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Most of Canada's major military hardware is old, degraded, unreliable and often unavailable. The Navy has no supply ships or air defence destroyers. Its marine coastal patrol vessels have been deemed unworthy of a mid-life refit. Its submarines are nearly 30 years-old and have spent most of their lives in refit. The Army's fleet of armoured trucks needs to be replaced before any sizeable overseas mission—including UN peacekeeping—can be undertaken. The Air Force's fighter-jets are 30 years-old, raising concerns about metal fatigue. Its search-and-rescue planes are nearly 50 years-old and it has only 14 long-range search and research helicopters, despite needing at least 18 of them. Making these necessary fixes requires a substantial increase in Canada's defence budget, from the current 1% of GDP to at least 1.5% of GDP. In this context, there is no room for unnecessary spending. My presentation focuses on four such items of unnecessary spending that the Canadian Forces (and others) have proposed:

1. Drones for Arctic surveillance

Canada is currently well-equipped for Arctic surveillance. It has RADARSAT-2, the world's best synthetic aperture radar satellite, and is investing in the next generation RADARSAT Constellation. Together with the US, it operates the North Watch radar system. It has Aurora maritime patrol aircraft, 14 of which are undergoing a major refit. It has two Transport Canada Dash 8s and one Dash 7 which overfly every foreign vessel visiting Canada's Arctic. Drones are not needed for Arctic surveillance; their use in the region was only proposed after the government twice denied a request from the Air Force to acquire armed drones for use in conflicts overseas.

2. Fighter jets for North American defence

The CF-18s desperately need to be replaced, within a reasonable budget, by planes that are suited for Arctic and maritime operations. One of the possible replacements, the F-35, is not yet proven, is not yet complete, has uncertain costs, and only one engine.

One issue concerns the financial aspect of this procurement, in particular the vulnerability of this acquisition to changes in the exchange rate. The Harper government set the acquisition budget for 65 F-35s at \$9 billion when the exchange rate was 92¢ on the US dollar. At today's exchange rate, \$9 billion would buy only 56 F-35s. Moreover, the sustainment and operating costs of the F-35 are roughly twice those of the Boeing Super Hornet.

Another issue concerns the F-35's single engine. Canada currently has twin-engine fighter jets that it chose because of the safety provided by a second engine, just like the US Navy chose the F-18 and its replacement Super Hornets. If Canada were to choose a single-engine jet, it would have to substantially improve its Arctic search and rescue, so that it could get to pilots quickly if they had to parachute to safety.

While it is true that jet engines are becoming progressively more reliable, twin-engine jets are still more reliable than single-engine jets. There is data on this, readily available at the US Air Force Flight Safety Center website. Lockheed Martin argues that, because trans-ocean civilian airlines are moving from four engine to two engine planes, the F-35 is appropriate for the Arctic. But would anyone want to fly from Canada to Europe or Asia on a single-engine civilian aircraft?

Somewhere in the world, the safest twin-engine civilian aircraft, the Boeing 777, suffers an engine failure at least once a month. We never hear about it because the 777 has a second engine.

3. Missile defence

If Canada wished to join US missile defence, the financial costs could be significant. We know how much the US has spent on its midcourse interceptor system in North America: US \$40 billion. We know how much it is spending per year to maintain and grow that system: US \$1 billion. Since the US does not require Canada to make the system work, it seems unlikely that Canada could join for free. Since Canada's population is one-tenth that of the United States, we might expect to pay \$4 billion in retrospective costs and \$100 million in annual operating costs.

In this context, a cost-benefit analysis is required. What risks would joining US missile defence actually address? For example, how much actual risk is there of North Korea sending an ICBM that draws a bright red line back to it and invites almost certain retaliation, as opposed to putting a warhead on a small private yacht and sailing it into Seattle or Vancouver harbour?

4. Submarines

Canada's four troubled Victoria-class submarines were purchased secondhand in 1998, for the suspiciously low price of \$750-million. Ten years later, the Harper government agreed to an additional \$1.5-billion in refits and repairs. By this point, the submarines were already between 15-19 years old. This means that the most one can hope for from the vessels, post-refits, is a single decade of service. So far, the four submarines have averaged, per vessel, just one month per year of at-sea service—thus showing that Canada has little real need for submarines.

If Canada wishes to retain a submarine capability beyond 2025, the procurement of replacements must begin now. But there is no mention of submarines in the National Shipbuilding Procurement Strategy. Nor, with tens of billions of dollars of other naval procurements already planned but still unbudgeted, is there any apparent room for an addition \$2-5 billion in acquisition costs.

5. Relevant reports and articles

“Smart Defence: A Plan for Rebuilding Canada's Military,” 29 June 2015, 60 page report available at: <https://www.policyalternatives.ca/publications/reports/smart-defence>

“Unmanned and unnecessary: Canada's proposed procurement of UAVs,” (2014) 20(3) Canadian Foreign Policy Journal 271-290, available at: <http://www.tandfonline.com/doi/abs/10.1080/11926422.2014.934866>

“One Dead Pilot: Single Engine F-35 a Bad Choice for Canada's Arctic,” 9 June 2014, 34 page report available at: <https://www.policyalternatives.ca/publications/reports/one-dead-pilot>

“The Plane That Ate the Canadian Military: Life-Cycle Cost of F-35 Fleet Could Reach \$126 Billion,” 29 April 2014, 32 page report available at: <https://www.policyalternatives.ca/publications/reports/plane-ate-canadian-military>

“That Sinking Feeling: Canada's Submarine Program Springs a Leak,” 11 June 2013, 58 page report available at: <https://www.policyalternatives.ca/publications/reports/sinking-feeling>