6. Deploy forces in response to crises elsewhere in the world for shorter periods.

Prof. James Fergusson, a prominent academic defence analyst generally supportive of increased Canadian military capacity, notes that “in the absence of a global struggle such as the Cold War,” Canada “faces few, if any, direct military threats.” Thus, he says, the Canadian Forces at home face primarily a policing challenge, including in the Arctic. Consequently, “there are few, if any, threats that necessitate an advanced multi-role fighter, even with the resumption of Russian bomber flights over the Arctic in the past several years.”²⁶

Paul Mitchell, an academic at Canadian Forces College in Toronto has argued that because Canada will not be in a position to buy enough of any fighter aircraft to fulfill all the NORAD, NATO, and expeditionary commitments that could be contemplated and that therefore alternatives to advanced fighters could be considered: “The most likely avenue of attack from the air on Canada today is not from a lumbering Bear bomber, but rather a small privately owned commercial aircraft.” And for defence against that you need aircraft that can fly “low and slow” – not, as he says, the *métier* of supersonic fighters. One suggestion: “A turboprop aircraft like Embraer’s ‘Super Tucano’ or Beechcraft’s AT-6B (whose engines are manufactured by Pratt & Whitney Canada in Nova Scotia) would easily fit this bill. At roughly \$6-million per copy, we could outfit the air force with 10 times the number of airframes. Furthermore, such aircraft are well suited to support army operations and are cheap to operate and maintain.”²⁷

Dan Middlemiss, a Canadian defence policy expert at the Centre for Foreign Policy Studies at Dalhousie University, has argued that it is becoming increasingly difficult to justify, on the basis of Canadian foreign policy, the cost of even a modest fleet of modern fighter aircraft. There would be “almost no requirement” for Canada to operate such aircraft on its own in expeditionary missions, and while such fighters could make a contribution to an international coalition of forces, their high costs could “rule them out as cost-effective contributors to Canadian expeditionary operations.”²⁸

The procurement process

The new Government’s rejection of the F-35 leaves two important questions in its wake. Can it be an open procurement process if one of the options is rejected before the competition even gets underway? Does rejection of the F-35 also mean rejection of the Joint Strike Fighter industrial program that Canada has been a part of since 1997?

An open process?

The first question is not really that much of a question. The F-35 exists and is thus in reality an option – but it is not an unexamined option. The merits and features of the F-35 have been widely debated and reported. It’s also clear that if the detailed specifications conform to the Liberal election platform’s²⁹ rejection of “stealth” and “first-strike” capabilities, two key selling points for the F-35, its stealth features and claimed fifth generation technologies, will be ruled out of the equation. There could hardly be a clearer signal that the F-35 would not win an open competition. In other words, an open competition doesn’t mean openness to any aircraft that exists, only to those that can meet defined requirements (if you go into a showroom and announce that you’re looking for a four-cylinder sedan you’re not being unfair to makers of V-6 SUVs).

Canada in the JSF program

The second question remains unanswered, but some commentators have wrongly assumed that the commitment not to buy the F-35 for the Canadian Forces means automatic Canadian withdrawal from the Joint Strike Fighter (JSF) program.³⁰ The *Globe and Mail* was among those reporting that “the Liberal promise [not to buy the F-35] means Canada will have to resign its partnership in the US Joint Strike Fighter Program.”³¹ Canada may well withdraw from the JSF, but it is important to maintain the distinction between the CF-18 replacement program and the JSF. Those are two distinct programs, and while the issues are obviously related, participation in the JSF program was never contingent on Canada making the product of that program the CF-18 replacement. If that had been the case, then Canada would have actually made the CF-18 replacement decision in 1997 when it joined the JSF program. It wasn’t logical then, and it isn’t logical or responsible now, to simply assume that whatever aircraft might emerge from the JSF program (a 12 member consortium led by the United States in which Canada had and has little impact over the kind of aircraft to emerge from it) would determine the kind of aircraft Canada would acquire to replace the CF-18.

Back in 1997 some warned that joining a multi-nation research and development program might be used to pre-determine the outcome of a major Canadian procurement decision-making process, but the Government of the day insisted that it would not.³² Again, Canadian participation in the JSF program has never been contingent on Canada buying the F-35. And in the election campaign, Mr. Trudeau didn’t promise to withdraw from the JSF, only that Canada “will not buy the F-35 fighter jet.”

Liberal silence on the question of ongoing participation in the JSF program likely means Canadian firms will continue to bid on JSF contracts. It is in fact commonplace for Canadian industry to work on US major weapons systems that Canada has not purchased and never will purchase.

Are there savings available?

In making the commitment not to acquire the F-35 fighter aircraft, Mr. Trudeau, said "there are many other fighters at much lower price points that we can use that have been proven, that we will actually be able to deliver in a timely way."³³

It’s true that most of the other options generally regarded as in the running could probably be delivered sooner than the F-35, and at lower acquisition costs – but consequential long-term savings are more likely to come from buying fewer or no fighter aircraft, rather than from buying a substantial fleet of something other than the F-35. Modern fighter aircraft of any make or model are extremely expensive to buy and even more costly to operate.³⁴

Of the projected \$44 billion cost of purchasing and operating 65 aircraft for 36 years, less than \$10 billion (or about 20 percent) is for the initial acquisition. The former Parliamentary Budget Officer, Kevin Page, argues there could be savings of as much as \$30 million per plane on the capital purchase price. That amounts to \$1 billion, but spread over 36 years, it is a modest \$30 million per year – a lot of money, to be sure, but not hugely significant for an annual defence budget of \$20 billion. Mr. Page did say there would also be bigger savings in maintenance and operating costs, but did not quantify them.³⁵

The case for, or against, fewer or no fighters ought obviously to include a thorough review of the Canadian defence and security context, with clear assessments of threats and needs, and with equally careful assessments of the relevance of fighter aircraft to those threats and needs. Rejecting the F-35 and withdrawing CF-18s from the Iraq and Syria operations are an important start, one that should lead to an early start on the promised “open and transparent review process to create a new defence strategy for Canada.”³⁶

Notes

¹ Richard Shimooka, “The F-35 is still our best bet,” *National Post*, 24 September 2015; Richard Shimooka and Don Macnamara, “Canada still needs fighter jets,” *National Post*, 15 July 2014.

² Various known as Islamic State, ISIS, ISIL, and Daesh.

³ David Pugliese, “Government sets up new office to buy replacement aircraft for CF-18s,” *Ottawa Citizen*, 15 November 2015. <http://ottawacitizen.com/news/politics/government-sets-up-new-office-to-buy-replacement-aircraft-for-cf-18s>

⁴ Mandate letters to the Minister of Public Services and Procurement and the Minister of National Defence. <http://pm.gc.ca/eng/ministerial-mandate-letters>

⁵ Bruce Campion-Smith, “Liberals would scrap F-35 jet purchase, says Justin Trudeau,” *The Toronto Star*, 20 September 2015. <http://www.thestar.com/news/canada/2015/09/20/liberals-would-scrap-f-35-jet-purchase.html>

⁶ Mandate letters to the Minister of Public Services and Procurement and the Minister of National Defence. <http://pm.gc.ca/eng/ministerial-mandate-letters>

⁷ Bruce Campion-Smith, “Liberals would scrap F-35 jet purchase, says Justin Trudeau,” *The Toronto Star*, 20 September 2015. <http://www.thestar.com/news/canada/2015/09/20/liberals-would-scrap-f-35-jet-purchase.html>

The Liberal campaign platform added that the fighter aircraft acquired would not have “stealth first-strike capability.” <https://www.liberal.ca/realchange/>

⁸ Ministerial Mandate Letters. <http://pm.gc.ca/eng/ministerial-mandate-letters>

⁹ James Drew, “Canadian F-35 exist could signal wider air force review,” *FlightGlobal.com*, 21 October 2015.

¹⁰ Joel J. Sokolsky, “Canada, Getting it Right This Time: The 1994 Defence White Paper,” 31 May 1995.

¹¹ Government of Canada, “Defence: A Role of Pride and Influence in the World,” Canada’s International Policy Statement, 2005.

¹² Government of Canada, Canada First Defence Strategy.

¹³ Paul Robinson, “Canada’s Military: A Solution in Search of a Problem,” CIPSBLOG, Centre for International Policy Studies, 29 May 2012. <http://cips.uottawa.ca>

¹⁴ (Paul T. Mitchell, “How to get more air force for the dollar,” *The Ottawa Citizen*, 12 October 2010. http://www.ottawacitizen.com/story_print.html?id=3655573&sponsor=).

¹⁵ Richard Shimooka, "The F-35 is still our best bet," *National Post*, 24 September 2015; Richard Shimooka and Don Macnamara, "Canada still needs fighter jets," *National Post*, 15 July 2014.

¹⁶ Gloria Galloway, "Liberals face more flak over plans to withdraw jets from bombing missions," *Globe and Mail*, 18 December 2015. <http://globeandmail.com>

"Rick Hillier says Liberals haven't clearly explained CF-18 withdrawal," *CBC News*, 17 December 2015. <http://www.cbc.ca/radio/the-house/>

¹⁷ "Canadian forces strike back against ISIS offensive in northern Iraq," *Canadian Press*, *CBC News*, <http://www.cbc.ca/news>, 18 December 2015.

¹⁸ Not-for-attribution comments made in a Workshop setting in 2006.

¹⁹ James Hohmann, "Are we going to lose Afghanistan?" *Washington Post*, *The Daily 202*, 28 December 2015. <http://www.washingtonpost.com>

²⁰ Columb Strack, *HIS Jane's 360*, 21 December 2015. <http://www.HIS.com>

²¹ Stephen M. Walt, "The Unbearable Lightness of America's War Against the Islamic State," *Foreign Policy*, 11 December 2015. <https://foreignpolicy.com/2015/12/11/the-unbearable-lightness-of-americas-war-against-the-islamic-state-obama-san-bernardino-us/>

²² "2016 Humanitarian Needs Overview: Syrian Arab Republic," Report from UN Office for the Coordination of Humanitarian Affairs Published, 29 Dec 2015. <http://reliefweb.int/report/syrian-arab-republic/2016-humanitarian-needs-overview-syrian-arab-republic>

²³ James Stavridis, "Killing the Islamic State Softly," *Foreign Policy*, 28 December 2015. <https://foreignpolicy.com/2015/12/28/>

²⁴ Paul Rogers and Richard Reeve, "Russia's Intervention in Syria: Implications for Western Engagement," *Oxford Research Group*, 14 October 2015.

²⁵ (Charles Nixon, "Canada does not need fighter jets, period," *The Globe and Mail*, 08 July 2014. <http://www.theglobeandmail.com>)

²⁶ (James Fergusson, "The right debate: airpower, the future of war, Canadian strategic interests, and the JSF decision," *Canadian Foreign Policy Journal*, 17:3, 204-216.)

²⁷ (Paul T. Mitchell, "How to get more air force for the dollar," *The Ottawa Citizen*, 12 October 2010. http://www.ottawacitizen.com/story_print.html?id=3655573&sponsor=).

²⁸ Dan Middlemiss, "A Military in Support of Canadian Foreign Policy: Some Fundamental Considerations," *Centre For Foreign Policy Studies*, *Dalhousie University*, *Halifax, Nova*. <http://www.cdfai.org/PDF/A%20Military%20In%20Support%20of%20Canadian%20Foreign%20Policy%20-%20Considerations.pdf>.

²⁹ <https://www.liberal.ca/realchange/>

³⁰ David Pugliese, "How much has Canada spent on the F-35 so far," *Ottawa Citizen*, 30 October 2015. <http://ottawacitizen.com/news/national/defence-watch/how-much-has-canada-spent-on-the-f-35-so-far>

The blog <http://bestfighter4canada.blogspot.ca/> says in an October 20, 2015 post: "If the LPC keeps its promise, we will be the first major JSF partner to walk away from the program."

³¹ Steven Chase, "Scrapping F-35 fighter jets may not lead to big savings, experts say," *Globe and Mail*, 28 October 2015. <http://www.theglobeandmail.com/news/politics/scrapping-f-35-fighter-jets-may-not-lead-to-big-savings-experts-say/article27012886/>

³² Canada began its participation in the JSF program since 1997, when it contributed (US) \$10 million for the Department of National Defence to participate in the Concept Demonstration phase. During this phase the two US bidders, Boeing and Lockheed Martin, developed and completed prototype aircraft. That process led in 2001 to the selection of Lockheed Martin as the JSF manufacturer. In 2002, Canada joined the System Development and Demonstration phase with a further investment of (US) \$100 million, and an additional (US) \$50 million contributed through federal Canadian technology investment programs assisting Canadian industry. This phase runs through 2015. In 2003, the United States invited the current partners to participate in the Production, Sustainment and Follow-on Development phase of the program, and in December 2006, Canada signed the JSF Production, Sustainment and Follow-on Development Memorandum of Understanding. DND projects the cost to Canada for this phase to be about (US)\$551 million from 2007 to 2051. [DND, "Canada's Next Generation Fighter Capability: The Joint Strike Fighter F-35 Lightning II." <http://news.gc.ca/web/article-eng.do?m=/index&nid=548059>.]

"Government of Canada Invests in R&D Technology for Joint Strike Fighter Program, 2 September 2008." Government of Canada News Centre. <http://news.gc.ca/web/article-eng.do;jsessionid=ac1b105330d514fd77ad446b41fd90d7edcb1f04e3ec.e38RbhaLb3qNe38TaxuMa3qOay0?crtr.sj1D=&mthd=advSrch&crtr.mnthndVI=7&nid=417259&crtr.dpt1D=&crtr.tp1D=&crtr.lc1D=&crtr.yrStrtVI=2002&crtr.kw=joint%2Bstrike%2Bfighter&crtr.dyStrtVI=1&crtr.aud1D=&crtr.mnthStrtVI=1&crtr.yrndVI=2010&crtr.dyndVI=23>

For a broader view of the JSF and F-35 program, including costs, see: Kenneth Epps, "Why Joint Strike Fighter aircraft? Program costs rise and benefits carry risks," Ploughshares Briefing 10/3, August 2010. <http://www.ploughshares.ca/libraries/Briefings/brf103.pdf>.

Alan Williams, "Open Competition Needed For Canada's New Fighter Aircraft Procurement Says Former Senior Procurement Official," in David Pugliese's Defence Watch. July 27, 2010. <http://communities.canada.com/ottawacitizen/blogs/defencewatch/archive/2010/07/27/open-competition-needed-for-canada-s-new-fighter-aircraft-procurement-says-former-senior-procurement-official.aspx>.

³³ Daniel Flitton, "Canada's Trudeau will dump \$130 million stealth jets Australia wants to buy," The Sydney Morning Herald, 20 October 2015. <http://www.smh.com.au/world/canadas-trudeau-will-dump-130-million-stealth-jets-australia-wants-to-buy-20151020-gke0u7.html>

³⁴ Michael Byers, "The Plane That Ate the Canadian Military: Life-Cycle Cost of F-35 Fleet Could Reach \$126 Billion," Canadian Centre for Policy Alternatives and the Rideau Institute, April 2014. https://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2014/04/The_Plane_That_Ate%20_Canadian_Military.pdf

³⁵ Steven Chase, "Scrapping F-35 fighter jets may not lead to big savings, experts say," *Globe and Mail*, 28 October 2015.

³⁶ Minister of National Defence Mandate Letter. <http://pm.gc.ca/eng/ministerial-mandate-letters>