

SOARING:

THE HARMS AND RISKS OF FIGHTER JETS AND WHY CANADA MUST NOT BUY A NEW FLEET

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Women's International League for
Peace & Freedom (WILPF) Canada



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About the Women's International League for Peace and Freedom (WILPF) Canada

The Women's International League for Peace and Freedom (WILPF) Canada is a membership-led organization committed to a feminist peace, social justice, and gender equality. WILPF Canada is active in the No New Fighter Jets Coalition, the Canada-Wide Peace and Justice Network, and the Women, Peace and Security Network-Canada. WILPF Canada is a national section of WILPF international, which is the world's longest standing women peace organization founded in 1915. WILPF International has an Environment Working Group, the Reaching Critical Will disarmament program, and the PeaceWomen program to monitor the United Nations Security Council's agenda on Women, Peace and Security.

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DEDICATION

Dedicated to

Tshaukuesh Elizabeth Penashue, Sheshatshiu Innu First Nation elder and land defender,
and

Nancy Scanie, Cold Lake Dene First Nations elder and clan grandmother to the Keepers of the Water.

“When I walk in nutshimit with my people, I’m showing how much we respect Innu culture, the natural world, and all living things. I want people to know we won’t give up our land. We won’t allow the government to damage it with mines and dams and bombs.”

Tshaukuesh Elizabeth Penashue, *Nitinikiau Innusi: I Keep the Land Alive*, Part 2: 1998-2001, p. 130 (nutshimit refers to being on the land or in the wilderness)

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ACRONYMS

AAR = air-to-air refueling

AMRAAM = Advanced Medium-Range Air-to-Air Missile

ATI = Access to Information

BLCN = Beaver Lake Cree Nation

CAF = Canadian Armed Forces

CF = Canadian Forces

CFB = Canadian Forces Base

CLAWR = Cold Lake Air Weapons Range

CLCN = Canoe Lake Cree Nation

CLFN = Cold Lake First Nations

CO_{2e} = Carbon dioxide equivalent

CTOL = Conventional Takeoff and Landing

DCA = Dual Capable Aircraft (the capability to deliver both conventional and nuclear weapons)

DEW = Distant Early Warning

DND = Department of National Defence

DOD = Department of Defense (U.S.)

FCSI = Federal Contaminated Sites Inventory

FMTGB = Foreign Military Training Goose Bay

GBA = Gender-Based Analysis

GBA+ = Gender-Based Analysis Plus

HAZMAT = hazardous materials

ITB = Industrial Technological Benefits

LLTA = large low-level training area

NATO = North Atlantic Treaty Organization

NDC = Nationally Determined Contributions

NORAD = North American Aerospace Defense Command

NPT = Nuclear Non-Proliferation Treaty

OPHTAS = Operation HONOUR Tracking and Analysis System

PFAS = Per- and polyfluoroalkyl substances, ‘forever chemicals’

RCAF = Royal Canadian Air Force

SSE = *Strong Secure Engaged*, the Liberal government’s 2017 defence policy

UXO = unexploded explosive ordnance

WAGE = Women and Gender Equality (federal department in the Government of Canada)

WILPF = Women’s International League for Peace and Freedom

EXECUTIVE SUMMARY

A fighter jet is an instrument of extreme violence. The most obvious violence results from the large-scale destruction and death caused when it launches a missile or drops a bomb. Yet, there are other forms of violence from sonic booms to the carbon pollution that are often overlooked. Worse still, Indigenous peoples in Canada have suffered severe adverse effects from the dispossession of their land for air force bases to the disruption of their traditional livelihoods for fighter jet training. As the Government of Canada plans to buy a new fleet of advanced fighter jets, it is critical to consider the range of negative impacts and risks.

In 2019, the Liberal government under Prime Minister Justin Trudeau launched a \$19-billion competition for 88 new fighter jets to replace Canada's aging CF-188 Hornets. It is the second most expensive procurement in Canadian history. The federal government is currently evaluating the bids submitted for two different combat aircraft: Lockheed Martin's F-35 Joint Strike fighter and SAAB's Gripen multirole fighter. Last fall, the government announced that it was dropping the bid for Boeing's Super Hornet. The Trudeau government plans to choose the winning bid and award the contract in early 2022. However, the procurement process does not transparently and comprehensively consider the serious risks posed by these warplanes.

Moreover, there has not been any government or Parliamentary report on the threat of fighter jets to people and the natural environment. There has not been a government study on the opportunity costs of investing in combat aircraft over other domestic priorities and the possibilities for disarmament. The federal government and the Department of National Defence have also failed to conduct and publicize an environmental assessment and a gender-based analysis of the fighter jet procurement. The opposition parties in the House of Commons and the Senate have also been reluctant to or have failed to ask critical questions about the risks and harms of combat aircraft and to consider alternatives.

This report begins with an overview of Canada's current fleet of combat aircraft and the planned procurement. It then examines some of the past and present harmful impacts, including environmental, climate,

nuclear, noise, financial and socio-cultural, of fighter jets and the air force bases where they are stationed in Canada. The report uses a critical feminist analysis that considers gender-based impacts and seeks out women's perspectives. It also highlights the cumulative, adverse impacts on First Nations across the country by looking at the history of low-level fight jet training on Innu people in Labrador and of the creation of the Cold Lake Air Weapons Range on the land of the Dene and Cree peoples in Alberta and Saskatchewan. The extreme noise, excessive carbon emissions, the destruction of the land from weapons testing and the death of people from air strikes are some of the grave harms caused by fighter jets and should be factored into the federal government's procurement decision.

Special attention is given in this report to the Lockheed Martin F-35 Lightning II because this is the warplane that the Canadian government will most likely choose. Since 1997, Canada has paid almost \$1 billion to be part of the international consortium to develop the F-35, a fifth-generation fighter jet. As well, our closest defence partner, the United States, and our transatlantic allies, including the United Kingdom, Netherlands, Belgium and Denmark, have already bought this fighter jet. However, the F-35 poses a crash risk because of technical flaws and a financial risk because of its escalating cost overruns leading many defence analysts to describe it as a "colossal boondoggle" or a "fiasco." Even more troubling, the F-35 is a stealth fighter designed for first strike attacks and is dual-capable for carrying both conventional and tactical nuclear weapons. The F-35 extends the North Atlantic Treaty Organization's nuclear deterrence and it risks a catastrophic nuclear accident or nuclear-armed conflict.

The source of the information for this report is varied deriving from government documents, Department of National Defence policies and reports, Access to Information records, news sources, civil society research and interviews. Some of the information has been acquired from correspondence with the federal government.

Last year, the author also went to Alberta to meet with members of the Cold Lake First Nation and to see 4 Wing Cold Lake and organized a webinar with a member of the Sheshatshiu Innu First Nation to

learn how fighter jets are affecting these Indigenous communities.

As well, the author reached out to community groups, such as *Safe Skies*, *Clean Water* and *Save Our Skies, Stop the F-35s*, that have protested the Lockheed Martin stealth fighters in Burlington, Vermont and Sound Defense Alliance that is opposing the extreme noise of the Boeing fighter jets in the Pacific Northwest. These organizations shared useful resources.

As part of the feminist analysis, the author sought out the stories of women including Indigenous women who have been affected by the air force bases and fighter jets on their traditional territory. For example, two years ago, Tshaukuesh Elizabeth Penashue published a moving account about her resistance to the low-level fighter jet testing at 5 Wing Goose Bay in Labrador and described the trauma suffered by the Sheshatshiu Innu First Nation. If Canada buys a new fleet of fighter jets, it will reinforce a patriarchal institution of state violence and sexual misconduct. The Canadian Armed Forces have a serious problem with sexual harassment and sexual assaults against women and a culture hostile to women in the military. Fighter jets have long been associated with derogatory gendered discourse and sexualized imagery. They privilege a masculinized defence industry and a preserve an economic system based on arms exports. They will also lock-in a future of carbon-intensive militarism making it more difficult to decarbonize and prevent catastrophic climate change. Fighter jets are incompatible with Canada's purported claim to have a feminist foreign policy and a commitment to climate action.

This report is made possible through a grant from the Women's International League for Peace and Freedom (WILPF) and is part of WILPF Canada's project entitled *Demilitarize Decarbonize Decolonize*. WILPF Canada is an affiliate of WILPF International, the world's oldest feminist peace organization. WILPF Canada is also a member of the No New Fighter Jets coalition that was formed in the summer 2020 to stop the Trudeau government from proceeding with the warplane procurement. The coalition is comprised of approximately twenty-five peace groups and progressive organizations across Canada. The coalition has held National Days of Action outside the offices of Members of Parliament, a Fast Against Fighter Jets

and several webinars. The coalition has also released open letters and petitions. In the spring of the 2021, the coalition's report *From Acquisition to Disposal: Uncovering the true cost of 88 new fighter jets* estimated that the full life-cycle cost of the procurement would be upwards of \$76.8 billion. This report is complementary and focuses on the soaring negative impacts to the environment, climate, women, and First Nations communities.

The Government of Canada has a choice: it can buy new fighter jets with all the attendant adverse impacts or it can choose not to buy them. By canceling the procurement of new warplanes, Canada would have the resources to build safer housing and end boil water advisories in First Nations communities. The federal government has made a commitment to reconciliation with Indigenous people and this should begin with returning and remediating the land that was expropriated for air force bases and fighter jet testing. Land back should be led by Indigenous people and informed by their traditional knowledge and wisdom for stewardship, reconciliation and healing.

To decide not to buy fight jets opens the door to a new politics of peace and a real possibility of transformational change as explained in the conclusion of this report. Twenty years ago, the Labour Prime Minister of New Zealand, Helen Clark, announced the cancellation of the contract for a new fleet of F-16 fighter jets and the disbanding of the combat wing of the air force. The Canadian government could likewise say no to combat aircraft and yes to a care economy. Investment in care not combat would make our society more secure and better able to tackle the urgent challenges we are facing: the pandemic, poverty and the climate emergency. The federal government should ground its plans for new fighter jets.

INTRODUCTION

A fighter jet is an instrument of extreme violence. The most obvious violence results from the large-scale destruction and death caused when a fighter jet launches a missile or drops a bomb. Yet, there are other forms of violence from sonic booms to the carbon pollution that are often overlooked. Worse still, Indigenous peoples in Canada have suffered severe trauma from land dispossession for military bases to the disruption of their traditional livelihoods from fighter jet training and air weapons testing. As the Government of Canada plans to buy a new fleet of advanced fighter jets, it is crucial to consider the full range and cumulative nature of these adverse impacts.

However, there has not been any government report or Parliamentary study on the impacts of fighter jets on people and the natural environment. There has also not been an assessment of the financial risks and opportunity costs of buying them. The opposition parties in the House of Commons and the Senate have also been reluctant or have failed to ask critical questions about this planned purchase. The federal government and the Department of National Defence (DND) have also failed to conduct and publicize an environmental assessment and a Gender-Based Analysis (GBA) of the fighter jet procurement.

This report fills the gaps and focuses on the past and present harmful impacts, including environmental, climate, nuclear, financial, socio-cultural and gender-based, of fighter jets and the air force bases where they are stationed. It begins with an overview of Canada's current fleet of combat aircraft and the planned procurement. It then describes the risks and adverse impacts of fighter jets in the Canadian context and uses a critical feminist analysis. The extreme noise, excessive carbon emissions, the destruction of the land from weapons testing and the death of people from air strikes are some of the harms that fighter jets cause. Special attention is given in this report to the F-35 because this is the fighter jet that the federal government will most likely choose as Canada has been part of the international consortium for its development

since 1997 and our closest allies have bought it.

The source of the information for this report is varied deriving from government documents, DND policies and reports, Access to Information (ATI) records, news sources, civil society research and interviews. Some of the information is also from correspondence with DND and from an environmental petition filed with the Commissioner of the Environment and Sustainable Development in the Office of the Auditor General. The author also went to Alberta to meet with members of the Cold Lake First Nation and to view the air force base and the CF-18s train. As part of the feminist analysis, the author sought out the stories of Canadian women including Indigenous women. As well, the author reached out to civil society groups, such as *Save Our Skies/Stop the F-35s* that has protested the Lockheed Martin stealth fighter fleet coming to the airport in Vermont and Sound Defense Alliance that is opposing the extreme noise of Boeing fighter jets in the Pacific Northwest, and has incorporated their important observations into the report.

This report is made possible through a grant from the Women's International League for Peace and Freedom (WILPF) and is part of WILPF Canada's project entitled *Demilitarize Decarbonize Decolonize*. WILPF Canada is a member of the *No New Fighter Jets* coalition that was formed in Canada in the summer 2020. In the spring of the 2021, the coalition released a study *From Acquisition to Disposal: Uncovering the true cost of 88 new fighter jets* that estimated the full life-cycle cost of fighter jet procurement to be \$76.8 billion.¹ This report is complementary and examines the soaring harms and risks to the environment, climate, women, and First Nations communities of fighter jets. It concludes by suggesting that the federal government has a critical decision to make: invest in combat or care. The government is urged to ground plans for new combat aircraft and instead invest in a green, care economy that would centre reconciliation and land back claims with Indigenous peoples and would make our country better able to deal with the pandemic, poverty and the climate emergency.

1

No Fighter Jets Coalition (2021) "From Acquisition to Disposal: Uncovering the true cost of 88 new fighter jets": <https://worldbeyondwar.org/wp-content/uploads/2020/09/Uncovering-the-True-Cost-of-88-New-Fighter-Jets-Report.pdf>

WHAT IS A FIGHTER JET? NOT JUST A WEAPONS SYSTEM

A fighter jet is a fixed-wing military aircraft designed to achieve air superiority in the battlespace. It is used for air strikes, air-to-air combat, air defence and air policing. Fighter jets are usually flown by one pilot who is sometimes accompanied by a weapons system operator that provides navigation assistance for the strikes. Fighter jets are designed to carry and launch missiles and bombs. Some fighter jets like the F-35 are dual-capable aircraft and are able to conduct conventional and strategic (nuclear) weapons attacks.² Over the past twenty-five years, the increased use of combat aircraft represents the growing trend of conducting war from the sky with “no boots on the ground.”³ Countries are more reluctant to deploy ground troops and risk soldiers’ lives, so there is greater reliance on airpower. For example, from 2014-2016, Canada used its fighter jets to bomb ISIS targets in Syria and Iraq but did not send combat soldiers.⁴

For military planners, fighter jets are vital for force projection. They carry out precision air strikes and they make possible “over-the-horizon” operations, which are airstrikes conducted in a country without soldiers on the ground, and “shock and awe” campaigns, which are attacks so massive and sudden that the enemy is stunned and overwhelmed. For people in war zones, such as Libya and Iraq, fighter jets are a source of terror and something to fear. For people at airshows, like the Canadian International Air Show in Toronto and the Abbotsford International Airshow in British Columbia, which is the largest air show in the country and attracts 110,000 people, fighter jets are the featured attraction and a form of entertainment.⁵

However, a fighter jet is more than a weapons system. It is a tool of coercive international relations and a material representation of state violence and the military-industrial complex. The weapons companies, such as Lockheed Martin, Boeing and SAAB, greatly profit from contracts for these warplanes. Allocating public funding for a weapon system is an expression of a state’s values and priorities. Fighter jets maintain an economic system that is reliant on weapons dealing and war. They preserve the domination of white, wealthy countries in the Global North and impede the development of the Global South.

A fighter jet is also a form of racist violence. Canada and the United States have used and have threatened to use combat aircraft against people of colour in countries in Africa, the Middle East and Asia. Fighter jets privilege a male-dominated institution, the military, and a male-dominated workforce, the aerospace and defence sector.

A fighter jet is also highly gendered and sexualized as a symbol of patriarchal ‘hard’ power and ‘masculinized’ armed force. As well, combat aircraft can be viewed as a ‘pipeline in the sky’ by fueling the climate crisis. They carry huge tanks of specialized jet fuel and emit excessive greenhouse gases while flying alongside tankers for aerial refueling.

Fighter jets are carbon-intensive, costly and risky tools for dealing with international conflict. The adverse environmental and social impacts of fighter jets make them a public health problem. They are harmful, unnecessary and anachronistic. This is why grounding the fighter jets and cancelling Canada’s plans for a new fleet are so crucial for climate justice, social justice and peace.

2 Hurtado, M. (2021) “The F-35A Passes Final Flight Test,” Arms Control Association: <https://www.armscontrol.org/act/2021-11/news-briefs/f-35a-passes-final-flight-test>

3 Wong, K. and Sink, J. (2014) “President Obama clings to air power,” The Hill: <https://thehill.com/policy/defense/217627-obama-clings-to-air-power>

4 Canada, National Defence, Military Operations: <https://www.canada.ca/en/department-national-defence/services/operations/military-operations.html>

5 Abbotsford International Airshow, History: <https://abbotsfordairshow.com/history/>

CANADA'S CURRENT FLEET OF FIGHTER JETS

According to the *Military Balance 2021* report, the Royal Canadian Air Force (RCAF) has a fleet of 77 Boeing CF-188 Hornets, commonly known as the CF-18.⁶ It is a warplane that carries precision-guided missiles and bombs. It has two GE engines for greater reliability. Between 1982 and 1988, Canada acquired over 130 of these fighter jets for approximately \$5 billion from McDonnell-Douglas, which later merged with Boeing.⁷ It was the most expensive defence procurement at the time. During the competition for a new fighter jet fleet in the late 1970s, Liberal Minister of Defence Barney Danson cautioned in a televised interview,

I'm not at all anxious to see Canada to build up a defence industry. First of all, then you make your military decisions based on your industrial capability, which makes a bad military decision, but also you have a vested interest in armaments, which I don't think is not a very attractive position for Canada to be in. You are forced to sell them when things are slow to countries that you don't want to, you don't have the same interest in disarmament, which I think is a very strong interest for Canada, and it distorts all of your values in this way.⁸

Danson's prescient warning came from his military and political experience. He was a lieutenant in the Queen's Own Rifles of Canada and fought in World War II. However, Danson and the Liberal government under Prime Minister Pierre Trudeau came under intense pressure to increase military spending and buy new fighter jets and other weapons to meet obligations in

the North American Aerospace Defense Command (NORAD) and the North Atlantic Treaty Organization (NATO).⁹ Danson's successor chose the American fighter jet F-18 and this procurement helped to entrench the defence industry in Canada.

Canada's current CF-18 fleet is approximately 40 years old. Most of the fighter jets have had a service life of at least 7,000 hours. In 2001, Canada began a \$1.2 billion incremental modernization program of the CF-18s that involved several contractors including Boeing, Harris Canada and Bombardier.¹⁰ The jets' radio, software and weapons capabilities were upgraded. In 2018, the federal government signed an agreement with the Government of Australia to purchase 18 flyable F/A 18 Hornet aircraft and up to seven non-flyable aircraft for use as spare parts and training aids to extend the life-span of the CF-18 fleet. However, most of these Australian planes are still not in service in Canada.¹¹ The following year, the Parliamentary Budget Officer Yves Giroux reported that the interim fighters would cost Canada much more than the federal government initially claimed.¹²

The CF-18 Hornets' maximum range carrying munitions and without mid-air refuelling is 3,700 km.¹³ For longer flights, the CF-18 must fly alongside a tanker for air-to-air refueling (AAR). The RCAF has two CC-130H Hercules refuellers and two CC-150 Airbus Polaris tankers that can carry enough fuel to assist four CF-18s across the Atlantic Ocean.¹⁴ If and when Canada buys a new fighter jet fleet, it will also need to replace the

- 6 International Institute for Strategic Studies (2021) "The Military Balance: The Annual Assessment of Global Military Capabilities and Defence Economics," <https://hostnezt.com/cssfiles/currentaffairs/The%20Military%20Balance%202021.pdf> (pp. 45-47).
- 7 CBC (2011) "A history of Canada's CF-18 Hornets," <https://www.cbc.ca/news/canada/cf-18-hornets-1.1003648>
- 8 CBC (1978) "Sky High: The search for a new Canadian fighter jet in the 1970s," *The Fifth Estate*: https://www.youtube.com/watch?v=kTk-Z0Th_SA&t=899s
- 9 Editor (1977) "Is a Good Offense the Best Defense?" *The Globe and Mail*, pg. A6.
- 10 Project Ploughshares (2000) "CF-18 Fighter Aircraft Modernization," *The Ploughshares Monitor* September 2000 Volume 21 Issue 3: https://ploughshares.ca/pl_publications/cf-18-fighter-aircraft-modernization/
- 11 Brewster, M. (2020) "Most of the used fighter jets bought by Canada are still not in service, MPs hear," <https://www.cbc.ca/news/politics/f18-fighter-jets-canada-australia-1.5836504>
- 12 Canada (2019) "Fiscal Analysis of the Interim F-18 Aircraft," Office of the Parliamentary Budget Officer: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2019/F-18/CF_18_Report_EN.pdf
- 13 National Defence (2020) CF-188 Hornet, Fact sheet: <http://rcf-arc.forces.gc.ca/en/aircraft-current/cf-188.page>

refuellers. Earlier this year, the federal government placed a tender for a new Strategic Tanker Transport Capability (STTC) to provide AAR for the planned fighter jets.¹⁵

The RCAF claims that fighter jets are required for defending Canada, defending North America, and meeting NORAD and NATO requirements.¹⁶ There is intense pressure on Canada to buy new fighter jets by the United States and the transatlantic alliance.

Since 2014, under Operation REASSURANCE, Canada's CF-18s have been regularly operating from a NATO air base in Romania to "police the skies" near Russia. They participate in many NATO exercises and operations every year.¹⁷ However, Canadian fighter jets in Eastern Europe heighten tension in the region and are seen as very provocative to Russia.¹⁸

Some CF-18s are painted in Canadian flag colours, red and white, and used by the 431 Air Demonstration



Canada's CF-18. Photo credit: Department of National Defence, Canada

- 14 CC-150 Polaris fact sheet, National Defence: <https://www.rcf-arc.forces.gc.ca/en/aircraft-current/cc-150-fact-sheet.page>
- 15 Host, P. (2021) "Airbus solely qualifies for Canada's tanker procurement," Janes: <https://www.janes.com/defence-news/news-detail/airbus-solely-qualifies-for-canadas-tanker-procurement>
- 16 Canada (2017) "Strong Secure Engaged: Canada's Defence Policy," <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf> (p. 13).
- 17 Canada (2021) OPERATION Reassurance, National Defence: <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-reassurance.html>
- 18 Isachenkov, V. (2020) "Russian general decries 'provocative' NATO drills near its border," Associated Press: <https://www.airforcetimes.com/training-sim/2020/06/01/russian-general-decries-provocative-nato-drills-near-its-border/?contentQuery=%7B%22section%22%3A%22%2Fhome%22%2C%22exclude%22%3A%22%2Fflashpoints%22%2C%22from%22%3A65%2C%22size%22%3A10%7D&contentFeatureId=f0fmoahPVC2AbfL-2-1-8>; and Reuters (2021) "Russia says it scrambled fighter jet to intercept British spy plane near annexed Crimea," <https://www.reuters.com/business/aerospace-defense/russia-says-it-scrambled-fighter-jet-intercept-british-spy-plane-near-annexed-2021-11-11/>

Squadron, the CF Snowbirds, in air shows across the country and overseas.¹⁹ The CF Snowbirds demonstration team is comprised of CAF members and National Defence Public Service employees.²⁰ The CF Snowbirds are an expensive and risky public relations exercise to garner public support for the air force and the military more broadly. In 2010, one of the Snowbird fighter jets crashed at the Alberta International Air Show in Lethbridge. During COVID, the CF-18 demo team flew over Canadian cities to “show support for frontline workers” as part of Operation INSPIRATION.²¹ These fighter jet displays were conducted to elicit public support for the military. Yet, one of the CF-18s crashed killing Captain Jennifer Casey in Kamloops, British Columbia. Despite the pandemic and the climate crisis, the financial costs and carbon emissions of the CF Snowbirds are not critically considered by the military or the government.

Last year, at the Toronto Air Show, the Snowbirds performed in the same line-up as the Lockheed Martin F-35s. The American F-35 demonstration team did several low, loud flypasts over the city. The company also passed out hundreds of red baseball caps and water bottles with the F-35 logo to people attending the air show to raise awareness and support for its fighter jet. However, there is no consideration of how the appearance and sound of fighter jets affect refugees and immigrants in the cities where the air shows take place. A few years ago, Canadian filmmaker Maya Bastian made a short documentary entitled *Air Show* about refugees from war zones being retraumatized by the annual air show in Toronto.²² Thousands of refugees from heavily bombed countries like Syria, Iraq and Afghanistan have come and are coming to Canada, but there is little concern about how air shows impact their well-being and settlement in the country.

CANADA'S WINGS AND AIR FORCE BASES

The Department of National Defence (DND) oversees 14 wings across the country from Comox, British Columbia to Gander, Newfoundland and Labrador. Wings are RCAF units of commands headed by a Commander and a Chief Warrant Officer and are affiliated with military bases.²³ Canada's fighter jet fleet is primarily stationed at two sites: 4 Wing at the Canadian Forces Base (CFB) Cold Lake in Alberta and 2 Wing and 3 Wing at CFB Bagotville in Quebec. There are also a few CF-18s stationed at CFB Trenton in Ontario for the protection of the province's nuclear facilities.²⁴ DND and the RCAF do not acknowledge on their web sites, in their reports or in their history the fact that many of the wings, such as 4 Wing Cold Lake and 5 Wing Goose Bay, were established on expropriated Indigenous land, which will be discussed further later in this report.

4 Wing Cold Lake is Canada's largest and busiest air force base.²⁵ This is where the Tactical Fighter Squadron, the CF-18s, and the CF-18 Demonstration Team are primarily stationed. It is also where NATO flight training in Canada is conducted and where the annual, multinational Exercise MAPLE LEAF is held. Since 1978, CFB Cold Lake hosts Exercise MAPLE FLAG, an annual air combat exercise that last several weeks with air forces from NATO countries and other partners.²⁶ The training involves command and control, air-to-air and air-to-surface weapons testing, and air-to-air refueling. The countries that regularly participate in the exercise include the U.S., United Kingdom, Belgium, France and other NATO allies. Under the International Observer Program, Canada has also invited other countries to train in Exercise MAPLE LEAF, though some of these

19 CF-18 Demonstration Team: <http://www.rcaf-arc.forces.gc.ca/en/cf-18-demo-team/index.page>

20 Canadian Forces Snowbirds, National Defence: <http://www.rcaf-arc.forces.gc.ca/en/snowbirds/index.page>

21 Staff (2021) “CF-18 demonstration team to fly over southern Vancouver Island on Sunday,” <https://www.victoriabuzz.com/2021/07/cf-18-demonstration-team-to-fly-over-southern-vancouver-island-on-sunday/>

22 Maya Bastian, *Air Show*, available on CBC Gem: https://gem.cbc.ca/media/canadian-reflections/s01e215?cmp=sch-air%20show&fbclid=IwAR1yUQ4h6DXfbFYUjOW5aUho-sMs6iWexquF_s1fUE8VyDMbU4VN-nqJK-4

23 History of RCAF wings and squadrons, National Defence, <https://www.canada.ca/en/air-force/services/history/wings-squadrons.html>

24 CBC (2011) “A history of Canada's CF-18 Hornets,” <https://www.cbc.ca/news/canada/cf-18-hornets-1.1003648>

25 CFB Cold Lake: <http://www.rcaf-arc.forces.gc.ca/en/4-wing/index.page>

26 Canadian Military Family Magazine (2016) “Exercise Maple Leaf: Largest Most Complex International Training Exercise hones Military Skills”: https://www.cmfmag.ca/duty_calls/exercise-maple-leaf-largest-and-most-complex-international-training-event-hones-military-skills/

countries are known for human rights abuses, gender discrimination and corruption.²⁷ In 2018, the Kingdom of Saudi Arabia, Morocco, Philippines, Qatar, United Arab Emirates and Colombia were invited to train their air forces during Exercise MAPLE LEAF. Yet, at the time, Saudi Arabia was and is engaged in a brutal war in Yemen and represses women, Morocco is illegally and violently occupying Western Sahara, and the Philippines is engaged in violent repression against vulnerable communities, trade unionists and activists.²⁸

Across Canada, there are 32 air weapons ranges including Cold Lake, Bagotville, Gagetown, Wainwright, Valcartier, Nanoose and Suffield.²⁹ These air weapons ranges are restricted-access and are used for live-fire training and multi-national exercises; some are used for low-level fighter jet testing. The largest is the Cold Lake Air Weapons Range (CLAWR) in Alberta (formerly Primrose Lake Air Weapons Range). CLAWR is 1.17 million hectares in size and is located approximately 70 kilometres north of 4 Wing Cold Lake. It is designated as a supersonic range where pilots can fly at that speed as low as 30 metres (100 feet) and is a tactical bombing range with over 100 targets areas for live firing of missiles and for dropping bombs up to 2,000 pounds.³⁰ CLAWR is considered a strategic, national asset that is used for integrated training with the Canadian Army, Canadian Special Operations Forces Command, and allies.

Canadian and American fighter jets also use bases in the northern territories. The Liberal's 2017 defence policy, *Strong Secure Engaged* (SSE), states, "The Canadian Armed Forces, including through NORAD, operates

from a number of locations in the North, including in Inuvik, Yellowknife, Rankin Inlet, Iqaluit, and Goose Bay, which also help support the Northern deployment of fighter aircraft."³¹ Fighter jets are militarizing not developing the north.

"FIGHTER JETS ARE MILITARIZING NOT DEVELOPING THE NORTH."

In 2019, the Minister of Defence Harjit Sajjan announced a \$150 million extension over five years to extend the runway at the airport in Inuvik for RCAF and NORAD operations.³² However, new runways will continue to bring military aircraft to the Arctic, a fragile ecosystem that is the fastest warming area of the planet where sea ice is rapidly shrinking and have an adverse impact on Indigenous communities.³³ More military aircraft will mean more carbon emissions exacerbating the climate crisis in the north. As well, federal government investment in fighter jets and runways deprives northern Indigenous communities from needed development. Many Indigenous communities suffer from food and housing insecurity and inadequate healthcare. They do not need warplanes; they need investment in their well-being.

27 Canada (2018) Exercise Maple Flag, National Defence: <http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=exercise-maple-flag/jpa6gfny>

28 Violent state repression in Saudi Arabia: <https://www.amnesty.org/en/location/middle-east-and-north-africa/saudi-arabia/report-saudi-arabia/>; Violent repression by Morocco against Western Sahara: <https://www.amnesty.org/en/location/middle-east-and-north-africa/morocco-and-western-sahara/>; and violent state repression in the Philippines: <https://www.opendemocracy.net/en/state-repression-philippines-during-covid-19-and-beyond/>

29 National Defence (2017) Audit of Range and Training Area Management, https://www.canada.ca/content/dam/dnd-mdn/migration/assets/FORCES_Internet/docs/en/about-reports-pubs-audit-eval/283p1850-3-005-eng.pdf (see footnote, p. 2/14)

30 Pennington, J. et al. (2005) "Distribution and Fate of Energetics on DOD Test and Training Ranges: Interim Report 5, Chapter 5: Characterization of Cold Lake Air Weapons Range, U.S. Army Corps of Engineers, <https://apps.dtic.mil/sti/pdfs/ADA433648.pdf>

31 Canada (2017) "Strong Secure Engaged: Canada's Defence Policy," <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

32 Scott, M. (2019) "Federal gov't announces more money for Inuvik airport" <https://www.cbc.ca/news/canada/north/money-inuvik-airport-lengthen-1.5270180>

33 Canada (2019) Canada's Changing Climate Report: https://changingclimate.ca/site/assets/uploads/sites/2/2020/06/CCCR_FULLREPORT-EN-FINAL.pdf



Canada's CF-188 Hornet (also known as the CF-18). Photo credit: Department of National Defence, Canada

CANADA'S PLANNED FIGHTER JET PROCUREMENT

The Conservative government under Prime Minister Stephen Harper had planned to purchase 65 F-35s for \$9 billion in a sole-source contract, which was in violation of federal procurement rules. However, the Conservatives lost the 2015 federal election to the Liberal party and the contract did not proceed.

During that election, Liberal leader Justin Trudeau called the F-35 program "unaffordable" and promised to cancel it and set up an open competition to replace Canada's fighter jet fleet. The Liberal Party's 2015 election platform also stated categorically that "we will not buy the F-35 stealth fighter-bomber" and that a defence policy review would be held. The Liberals won the election and launched consultations for a new defence policy.

The Liberal's defence policy, *Strong Secure Engaged* (SSE), was announced in June 2017 and explained that the RCAF would acquire 88 advanced fighter jets "to enforce Canada's sovereignty and to meet Canada's NORAD and NATO commitments."³⁴ The SSE specified that Canada's new fighter capability must maintain high interoperability with American allies.

Currently, the federal government is evaluating two bids: Lockheed Martin's F-35 stealth fighter and SAAB's Gripen multi-role fighter. The government recently dropped Boeing's Super Hornet from the competition. However, the Super Hornet is most closely related to Canada's current fleet of CF-18. A comparison of specifications among the F-35, Super Hornet and Gripen is provided in Appendix 1. The Trudeau government has said that it will pick the winning bid by early 2022 and it expects that the first combat aircraft will be delivered by 2025.

Most likely, the federal government will choose the F-35, because our closest defence partner, the U.S., manufactures and flies the F-35 and our NATO allies, including the United Kingdom, Netherlands, Belgium and Denmark, have already bought this warplane. As well, the Canadian government has already spent almost \$1 billion to participate in the international development consortium of this stealth fighter over the past twenty years. The specific problems and risks of the F-35s will be described later in this report.

34 Canada (2017) "Strong Secure Engaged: Canada's Defence Policy," <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf> (p. 13).

PARTNERS IN WAR CRIMES: INTEROPERABILITY WITH NATO AND NORAD

Canada's air force is deeply integrated in NATO and NORAD and these alliances are the key justifications for new combat aircraft. NATO is a U.S.-dominated, nuclear-armed military alliance of 30 Western countries. Canada was one of twelve founding members of transatlantic alliance in 1949. Since its inception, NATO's Supreme Commander has always been an American general who leads the operations of the Allied Command. Despite the Cold War ending and Soviet-led Warsaw Pact disbanding in 1991, NATO continued to exist and has expanded its membership. Over the past thirty years, NATO members, including Canada, have been engaged in deadly, destructive wars, such as the illegal bombing of the former Yugoslavia in 1999, the bombing Libya in 2011 and the failed combat mission in Afghanistan from 2001 to 2021. As well, NATO regularly engages in dangerous, provocative large-scale military exercises near Russia's borders, such as Steadfast Defender and Steadfast Noon.

At the 2014 Wales Summit, NATO members made a commitment to spend 2% of gross domestic product (GDP) on the military and of that amount 20% on new weapons systems. According to NATO's latest Defence Expenditures report, Canada has increased military spending to \$33 billion, which is 1.39% of GDP, in 2021.³⁵ To fulfill NATO requirements for interoperability, analysts expect that Canada will choose the F-35 over the Gripen, because Sweden is not a NATO member. In 2020, the transatlantic alliance released its new agenda, *NATO 2030*, which ominously identifies Russia and China as prime threats. In October 2021, a Canadian warship with American and British carrier strike groups and F-35s conducted a freedom of navigation operation in the South China Sea antagonizing China.³⁶ This is an

example of the F-35s with Canadian forces close to China's border. If Canada buys new fighter jets, these are the types of provocative operations in which they will be engaged.

NORAD is a joint military partnership between Canada and the U.S. that was established in 1958. The NORAD headquarters are located at the Peterson Space Force Base near Colorado Springs in Colorado. The Commander of NORAD is always an American general and the Vice Commander is a Canadian general, which is another example of Canada's subservience. NORAD was set up during the Cold War as an early warning system to detect planes and potential attacks from the Soviet Union. There were three NORAD radar lines from the Arctic to the Canada-U.S. border set up: the Distant Early Warning (DEW) Line; the Mid-Canada Line; and the Pinetree Line. These radar installations were placed on land expropriated from Indigenous people. Over the years, the DEW sites were abandoned with terrible contamination. Canada was left covering most of the cost to remediate the sites.³⁷

In August 2021, Canada and the U.S. announced a NORAD modernization program.³⁸ This modernization will involve new fighter jets and new sensors from the seabed to outer space. These weapons and radar systems risk greater contamination. Upgrading these systems will be costly and will enrich weapons manufacturers like Lockheed Martin and Boeing. In the SSE, the Government of Canada stated that the planned new fleet of fighter jets will also fulfill NORAD obligations. Moreover, in 2019, Patrick Finn, DND's assistant deputy minister of materiel, told *The Canadian Press* that the U.S. will have to certify the fighter jet that Canada chooses to ensure that it complies with

35 NATO Defence Expenditures Report (June 2021): https://www.nato.int/nato_static_fl2014/assets/pdf/2021/6/pdf/210611-pr-2021-094-en.pdf (p. 6)

36 CBC (2021) "China condemns Canada, U.S. for sending warships through Taiwan Strait Social Sharing," <https://www.cbc.ca/news/politics/china-canada-warships-taiwan-strait-1.6214303>

37 Pugliese, D. (2001) An expensive farewell to arms: The U.S. has abandoned 51 military sites in Canada. Many are polluted, and taxpayers are paying most of the \$720-million cleanup cost, *The Gazette*, B1.

38 Canada (2021) Joint Statement on NORAD Modernization, National Defence: <https://www.canada.ca/en/departement-national-defence/news/2021/08/joint-statement-on-norad-modernization.html>

the top-secret intelligence networks.³⁹ Yet, the federal government could withdraw Canada from NORAD, taking independent control over its airspace, and could withdraw Canada from NATO and the “Five Eyes” intelligence alliance, working diplomatically with other countries for peace and common security.

CANADIAN FIGHTER JETS FOR NATO

The North Atlantic Treaty Organization (NATO) is a U.S.-dominated, nuclear-armed military alliance of 30 North American and European countries. Canada was one of twelve founding members of transatlantic alliance in 1949. Despite the Soviet-led Warsaw Pact disbanding in 1991, NATO continued to exist and expand. Over the past thirty years, 14 countries have joined the alliance. Since the end of the Cold War, NATO has been engaged in deadly, destructive wars. In these wars, NATO members have flown fighter jets for the illegal bombing of the former Yugoslavia in 1999, the bombing Libya in 2011 and the failed combat mission in Afghanistan from 2001 to 2021.

CANADIAN FIGHTER JETS FOR NORAD

The North American Aerospace Defense Command (NORAD) is a joint military partnership between Canada and the U.S. established in 1958. The NORAD Headquarters is located at the Peterson Space Force Base near Colorado Springs, Colorado. The Commander of NORAD is always a U.S. general and the vice-commander is a Canadian general. NORAD was set up during the Cold War as an early warning system of possible attacks from the Soviet Union. Fighter jets have been an integral part of the command system. American and Canadian fighter jets regularly train together across North America. The U.S. and Canada are now engaged in a costly NORAD modernization program.

WHO'S THE ENEMY? NO PUBLIC THREAT ASSESSMENT

DND has not released any public threat assessment to justify the acquisition of new fighter jets. The 2017 SSE explained that the country needs new fighter capability to meet our NATO and NORAD obligations, but not because of a specific threat from another country. The federal government claims that fighter jets are necessary to protect Canada's airspace and territory and secure our sovereignty. However, the question, “secure our airspace and sovereignty from what?” is not answered.

In a 2013 opinion piece in the *Globe and Mail*, former Deputy Minister of National Defence, Charles Nixon, argued that Canada does not face any credible threat that requires fighter jets. He explained that Canada does not need any fighter jets, because they are not necessary to defend the country or protect our sovereignty.⁴⁰ In 2020, retired Canadian fighter jet pilot and former squadron commander, Sidney Popham of Comox, British Columbia, also claimed that the country does not need any new combat aircraft in correspondence with the author. Popham stated,

There is no military requirement for them. We should not burden our children and grandchildren by making them pay for this colossal waste!⁴¹

Popham explained that recent history shows that Canadian fighter jets have been used offensively not defensively and he challenged Canada's continued membership in NATO.

In 2020, DND commissioned Dr. Richard Goette, an air power academic and Canadian Air Force historian at the Canadian Forces College, to prepare a study on future roles and missions for the RCAF. In his study, *Preparing the RCAF for the future: Defining Potential Niches for Expeditionary Forces*, Goette identifies Russia, China and Iran as adversary challenges. Goette recklessly argues, “The recent Russian resurgence, Chinese actions in

39 Berthiaume, L. (2019) “New Canadian fighter jets will need U.S. certification: DND,” The Canadian Press, published in The Chronicle Journal: https://www.chroniclejournal.com/news/national/new-canadian-fighter-jets-will-need-u-s-certification-dnd/article_bb3ec0d-922b-57b7-9055-6dc9cc8bc81a.html

40 Nixon, C. (2014) “Canada does not need fighter jets, period,” The Globe and Mail: <https://www.theglobeandmail.com/opinion/canada-does-not-need-fighter-jets-period/article19503129/>

41 Correspondence with author, May 2020.

the Western Pacific and Iranian posturing indicate that state-on-state war involving great powers is a possibility that definitely cannot be ruled out."⁴² Though Goette writes the risk of a war is low, he still asserts that Canada must prepare to contribute to any conflict if asked. Yet, preparing for war with nuclear-armed Russia and China or more war in the Middle East is dangerously irresponsible. State-on-state war should be emphatically ruled out. A safer and more prudent approach would be for Canada to engage diplomatically with Russia, China and Iran not coerce with fighter jets.

FIGHTER JETS ARE FOR FIGHTING: HARM TO PEOPLE

Canadian fighter jets have injured and killed many people. The RCAF first deployed fighter jets in combat during World War II. The RCAF later flew fighter jets during the NATO war in Korea from 1950-1953 and the First Gulf War in Iraq from 1990-1991. During the Korean War, Canadian pilots flew more than 2,200 combat missions.⁴³ Canada and other NATO forces extensively bombed and napalmed North Korea killing 20% of the population.⁴⁴ Washington Post journalist Blaine Harden described the bombing as "long, leisurely and merciless" and explained that "the ferocity of the bombing was criticized as racist and unjustified elsewhere in the world."⁴⁵ During the First Gulf War, Canada conducted 56 airstrikes dropping 100 tonnes of ordnance on targets as part of the U.S.-led coalition Operation Desert Storm.⁴⁶

Despite military claims of "precision air strikes," it was estimated that at least 100,00 Iraqi soldiers and 7,000 civilians were killed in the heavily bombed country.⁴⁷

In support of NATO's war against the former Yugoslavia in 1999, Canadian fighter jets flew 678 sorties and launched 361 laser-guided bombs and 171 regular, 220-kilogram bombs, some with depleted uranium.⁴⁸ CF-18s killed civilians and destroyed civilian infrastructure, such as bridges, manufacturing plants, refineries, the electric grid, public buildings and private businesses in Serbia and Montenegro. Estimates of between 500 and 2,000 innocent Serbian civilians were killed and over 100,000 Serbians were displaced from their homes. In 2000, during testimony before Canada's Standing Committee on Foreign Affairs and International Trade, legal expert Michael Mandel stated that NATO bombing "was flatly illegal" and "a gross and deliberate violation of international law and the Charter of the United Nations."⁴⁹

In 2011, Canadian Lieutenant-General Charles Bouchard led the NATO bombing of Libya. CF-18s dropped hundreds of GBU-12 laser-guided 'smart' bombs.⁵⁰ Each one of these 227-kilogram bombs manufactured by Lockheed Martin cost \$100,000. Canadian fighter jets destroyed civilian infrastructure and killed civilians in the North African country. The Canada-led NATO bombing destabilized one of Africa's richest countries, which led to a civil war and a massive humanitarian and refugee crisis. Thousands of people fled the war-torn country

- 42 Goette, R. (2020) "Preparing the RCAF for the future: Defining Potential Niches for Expeditionary Forces," Royal Canadian Air Force: https://publications.gc.ca/collections/collection_2021/mdn-dnd/D2-420-2020-eng.pdf
- 43 The RCAF in the Korean War, National Defence: <http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=the-rcaf-in-the-korean-war/kbtm6g43>
- 44 Harden, B. (2015 "The U.S. war crime North Korea won't forget," The Washington Post, https://www.washingtonpost.com/opinions/the-us-war-crime-north-korea-wont-forget/2015/03/20/fb525694-ce80-11e4-8c54-ffb5ba6f2f69_story.html?utm_term=.28d1e135099b
- 45 Harden, B. (2015 "The U.S. war crime North Korea won't forget," The Washington Post, https://www.washingtonpost.com/opinions/the-us-war-crime-north-korea-wont-forget/2015/03/20/fb525694-ce80-11e4-8c54-ffb5ba6f2f69_story.html?utm_term=.28d1e135099b
- 46 CBC (1991) "From defensive to offensive: Canada joins combat in Gulf War," <https://www.cbc.ca/archives/entry/from-defensive-to-offensive-canada-joins-combat-in-gulf-war>
- 47 Murphy, C. (1991) "IRAQI DEATH TOLL REMAINS CLOUDED," The Washington Post: <https://www.washingtonpost.com/archive/politics/1991/06/23/iraqi-death-toll-remains-clouded/a3a46ae0-11df-4aa5-accd-d8ac6dae7f2f/>
- 48 CBC (1999) "Canadian planes heavily involved in Yugoslav campaign," <https://www.cbc.ca/news/canada/canadian-planes-heavily-involved-in-yugoslav-campaign-1.179828>
- 49 Standing Committee on Foreign Affairs and International Trade, Hearing, February 22, 2000: <https://www.ourcommons.ca/DocumentViewer/en/36-2/FAIT/meeting-22/evidence>
- 50 Canadian Press (2012) "Canada drops 240 'smart' bombs on Libya": <https://www.ctvnews.ca/canada-drops-240-smart-bombs-on-libya-1.649030>

and drowned in the Mediterranean Sea according to the UN International Office of Migration.⁵¹ A year later, Lt-General Bouchard retired from the air force and in 2013, he became CEO of Lockheed Martin Canada to push the federal government to buy the F-35.⁵² He served as head of the Lockheed Martin Canada for six years, but never had to register as a lobbyist because of loopholes in the *Lobbying Act*.⁵³

From 2014-2016, Canadian fighter jets dropped over 600 missiles and bombs on Iraq and Syria for the U.S.-led operation to “destroy and defeat” ISIS.⁵⁴ DND provided general information about the date and location of airstrikes, but not of civilian casualties. Fighter jets have not brought security or eliminated terrorism, but have instead prolonged the chaos and exacerbated the violence in the Middle East.

Since 2014, CF-18 fighter jets have conducted regular “Air Policing” operations along Russia’s border from a NATO base in Romania.⁵⁵ These fighter jet operations are alarmingly provocative to nuclear-armed Russia and there is no legal authority under the United Nations for these operations. There has been limited Parliamentary oversight or public accountability of Canadian fighter jet deployments.

Fighter jets are not for defence; they are for fighting. The 2017 Liberal defence policy confirmed that new fighter jets are necessary for “air attack” and “high-end warfighting.”⁵⁶ If Canada buys new combat aircraft, they will be used in military interventions and wars as they were in the past and many people will continue to be harmed.

CANADA'S DEPLOYMENT OF ITS CF-18 FIGHTER JETS SINCE THE END OF THE COLD WAR, 1991-2021	
1991	CF-18 fighter jets bomb Iraq in First Gulf War
1999	CF-18 fighter jets bomb Serbia
2011	CF-18 fighter jets bomb Libya
2014 - 2016	CF-18 fighter jets bomb Syria and Iraq
2014 - 2021	CF-18 fighter jets conduct NATO “Air Policing” operations along Russia’s border

CANADA, LOCKHEED MARTIN AND THE TECHNICALLY-FLAWED F-35

The most likely replacement for Canada’s aging CF-18 is the F-35. The F-35 Joint Strike Fighter, Lightning II, is a global weapons program and the most expensive one in human history. The program involves the manufacturing of 3,300 stealth fighters at an estimated cost of \$1.7 trillion over its 55-year life cycle.⁵⁷ The program is led by the U.S. government and the prime contractor is Lockheed Martin, the largest weapons manufacturer in the world. In 2021, according to its annual report, Lockheed Martin reported sales of \$65 billion and provided multi-million-dollar executive compensation and million-dollar director compensation.⁵⁸ Lockheed Martin’s CEO James Taiclet was a former air force pilot and his total compensation for 2020 was over \$23 million.⁵⁹ The company’s board of directors is comprised of several retired military personnel including retired U.S. Air Force General Bruce Carlson. In the military, General Carlson was head of the Air Force Materiel Command and acquired Lockheed Martin aircraft including the F-35. Upon retirement,

51 IOM (2021) “Deaths on Maritime Migration Routes to Europe Soar in First Half of 2021: IOM Brief,” <https://www.iom.int/news/deaths-maritime-migration-routes-europe-soar-first-half-2021-iom-brief>

52 Lockheed Martin (2013) “Charles Bouchard to Lead Lockheed Martin Canada,” Press Release: <https://news.lockheedmartin.com/2013-09-24-Charles-Bouchard-To-Lead-Lockheed-Martin-Canada>

53 Correspondence with Office of the Commissioner of Lobbying of Canada: <https://lobbycanada.gc.ca/en/>

54 Canada (2017) “Operation IMPACT – Airstrike History,” National Defence, <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-impact/airstrike-history.html>

55 National Defence, Operation Reassurance: <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-reassurance.html>

56 Canada (2017) “Strong Secure Engaged: Canada’s Defence Policy,” <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf> (p. 39).

57 Government Accountability Office (2021) F-35 JOINT STRIKE FIGHTER: Sustainment: <https://www.gao.gov/assets/gao-21-439.pdf>

58 Lockheed Martin (2021) Security Exchange Commission filing: <https://www.sec.gov/Archives/edgar/data/936468/000093646821000035/lockheedmartin2021proxy.htm>

59 Lockheed Martin (2021) Security Exchange Commission filing: <https://www.sec.gov/Archives/edgar/data/936468/000093646821000035/lockheedmartin2021proxy.htm>

General Carlson was rewarded with a lucrative board position with the company. Last year, Carlson earned a director compensation package of over \$300,000 from Lockheed Martin as well as his publicly-funded military pension. Lockheed Martin exerts tremendous influence and power in the DOD and in defence procurement.

Canada is one of seven other international partners in the F-35 development program. The other countries are the United Kingdom, Italy, Netherlands, Australia, Norway, and Denmark (Turkey was excluded). Israel, Japan and South Korea have made orders and bought these stealth fighters through the foreign military sales process. Between 1998 and 2006, the Government of Canada signed three agreements with the U.S. and Lockheed Martin to participate in the development consortium.⁶⁰ These agreements allow Canadian companies to compete for contracts associated with the production and maintenance of the F35s. Since 1998, Canada has paid over \$772 million CAD (approximately \$613 million USD) to remain a partner. Because Canada has been involved in the development and its closest allies fly the warplane, it is expected that Canada will choose the F-35, specifically the 'A' variant fighter for Conventional Takeoff and Landing (CTOL).

However, over the past two decades, the U.S. Government Accountability Office (GAO) has released several reports about the severe technical flaws, production problems and cost overruns of the F-35 program.⁶¹ In its most recent report, the GAO found that the program is more than 8 years delayed and \$165 billion USD over original cost expectations.⁶² It also found that the stealth fighter had 864 open deficiencies as of June 2021. Deficiencies represent specific instances where the weapon system either does not meet requirements or where the safety, suitability,

or effectiveness of the weapon system could be affected. Last February, Bloomberg journalist Anthony Capaccio described the F-35 as a “flying computer” that is “bedeviled” by software flaws.⁶³ He reported that the F-35 has chronic deficiencies among its 8 million lines of code, the most of any fighter jet, that has led Lockheed Martin to partner with three American universities to try to resolve the problems. There are also serious concerns about whether countries that buy the F-35 will have any control or access to the software or to spare parts. In his article, “The F-35 and the Captured State,” Dan Grazier, a defence analyst at the Project on Government Oversight, argued that the DOD has surrendered control over the F-35 program to Lockheed Martin, so that the department cannot manage the escalating costs, the supply chain, the spare parts and pilot training.⁶⁴ If Canada buys the F-35, it too will become a “captured state” with even less control than the U.S. government.

In April 2021, the U.S. House Armed Services' Subcommittee on Readiness and Subcommittee Tactical Air and Land Forces held a joint hearing on the F-35 program with Lockheed Martin officials and a representative of the GAO.⁶⁵ House members criticized the ongoing poor performance and cost problems of the Pentagon's stealth fighter. One of the issues raised in the hearing was the rising sustainment costs of the F-35. Lockheed Martin admitted that the operating cost of the F-35 is still very high at \$38,000 USD (\$48,000 CAD) per flying hour. Thus, two hours of flying an F-35 is roughly equivalent to the yearly salary of an essential long-term care worker, nurse or teacher. The ongoing technical flaws and increasing costs of the F-35 have led the Chairman of the Subcommittee, Congressman John Garamendi, to bemoan “every single piece of this is problematic” and Grazier to describe it as a “colossal

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- 60 Williams, A. (2012) Canada, Democracy and the F-35: <https://www.queensu.ca/cidp/sites/webpublish.queensu.ca/cidpwww/files/files/publications/claxtonpapers/Claxton16web.pdf>
- 61 Government Accountability Office (2020) F-35 Joint Strike Fighter: Actions Needed to Address Manufacturing and Modernization Risks: <https://www.gao.gov/products/gao-20-339>
- 62 Government Accountability Office (2021) F-35 JOINT STRIKE FIGHTER: Cost and Schedule Risks in Modernization Program Echo Long-Standing Challenges: <https://www.gao.gov/assets/gao-21-105282.pdf>
- 63 Capaccio, A. (2021) “F-35's Buggy Software Prompts Pentagon to Call in Universities,” Bloomberg: <https://www.bloomberg.com/news/articles/2021-02-02/f-35-s-buggy-software-prompts-pentagon-to-call-in-universities>
- 64 Grazier, D. (2019) “The F-35 and the Captured State,” Project on Government Oversight: <https://www.pogo.org/analysis/2019/06/the-f-35-and-the-captured-state/>
- 65 United States (2021) U.S. House Armed Services Subcommittees on Readiness and Tactical Air and Land Forces, “Update on F-35 Program Accomplishments, Issues, and Risks”: <https://armedservices.house.gov/2021/4/subcommittees-on-tactical-air-and-land-forces-and-readiness-joint-hearing-update-on-f-35-program-accomplishments-issues-and-risks>

boondoggle.”⁶⁶ Moreover, the U.S. Federal Misconduct Database shows that Lockheed Martin is also one of the most corrupt companies paying fines for over-billing and bribery. Since 1995, the company has had 91 instances of misconduct and paid fines of almost \$1 billion.⁶⁷

FINANCIAL RISK: ESCALATING SUSTAINMENT COSTS AND OPPORTUNITY COSTS

If Canada decides to buy the stealth fighter jet or any warplane, the financial risks cannot be ignored and the opportunity costs cannot be overlooked. In July 2021, the GAO released another troubling report about the unaffordability of the F-35 program because of its escalating sustainment costs.⁶⁸ The U.S. government watchdog explained that, of the \$1.7 trillion program cost, \$400 billion is for production of the stealth fighters and \$1.3 trillion is budgeted for their sustainment.⁶⁹ It warned that the sustainment costs are rising to such a level that the jets will not be affordable in the near future. The sustainment costs are the operating and support (O&S) including maintenance costs of the warplane. The GAO cautioned the “DOD may continue to invest resources in a program it ultimately cannot afford” and called for greater congressional oversight.⁷⁰

In the same report, the watchdog also found that the F-35 had not yet met the warfighter-required mission capable rate, which means that the plane cannot conduct all the functions it is supposed to perform and the fleet has a very low readiness. In an interview earlier this year, U.S. Air Force chief of staff, General Charles Brown Jr. declared that “The F-35 should become the Ferrari of the fleet: ‘You only drive it on Sundays.’”⁷¹ The out-of-control costs



Lockheed Martin F-35 Joint Strike Fighter.
Photo credit: Lockheed Martin

and the poor performance of the F-35 led House Armed Service Committee Chairman Adam Smith to recently describe it as a “rathole.”⁷² Thus, there is a serious financial risk to the Canadian treasury and to taxpayers if the Trudeau government buys a fighter jet that is not fit for purpose and has unconstrained sustainment costs. The federal government should conduct and publicize the full life-cycle costs of the planned fleet of fighter jets before purchasing them.

The federal government and the defence contractors promise a plethora of jobs in Canada from the fighter jet procurement. Under the Industrial Technological Benefits

66 Grazier, D. (2021) “F-35 program embodies the problems with defense acquisition — here’s how we fix them,” The Hill Times: <https://thehill.com/blogs/congress-blog/economy-budget/550601-f-35-program-embodies-the-problems-with-defense>

67 Federal Contractor Misconduct Database: <https://www.contractormisconduct.org/>

68 Government Accountability Office (2021) F-35 JOINT STRIKE FIGHTER: Sustainment, DOD Needs to Cut Billions in Estimated Costs to Achieve Affordability: <https://www.gao.gov/assets/gao-21-439.pdf>

69 Government Accountability Office (2021) F-35 JOINT STRIKE FIGHTER: Sustainment, DOD Needs to Cut Billions in Estimated Costs to Achieve Affordability: <https://www.gao.gov/assets/gao-21-439.pdf>

70 Government Accountability Office (2021) F-35 JOINT STRIKE FIGHTER: Sustainment, DOD Needs to Cut Billions in Estimated Costs to Achieve Affordability: <https://www.gao.gov/assets/gao-21-439.pdf>

71 Editor (2021) “The Fighter Jet That’s Too Pricey to Fail: The F-35 is a boondoggle. Yet we’re stuck with it.” The New York Times: <https://www.nytimes.com/2021/03/12/opinion/f-35-fighter-jet-cost.html>

72 Gould, J. and Insinna, V. (2021) “Ripping F-35 costs, House Armed Services chairman looks to ‘cut our losses’”, Defense News: <https://www.defensenews.com/congress/2021/03/05/ripping-f-35-costs-house-armed-services-chairman-looking-to-cut-our-losses/>

(ITB) policy, the government requires that contractors ensure that their weapons system contributes to the Canadian economy. However, the federal government's ITB requirement conflicts with the memorandum of understanding that Canada signed with the U.S. to be part of the F-35 development program, which only allowed Canadian companies to bid for contracts, but did not guarantee jobs and benefits to the Canadian economy.

In early 2020, Lockheed Martin put up advertising to promote the F-35 in bus stops near the Parliament buildings in Ottawa. The ad showed a picture of the stealth fighter with the caption "One pilot, many jobs." That year, Lockheed Martin released an economic assessment of its F-35 proposal for Canada that estimated that there would be approximately 130,000 jobs created between 2026 and 2058. However, this number of jobs is circumspect because the stealth fighter cannot be fully built in Canada. Canadian companies can only supply some components to manufacturing plants in the U.S. where the warplane is assembled. By contrast, SAAB has announced that it will build the Gripen fighter jet in Canada and set up a manufacturing plant in Nova Scotia and set up two new aerospace centres in Quebec, which the company claims will create and protect thousands of aerospace and related jobs in Canada, but provided no public economic assessment.⁷³

However, a new fleet of fighter jets is not a good way to increase jobs and stimulate the economy. Research from the Political Economy Research Institute at the University of Massachusetts shows that considerably more jobs are created from \$1 billion in government investment in clean energy, health care and education than in the military.⁷⁴ A 2017 economic study, which looked at military spending from 1970 to 2014 across many countries, found that there was in fact a significant and persistent negative effect on economic growth from government spending on the military.⁷⁵ Fighter jets are not productive and beneficial to the economy like public

transit, hospitals and schools. **The Opportunity Costs** box below shows what else the federal government could build for \$19 billion, such as recreation centres, schools and affordable housing, instead of buying new fighter jets. If the federal government decides to buy a new warplane, there will be serious financial risks and negative economic employment effects for the country.

OPPORTUNITY COSTS

\$19 billion price tag = 88 fighter jets or

422 recreation centres (\$45 million cost of the Canada Games Centre in Halifax, Nova Scotia)

15 state-of-the-art healthcare complexes (\$1.2 billion cost for West Park Healthcare Centre in York, Ontario)

760 Indigenous wellness centres (\$25 million cost of the Songhees Indigenous wellness and health centre in British Columbia)

240 high schools (\$79 million cost of the Edmonton Meadows High School for 1,800 students in Alberta)

575 elementary schools (\$33 million cost for the Edmonton K-9 school for 950 students in Alberta)

130 kilometres of light rail transit (\$9 billion cost of 64 kilometres of light rail transit in Ottawa, Ontario)

380,000 Solar panel systems for large businesses and farms (Cost of \$15,000 to \$20,000 for residential systems and \$30,000 to \$50,000+ for farm or commercial solar power systems in Saskatchewan)

87,842 green affordable housing units (\$56.8 million cost for 263 new affordable housing units in Quebec)

73 Smith, C. (2021) "Bidding partner says fighter jets could bring hundreds of jobs to Atlantic region," Global News: <https://globalnews.ca/news/8421387/bidding-partner-fighter-jets-jobs-atlantic-region/>

74 R. Pollin & H. Garrett-Peltier (2011) "The U.S. Employment Effects of Military and Domestic Spending Priorities: Update," Political Economy Research Institute at the University of Massachusetts: http://peri.umass.edu/fileadmin/pdf/published_study/PERI_military_spending_2011.pdf

75 d'Agostino, G., Dunne, J.P., & Pieroni, L. (2017) "Does Military Spending Matter for Long-run Growth," Defence and Peace Economics, Volume 28, 2017 - Issue 4: <https://www.tandfonline.com/doi/abs/10.1080/10242694.2017.1324723>

NUCLEAR WEAPONS RISK OF THE F-35

The F-35 is intended as a first-strike fighter jet and is also a delivery system for nuclear weapons. Since its inception, the F-35 was designed to carry a nuclear weapon, the B61-12, in its bomb bay. The B61-12 is a 700-pound gravity, thermonuclear bomb.⁷⁶ It is a variable yield that ranges from 0.3 to 50 kilotons (kt). The bomb's maximum yield of 50-kilotons is the equivalent of 50,000 tons of TNT. This is more than twice the yield of the atomic bombs dropped on Hiroshima (18 kt TNT) and Nagasaki (19 kt TNT). Depending on how the yield is set, the B61-12 can become a low-yield tactical weapon or an intermediate-yield strategic nuclear weapon.

According to the GAO, the B61-12 modernization is the most complex, expensive nuclear weapon life extension program in U.S. history.⁷⁷ Approximately 400 of these refurbished bombs will be produced at a cost of almost \$8 billion. The weapon has a new guided tail kit for precision strikes. Zachary Keck, the Wohlstetter Public Affairs Fellow at the Non-proliferation Policy Education Center, argues that the greater accuracy and the lower yield of the weapon makes the B61-12 more useable, and thus the "most dangerous in the U.S. arsenal."⁷⁸

As President Obama's 2010 Nuclear Posture Review explained, the B61-12 bomb will be carried on the F-35, a dual capable aircraft designed for conventional and nuclear weapons.⁷⁹ President Trump's 2018 U.S.

Nuclear Posture Review re-affirmed the central role that the F-35 plays in American and NATO nuclear weapons strategy,

Modernizing our dual-capable fighter bombers with next-generation F-35 fighter aircraft will maintain the strength of NATO's deterrence posture and maintain our ability to forward deploy nuclear weapons, should the security situation demand it.⁸⁰

In October 2021, two F-35s from the Nellis Air Force Base in Nevada released dummy nuclear bombs at a nearby test range.⁸¹ It is expected the F-35 will be certified to carry nuclear bombs for operations in 2022. However, this troubling arrangement puts the F-35 pilot in control of launching a nuclear weapon with no oversight of its final release.⁸²

Several NATO members have already bought the F-35 including the UK, Belgium, Denmark, Italy, Netherlands, Norway and Poland. With a fleet of F-35s, a dangerous nuclear deterrence and a demand for collective defence, NATO puts Canada in a conflictual situation. Grazier explains that if there were a nuclear war, allied F-35s including any of Canada's, may be required to carry the B61-12 nuclear weapon.⁸³ Thus, choosing the F-35 could put Canada in violation of the Nuclear Non-Proliferation Treaty (NPT), which prohibits the

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- 76 Wellen, R. (2016) "Increasing Accuracy and Flexibility in Nuclear Weapons Actually Undermines Arm Control," Foreign Policy In Focus: <https://fpif.org/increasing-accuracy-flexibility-nuclear-weapons-actually-undermines-arm-control/>
 - 77 Government Accountability Office (2018) B61-12 NUCLEAR BOMB Cost Estimate for Life Extension Incorporated Best Practices, and Steps Being Taken to Manage Remaining Risk: <https://www.gao.gov/assets/gao-18-456.pdf>
 - 78 Keck, Z. (2018) "Why the B-61-12 Bomb Is the Most Dangerous Nuclear Weapon in America's Arsenal", Zachary Keck, The National Interest, October 9, 2018: <https://nationalinterest.org/blog/buzz/why-b-61-12-bomb-most-dangerous-nuclear-weapon-americas-arsenal-32976>
 - 79 United States (2010) Nuclear Posture Review: https://dod.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf
 - 80 U.S. Nuclear Posture Review 2018: <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF> p. 3.
 - 81 U.S. Air Force (2021) "F-35A complete 5th generation fighter test milestone with refurbished B61-12 nuclear gravity bombs: <https://www.af.mil/News/Article-Display/Article/2801860/f-35a-complete-5th-generation-fighter-test-milestone-with-refurbished-b61-12-nu/>
 - 82 Grazier, D. (2019) "Basing F-35s in Burlington, Vermont, Raises Significant Questions," testimony, Project on Government Oversight: <https://www.pogo.org/testimony/2019/05/basing-f-35-in-burlington-vermont-raises-significant-questions/>
 - 83 Grazier, D. (2019) "Basing F-35s in Burlington, Vermont, Raises Significant Questions," testimony, Project on Government Oversight: <https://www.pogo.org/testimony/2019/05/basing-f-35-in-burlington-vermont-raises-significant-questions/>

transfer of nuclear weapons and requires progress on nuclear disarmament.⁸⁴ By 2035, Lockheed Martin anticipates that more than 500 F-35s will be stationed at allied bases in Europe. As a warplane that is designed to carry the B61-12 but is highly flawed and is a crash danger, the F-35 risks a nuclear conflict or a serious nuclear accident.

“THE F-35 IS INTENDED AS A FIRST-STRIKE FIGHTER JET AND IS ALSO A DELIVERY SYSTEM FOR A NUCLEAR WEAPON, THE B61-12.”

ENVIRONMENTAL HARMS AND ENVIRONMENTAL RACISM OF FIGHTER JETS

Throughout the life-cycle of a fighter jet, from its production to its deployment, there are many adverse environmental impacts. In its *Martial Mining: Resisting Extractivism and War Together* report released in 2020, the London Mining Network described the links between extractivism, weapons systems and war.⁸⁵ The report explained that many different metals, minerals and rare earth minerals are needed for the production of a fighter jet. The air frame alone is constructed from aluminum, beryllium, cadmium carbon-epoxy composite, chromium, germanium, gold, lead, molybdenum, nickel, tantalum, tin and tungsten (See below the graphic **Metals and minerals needed for a fighter jet**). The tremendous amount of extracted raw material needed to manufacture a fighter jet makes them very large, heavy vehicles. The CF-18 has a weight without fuel of 10,610 kilograms (23,400 lb). The F-35 has an “empty weight”, without fuel, of 13,290 kg (29,300 lb) and the Gripen is 8,000 kg (16,500 lb).⁸⁶ On average, a fighter jet is approximately six times heavier than a passenger vehicle (1,760 kg = 3,900 lb). As well, the weapons carried by warplanes are also manufactured

from metals and rare earth minerals. The F-35 can carry more than 18,000 pounds of missiles and bombs.⁸⁷

The *Martial Mining* report explained that the F-35 is composed of 300,000 individual parts and assembled from 1,900 suppliers around the globe. For its electronic warfare system, the F-35 requires 417 kilograms (919 lbs) of rare earth elements, which are in limited supply. However, rare earth minerals are also needed for crucial non-military products and technologies, such for cell phones, computers, LED lights and health care devices. The excessive mining of the metals and minerals needed for a fighter jet cause toxic tailing waste, terrible environmental damage and often community displacement.

As well, the heavy metal and explosive residue from air weapons damage the land and harm wildlife. A 2005 joint study by DND and the U.S. Department of Defense (DOD) found heavy metal contamination in the soil, water and vegetation from live fire testing in the CLAWR.⁸⁸ In her memoir, *Nitinikiau Innusi: I Keep the Land Alive*, Innu elder

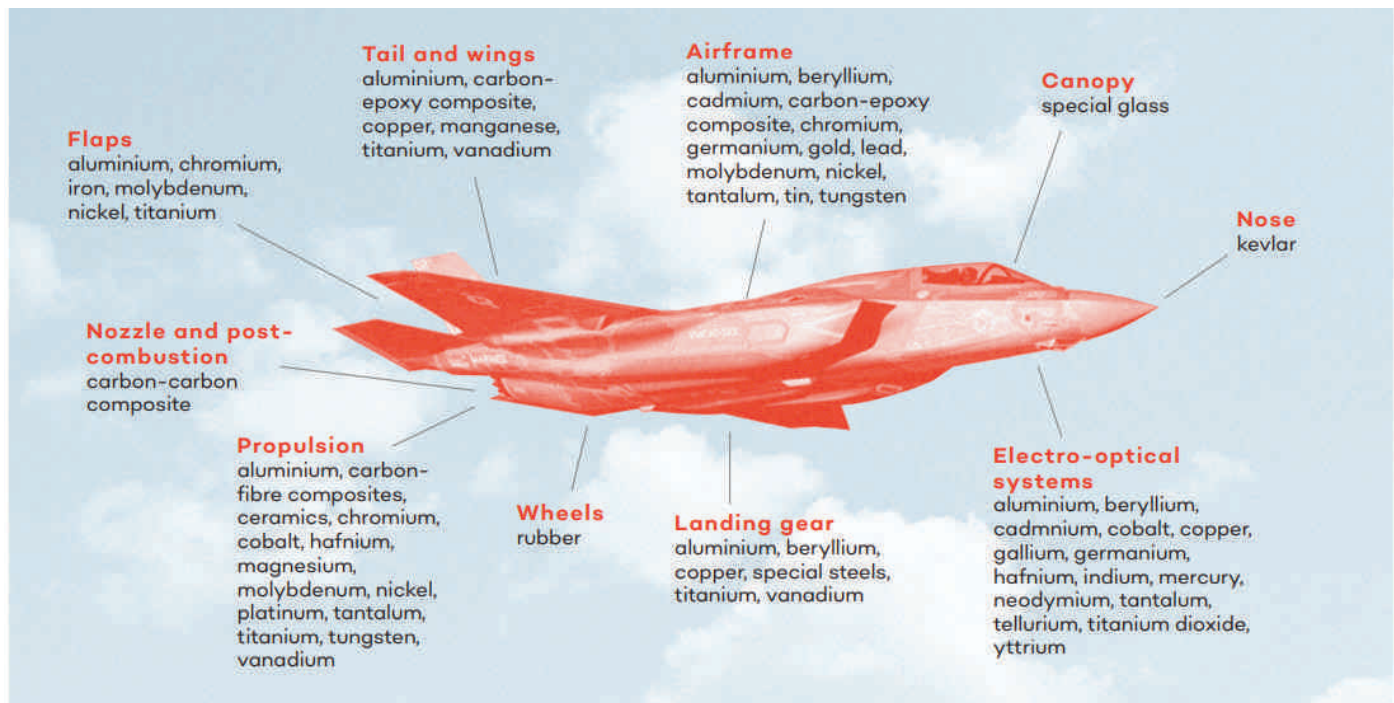
84 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) <https://www.un.org/disarmament/wmd/nuclear/npt/text> (Articles 1, 2 and 6)

85 London Mining Network (2020) *Martial Mining: Resisting Extractivism and War Together*, <https://londonminingnetwork.org/wp-content/uploads/2020/04/Martial-Mining.pdf>

86 See: Appendix 2: Specifications for the Three Fighter Jet Options.

87 Lockheed Martin, F35 Lightning II: <https://www.f35.com/f35/global-enterprise/canada.html> and F-35 Capabilities: <https://www.lockheedmartin.com/en-us/products/f-35/f-35-capabilities.html>

88 Pennington, J. et al. (2005) “Distribution and Fate of Energetics on DOD Test and Training Ranges: Interim Report 5, Chapter 5: Characterization of Cold Lake Air Weapons Range, U.S. Army Corps of Engineers, <https://apps.dtic.mil/sti/pdfs/ADA433648.pdf>



Metals and minerals needed for a fighter jet.

Source: Martial Mining report written by Daniel Selwyn, designed by Kay Stephens and published by the London Mining Network (p. 35).

Tshaukuesh Penashue described the ravaged landscape after fighter jet weapons testing in Labrador,

The next morning, we went to have a look. There were fuel drums around the shore and the bombs had left huge craters in the ground, longer than an adult person and deep enough to stand up in. It's a wasteland. It looks as though a giant bulldozer dug it all up. All the trees and plants are dead. There's nothing left for the animals to eat. It broke my heart.⁸⁹

Penashue also worried about the negative effects of the fighter jets on wildlife.

In Alberta, CFB Cold Lake and the air weapons range have had an adverse impact on wildlife. The CLAWR spans 11,700 square kilometres of the endangered Boreal Caribou's range in the province (see below

Map of the Cold Lake Air Weapons Range).⁹⁰ CLAWR has severely disturbed the caribou's habitat including destroying calving areas that has led to a precipitous decline in the population (also known as the Woodland Caribou, Boreal population).⁹¹ Since 2000, the Boreal Caribou has been listed as threatened under the federal *Species at Risk Act*. The decline of the caribou population has impaired the culturally significant relationship between the Indigenous people who used to follow the herd.⁹²

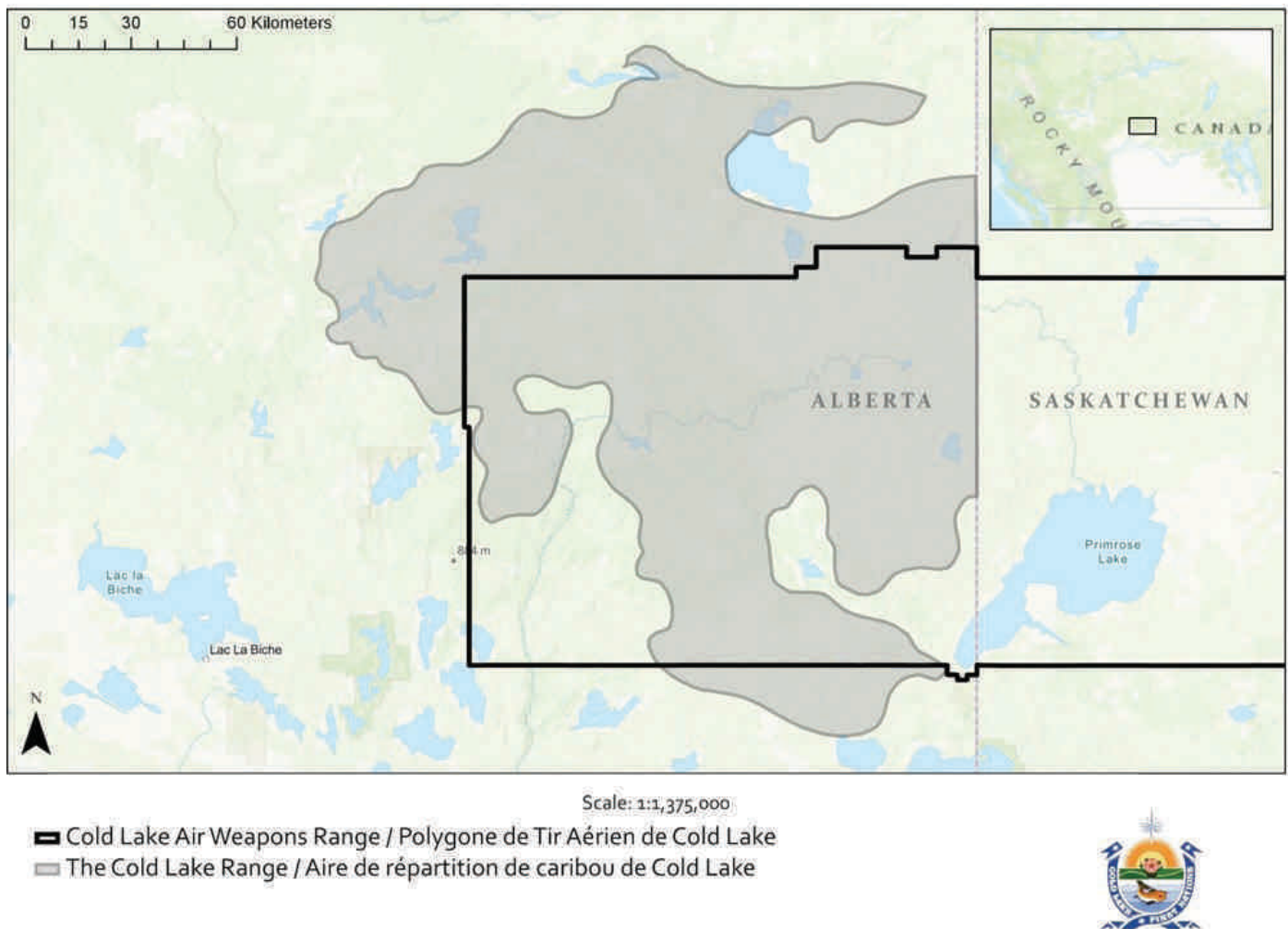
Scientific research from the United States has shown that military aircraft noise and low-altitude overflights do cause stress in animals. This research was described in the United States Air Force's 2016 *Final Environmental Impact Statement F-35A Operational Beddown – Pacific*. It explained that fighter jet noise and low-altitude flights cause increased heart rates, an indicator of stress, in

⁸⁹ Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press, p. 14-16.

⁹⁰ Canada (2020) Woodland Caribou (Boreal population) with Cold Lake First Nations: conservation agreement <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/conservation-agreements/woodland-caribou-boreal-cold-lake-first-nations-final-2019.html>

⁹¹ Canada (2020) Woodland Caribou (Boreal population) with Cold Lake First Nations: conservation agreement <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/conservation-agreements/woodland-caribou-boreal-cold-lake-first-nations-final-2019.html>

⁹² Todd, Z. (2017) "Very dire situation": Disappearance of Alberta's caribou threatens centuries-old way of life," CBC: <https://www.cbc.ca/news/canada/edmonton/cold-lake-caribou-protection-first-nation-land-preserve-1.4401994>



Map of the Range of the Boreal Caribou.

Source: Woodland Caribou (Boreal population) with Cold Lake First Nations: conservation agreement.

wild ungulates like caribou, elk, and bighorn sheep.

In discussions with members of the Cold Lake First Nation, they expressed their concern that fighter jets are harming animals, the forest and the water. They said that they have witnessed over the years fighter jets dumping fuel from the sky on the lakes and leaving unexploded weapons on the land.⁹³ Fighter jets jettison or dump fuel in an emergency procedure to reduce their weight when they need to land. The federal government has not done a public environmental assessment for the new fighter jet procurement to determine what impacts there will be on people and the natural environment. There is no assessment listed on the Canadian Impact Assessment Registry.⁹⁴ Correspondence with the Impact Assessment Agency of Canada confirms that the federal government has not done a public

environmental assessment. There has also not been any Parliamentary study on the environmental and climate impacts or the risks to Indigenous people of the planned fighter jets. The dispossession and ruination of First Nations' land by extraction and by the military for weapons testing and warfare training should be viewed as examples of environmental violence and racism. The issue of environmental racism by the military against Indigenous people will be discussed further later in the report.

⁹³ Interviews with author in Cold Lake, August 25, 2021.

⁹⁴ Canadian Impact Assessment Registry: <https://www.ceaa-acee.gc.ca/050/evaluations/exploration?culture=en-CA>

CONTAMINATED AIR FORCE BASES AND FOREVER CHEMICALS

Many of the most contaminated and environmentally degraded sites in Canada are military bases. The Federal Contaminated Sites Inventory (FCSI) shows that DND is currently responsible for 771 active sites and 121 suspected contaminated across the country.⁹⁵ The FCSI is a public, searchable database that lists the contaminated sites under the custody and control of federal government departments and agencies. On military bases, the FCSI reveals that there have been releases of petroleum hydrocarbons, polychlorinated biphenyls, benzene and toluene into the soil, surface water, ground water and air sheds. These toxic and carcinogenic compounds have adverse health impacts on humans and the natural environment and can bioaccumulate.

Military vehicles, like fighter jets, and weapons testing require a disproportionate use of hazardous materials (HAZMAT), such as explosives, solvents and petrochemicals. DND acknowledges that the military is a major consumer of HAZMAT and producer of hazardous waste.⁹⁶ However, the latest internal audit of DND's management of HAZMAT reveals persistent gaps in the storage, identification and handling of dangerous chemicals that puts public health and the environment at risk.⁹⁷ Over the years, the improper management of HAZMAT, the leaking of fuel and the dumping of toxic waste have caused contamination at bases across the country.

According to the FCSI, per- and polyfluoroalkyl substances (PFAS), 'forever chemicals', have also been

found on military bases across the country. These chemicals are a group of over 4,700 human-made substances that are used as surfactants, lubricants and repellents (for dirt, water, and grease) and have adverse health impacts, such as cancer, decreased fertility, and increased risk of asthma and thyroid disease.⁹⁸ Wings in Cold Lake, Comox, Moose Jaw, Winnipeg, Shearwater and Gander are contaminated or suspected of being contaminated with PFAS. PFAS can be found in certain firefighting foams that are often used on air force bases to prevent fires from military aircraft. A new fleet of fighter jets will likely prolong the use of PFAS and increase contamination around military bases.

Across Canada, there are also 865 suspected and 63 confirmed unexploded ordnance (UXO) legacy sites for which DND is responsible.⁹⁹ Many of these sites are weapons ranges that are littered with unexploded bombs, rockets, artillery shells, flares and missiles from fighter jet testing. These UXOs threaten public safety and harm the natural environment. The Cold Lake First Nations people who want access to the CLAWR must do a safety orientation in advance, so that they avoid injury by UXOs on the land.¹⁰⁰ Exploded and unexploded ordnances are another form of military contamination of the natural environment.

Military vehicles like fighter jets require a tremendous amount of fuel. DND is responsible for the largest stock of fuel in Canada outside the petrochemical industry.¹⁰¹ At bases across the country, it was estimated that DND has 2,895 fuel storage tanks, which is more than any

95 Federal Contaminated Sites Inventory (FCSI): <https://www.tbs-sct.gc.ca/fcsi-rscf/home-accueil-eng.aspx>

96 Canada (2017) Defence Energy and Environment Strategy, Department of National Defence: <https://www.canada.ca/content/dam/dnd-mdn/documents/reports/2017/20171004-dees-en.pdf>

97 Canada (2012) Audit of Hazardous Materials Management, Chief Review Services, Department of National Defence, [Online] Available at: <http://www.crs-csex.forces.gc.ca/reports-rapports/pdf/2012/p0963-eng.pdf> Note: the audit did not include chemical and biological agents, radiological and nuclear materials or ammunitions and explosives, see p. 2.

98 U.S. Department of Health & Human Services (2021) Toxicological Profile for Perfluoroalkyls: <https://www.atsdr.cdc.gov/ToxProfiles/tp200.pdf>

99 Canada (2007) DND Unexploded Explosive Ordnance (UXO) and Legacy Sites Program, Department of National Defence, [Online] Available at: <http://www.forces.gc.ca/en/news/article.page?doc=dnd-unexploded-explosive-ordnance-uxo-and-legacy-sites-program/hnps1tzd>

100 Interview with Cold Lake First Nation members, August 2021. National Defence, Range Control, CLAWR: http://www.rangesafety.ca/CLAWR_content/Range_Policies.pdf

101 Lauzon, M. (2015) "Contaminated sites Management within the Department of National Defence," <https://www.rmc-cmr.ca/en/civil-engineering/contaminated-sites-management-by-dr-michel-tetreault>

other federal department and leaks from these tanks are a major source of hydrocarbon contamination according to the FCSI.¹⁰² At CFB Cold Lake, there are huge fuel storage tanks reserved for the CF-18 fleet. Fighter jets are fuel-intensive and cause severe environmental stress.

PIPELINES IN THE SKY: CLIMATE IMPACTS OF FIGHTER JETS

Among the major services of the military, it is the air force that uses the most fossil fuel. Aviation fuel accounts for almost 45% of all the fossil fuels used by the military.¹⁰³ Aviation fuel is used to power the RCAF's CF-18 Hornet fighter jets, CH-146 Griffon tactical helicopters, CC-150 Polaris aerial refuelers, and the CC-177 Globemaster III strategic airlifters among other aircraft.¹⁰⁴ Fighter jets use

a specialized fuel called JP8 that is a more refined kerosine fuel with toxic chemicals that allow them to fly at faster speeds and higher altitudes compared to commercial aircraft.¹⁰⁵ Unlike a commercial aircraft that is flown by a crew and can carry up to 500 hundred passengers with luggage, a fighter jet is flown by one pilot and carries a dozen missiles or bombs.



CF-18 being refuelled. Photo credit: Department of National Defence, Canada.

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- 102 Office of the Auditor General of Canada (2002) *The Legacy of Federal Contaminated Sites*, Report of Office of the Commissioner of Environment and Sustainable Development, Chapter 2: https://publications.gc.ca/collections/collection_2013/bvg-oag/FA1-2-2002-2-eng.pdf , p. 14.
 - 103 Access to Information record, National Defence, A0489141_10-A-2016-00153-0037
 - 104 Royal Canadian Air Force, Inventory of Aircraft: <http://www.rcaf-arc.forces.gc.ca/en/aircraft.page>
 - 105 Chevron (2007) Aviation Fuels: Technical Review: <https://www.chevron.com/-/media/chevron/operations/documents/aviation-tech-review.pdf>

Fighter jets, in particular, emit excessive greenhouse gases. A fighter jet releases more carbon emissions in one long-range flight than a typical automobile emits in a year (an average car consumes 1,800 litres gas/year).¹⁰⁶ The F-35 has an internal fuel capacity of approximately 18,000 lbs (10,200 litres or 2,800 gallons) giving it a maximum range of only 1,200 nautical miles (2,222 kilometres).¹⁰⁷ The F-35 burns 5,600 litres of fuel (1,480 gallons) in one flying hour.¹⁰⁸ According to the Costs of War Project at Brown University, the stealth fighter is extremely fuel inefficient burning over 2.3 gallons (8.7 litres) of fuel per mile and emitting 27 metric tonnes of carbon dioxide equivalent (CO_{2e}).¹⁰⁹ It is important to note here that military vehicles are so inefficient that fuel use is listed as

“FIGHTER JETS RELEASE TOXIC POLLUTANTS THAT CONTAMINATE THE AIR SHED AND UPPER ATMOSPHERE AND EXACERBATE THE CLIMATE CRISIS.”

gallons per mile as opposed to commercial vehicles that are described by miles per gallon.¹¹⁰

Fighter jets also release air pollutants, such as sulphur dioxide, volatile organic compounds, particulates and carbon dioxide, contaminating the air shed and the upper atmosphere. These air pollutants have an adverse impact on human health and worsen global warming. The chart below is copied from U.S. Air Force's F-35A Training Basing Environmental

Impact Statement done in 2012 and shows the annual operational emissions in tonnes from a fleet of stealth fighters.¹¹¹ Nitrous oxide is also a greenhouse gas and sulphur dioxide is a gaseous air pollutant.

ANNUAL OPERATIONAL EMISSIONS (FOR 72 F-35 FIGHTER JETS)

Activity	Air Pollutant Emissions (tonnes per year)						
	Volatile organic compound (VOCs)	Carbon monoxide (CO)	Nitrous Oxide (NOx)	Sulphur Dioxide (SO ₂)	Particulate matter less than or equal to (PM ₁₀)	Particulate matter less than or equal to (PM _{2.5})	Carbon dioxide equivalent (CO _{2e})
F-35A operations and aerospace ground equipment	4.65	150.28	125.82	13.47	2.19	2.19	44,522.00

- 106 Natural Resources (2021) Fuel Consumption Guide: [https://www.nrcan.gc.ca/sites/nrcan/files/oeef/pdf/transportation/fuel-efficient-technologies/2021%20Fuel%20Consumption%20Guide\(1\).pdf](https://www.nrcan.gc.ca/sites/nrcan/files/oeef/pdf/transportation/fuel-efficient-technologies/2021%20Fuel%20Consumption%20Guide(1).pdf)
- 107 Lockheed Martin, F-35: The Right Choice for Canada: <https://www.f35.com/f35/global-enterprise/canada.html>
- 108 Peck, M. (2019) "The Next Threat to the Stealth F-35? Global Warming," National Interest: <https://nationalinterest.org/blog/buzz/next-threat-stealth-f-35-global-warming-92931>
- 109 Crawford, N (2019) "Pentagon Fuel Use, Climate Change, and the Costs of War" <https://watson.brown.edu/costsofwar/files/cow/imce/papers/Pentagon%20Fuel%20Use%2C%20Climate%20Change%20and%20the%20Costs%20of%20War%20Revised%20November%202019%20Crawford.pdf>
- 110 Crawford, N (2019) "Pentagon Fuel Use, Climate Change, and the Costs of War" <https://watson.brown.edu/costsofwar/files/cow/imce/papers/Pentagon%20Fuel%20Use%2C%20Climate%20Change%20and%20the%20Costs%20of%20War%20Revised%20November%202019%20Crawford.pdf> (p. 13).
- 111 U.S. Air Force's F-35A Training Basing Environmental Impact Statement (2012) https://www.airforcemag.com/PDF/SiteCollectionDocuments/Reports/2012/June2012/Day13/F-35A_training_basing_EIS_exec_summary_June2012.pdf

As well, fighter jets have a limited flying range, so they need refueling when travelling long distances. In military terms, the ‘range’ or ‘radius of action’ refers to the maximum distance an aircraft can travel away from its base along a given course with a normal load and return without refueling. For instance, the F-35 has a range of 2,222 kilometres and a CF-18 fighter jet has a maximum range of 3,700 km, so they cannot fly from a wing in Canada to Asia or to Europe without needing to refuel on the ground or in the air.¹¹² Canada’s fighter jets often fly alongside of fossil fuel-powered CC-150 Polaris tankers. These tankers consume 5,702 litres of fuel per flying hour.¹¹³ From 2014 to 2019, the Canadian CC-150 Polaris tankers flew 1,166 sorties and delivered 64,500,000 pounds of fuel to the U.S.-led coalition fighter jets to bomb Syria and Iraq.¹¹⁴ This was equivalent to approximately 94,000 tonnes of CO_{2e} emitted into the atmosphere. By their dependence on air refueling and their excessive fuel use, fighter jets are like pipelines in the sky.

Worse, Canada’s planned fleet of new fighter jets are intended to last for up to fifty years, so they will lock-in carbon-intensive militarism for decades. The military is the largest consumer of fossil fuel in the federal government and the air force is the most fossil-fuel dependent service. DND admits there are currently no renewable energy options for fighter jets or military aircraft.¹¹⁵

The federal government has also excluded military emissions from Canada’s Nationally Determined Contributions (NDC). Canada’s NDC is the national plan to reduce greenhouse gases and to adapt climate change that is submitted to the UN Framework Convention on Climate Change Secretariat.¹¹⁶ Military emissions as a sector are absent in Canada’s NDCs for 2016, 2017 and 2021.¹¹⁷ As

explained in DND’s 2017 *Defence Energy and Environment Strategy*, military vehicles and operations are exempt from the national greenhouse gas reduction target.¹¹⁸ The 2020 *Defence Energy and Environment Strategy* continues to exclude military vehicles including aircraft from the emissions reduction target, but DND claims that it will try to achieve net-zero by 2050. Yet, there is no evidence that DND has offset any of its carbon emissions from its aircraft in the past and has no public plan to offset its emissions at the present. Though the federal government has pledged to achieve net-zero by 2050 through the *Canadian Net-Zero Emissions Accountability Act*, DND has not explained how that will be achieved from the planned fleet of fighter jets.¹¹⁹ It is no surprise, then, that Canada’s carbon emissions continue to rise and that Canada has failed to meet every climate target.

FUEL CONSUMPTION AND CARBON EMISSIONS

A fighter jet carries and consumes approximately 15,000 lbs of fuel to fly one long range flight (of 1,200 nautical miles or 2,300 kilometres.) That’s equivalent to **8,500 litres** or **2,300 gallons**.¹²⁰

By contrast, a typical passenger vehicle consumes **1,800 litres** of fuel per year.

How many trees will the federal government have to plant to offset the greenhouse gases from warplanes?

112 CBC (2017) “A History of Canada’s CF-18 Hornets”: <https://www.cbc.ca/news/canada/cf-18-hornets-1.1003648>

113 Correspondence with the Department of National Defence.

114 Operation IMPACT, National Defence: <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-impact.html>

115 Canada (2020) Defence Energy and Environment Strategy, https://www.canada.ca/content/dam/dnd-mdn/images/dees2020/2020-23%20Defence%20Energy%20and%20Environment%20Strategy_EN%20-%20Signed.pdf (p. 7).

116 Nationally Determined Contributions (NDCs): <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs>

117 NDC Registry: <https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx>

118 Canada (2017) Defence Energy and Environment Strategy, <https://www.canada.ca/content/dam/dnd-mdn/documents/reports/2017/20171004-dees-en.pdf> (p. 9).

119 Canadian Net-Zero Emissions Accountability Act (S.C. 2021, c. 22): <https://laws-lois.justice.gc.ca/eng/acts/C-19.3/FullText.html>

120 A fighter jet carries and consumes about 15,000 lbs of fuel to fly one long range flight (of 1,200 nautical miles or 2,300 kilometres.) That’s equivalent to 8,500 litres or 2,300 gallons.

DISTURBING THE PEACE: NOISE POLLUTION OF FIGHTER JETS

Fighter jets, which have very powerful military aircraft engines, are extremely loud and negatively affect hearing.¹²¹ They have low-bypass, turbo-jet engines and after-burners for additional thrust to fly faster than the speed of sound (supersonic, or faster than 1,225km/h).¹²² These engines need higher power-to-weight ratios for speed and manoeuvrability. Under certain conditions, fighter jets like the F-35 and the Gripen can create sonic booms. A sonic boom can resound far and wide causing buildings to shake and intense stress reactions in the body.¹²³ Fighter jets are generally much noisier than commercial aircraft engines. Commercial planes have high-bypass, turbo-fan engines which are suitable only for subsonic flight (flying slower than the speed of sound or 1,225km/h). Engines for commercial planes that fly at lower altitudes and at slower speeds are for optimised fuel efficiency and reduced noise, but fighter jets are not.

The Federal Aviation Administration and the U.S. DOD have identified residential use as incompatible with annual noise levels above 65 dB day-night average sound level.¹²⁴ The F/A-18 Super Hornet produces 118 decibels of noise, which is the equivalent of a rock concert. The U.S. Air Force has warned that the F-35 is much louder than the F-16 or F-18.¹²⁵ The F-35's Pratt & Whitney engine gives 43,000 pounds of thrust to propel

the 70,000-pound aircraft through the air. On take-off, the F-35 is estimated to have a sound level over 65 dB and to a maximum 121 dB with the use of afterburners at 1,000 feet above ground level. That is 21 decibels louder than the maximum sound level estimated for an F-16. Fighter jets use their afterburners if they are weighted down with munitions and fuel, which makes them extremely noisy.

For people in Burlington, Vermont where the F-35s are stationed, the stealth fighter is a "decibel-roaring hunk of metal flying overhead."¹²⁶ The fighter jet has hurt their quality of life and degraded their health. When the fighter jets fly over the city, people say that they trigger anxiety and panic attacks, cause headaches, disrupt people's hearing, rattle windows, and scare children and animals.¹²⁷ Hundreds of homes in the F-35 flight paths are undergoing soundproofing and some homes closest to the base have been deemed 'unlivable'.¹²⁸ The concern about noise led the people of Burlington to demand a public health study of the impacts of the F-35 beddown in their community.

People in Virginia Beach filed two lawsuits against the DOD for the harm caused by noise from the Boeing Super Hornets from the Oceana Naval Air Station and Fentress Naval Auxiliary Landing Field in Virginia. In

- 121 Su-ern Yong, J. & De-Yun Wang, D. (2015) "Impact of noise on hearing in the military," *Military Medical Research*, Volume 2, Article number 6: <https://mmrjournal.biomedcentral.com/articles/10.1186/s40779-015-0034-5>; a recent report also found that Canadian fighter jet pilots have higher hearing loss than the general public, Smith, E. and Burrell, C. (2017) "A Study of Risk Factors and Prevalence for Noise-Induced Hearing Loss in Canadian Armed Forces Pilots," *Defence Research and Development Canada*: https://cradpdf.drdc-rddc.gc.ca/PDFS/unc301/p806371_A1b.pdf
- 122 National Aeronautics and Space Administration, "Turbofan Engine" <https://www.grc.nasa.gov/www/k-12/airplane/aturbf.html>
- 123 Wendorf, M. (2021) "F-35 Fighter Jets Cause Sonic Booms Over Utah," *Interesting Engineering*: <https://interestingengineering.com/f-35-fighter-jets-cause-sonic-booms-over-utah>
- 124 "Sound Effects: In the F-35's Flight Path, Vermonters' Lives Have Changed" *Seven Days News*, Vermont's Independent Media, July 7, 2021 <https://www.sevendaysvt.com/vermont/sound-effects-in-the-f-35s-flight-path-vermonters-lives-have-changed/Content?oid=33345419>
- 125 Noise Level Comparisons: F-35 and other Aircraft <https://www.safeskiescleanwaterwi.org/noise-level-comparisons-f-35-and-other-aircraft/>
- 126 Elleston, Grace (2020) "Panic attacks. Ringing ears. Shaking walls. Happy 1-year anniversary to the F-35s." *Vermont Digger*, September 2020: <https://vtdigger.org/2020/09/27/panic-attacks-ringing-ears-shaking-walls-happy-1-year-anniversary-to-the-f-35s/>
- 127 Watch: "Jet Line: Voicemails from the Flight Path," a 12-minute documentary made up entirely of recorded phone messages from people impacted by the F-35 noise in Burlington, Vermont (2021). <https://jetlinefilm.com/>
- 128 Harding, H. (2019) "F-35s in Idaho would cause 'significant' noise, make houses unlivable, report finds," *American Military News*: <https://americanmilitarynews.com/2019/08/f-35s-in-boise-would-cause-significant-noise-make-houses-unlivable-report-finds/>

2019, people in Whitbey Island also filed a lawsuit for harm caused by noise from the Boeing EA-18G Growler, a specialized version of the two-seat F/A-18F Super Hornet, in Washington State. The affected communities claimed in their lawsuits that the fighter jet noise reduced their quality of life and reduced their property values.

The Canadian government has not done a public environmental impact assessment that includes the risk of noise pollution from the planned fighter jets. In response to Environmental Petition No. 447 released in the spring of 2021, DND admitted that noise is not a factor in the procurement decision for new fighter jets.¹²⁹ Yet, Health Canada has raised concerns about the adverse health effects of aircraft noise.¹³⁰ The noise from fighter jets often evokes a fear response: breathing accelerates, heart rate increases and blood pressure rises. They may also cause hearing damage and ear drum rupture.¹³¹ The intense sonic booms from these jets can also cause tension and pain in the body. In her memoir, Penashue described the terrible noise from low-level fighter jet testing in Labrador,

The fighter jets shatter our happiness – they have no respect. Sometimes they come in the morning, when the children and old people are still asleep in their tents. The little ones cry because they don't understand what that terrifying sound is, the sonic boom. It's so loud it hurts their ears, and we worry the damage might be permanent. Sometimes we're out canoeing along the shore – hunting, fishing or teaching our

children and grandchildren our ways of doing things – and I'm afraid a canoe could capsize when people are startled... That's what it's like these days in nutshimit (the wilderness or bush).¹³²

According to a 2013 study by the Harvard School of Public Health, older adults exposed to high levels of aircraft noise face increased risk of heart disease.¹³³ American teachers in schools located near air force bases have said jet noise poses a significant obstacle to their teaching from the intense noise, protracted rumbling and difficulty regaining students' focus.¹³⁴ In his article, "US Air Force Admits F-35 Will Harm Health and Learning of Vermont Children," lawyer James Marc Leas gave a detailed analysis of the U.S. Air Force's 2013 Final Environmental Impact Statement, which explains how the noise from F-16s and F-35s adversely impact children's hearing and development. A European study on aircraft noise found that there was a substantial risk for cognitive impairment, such as adversely affecting reading skills and oral comprehension, that increased for sounds at and over 55 dB.¹³⁵ Research also shows that the prevalence of hearing loss and tinnitus in the military population is greater than in the general public.¹³⁶ In Burlington, Vermont, 200 homes in the direct flight path of the F-35s were bought by the government and demolished.¹³⁷ Communities around CFB Cold Lake in Alberta and the CFB Bagotville in Quebec will be exposed to extreme noise from the new fleet of fighter jets especially from the F-35. (See the chart on the next page **How loud is a fighter jet?**)

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- 129 Office of the Auditor General (2021) Climate Impacts of New Fighter Jets: Petition 447: https://www.oag-bvg.gc.ca/internet/English/pet_447_e_43704.html
- 130 Health Canada – Noise Effects from Airplanes <https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/everyday-things-emit-radiation/health-effects-airplanes-aircraft-noise.html>
- 131 FAA, Hearing and Noise in Aviation: <https://www.faa.gov/pilots/safety/pilotsafetybrochures/media/hearing.pdf> and Purdue University, Noise and its Effects: <https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm>
- 132 Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press.
- 133 Harvard School of Public Health (2013) "Aircraft noise linked with heart problems": <https://www.hsph.harvard.edu/news/press-releases/aircraft-noise-linked-with-heart-problems/>
- 134 Vermont Health, Public Health Review "U.S. Air Force F-35A Operations: Environmental Impact Statement" December 17, 2012: https://www.healthvermont.gov/sites/default/files/documents/2016/11/EIS_F-35A_Jets%202012.pdf
- 135 Vermont Health, Public Health Review "U.S. Air Force F-35A Operations: Environmental Impact Statement" December 17, 2012: https://www.healthvermont.gov/sites/default/files/documents/2016/11/EIS_F-35A_Jets%202012.pdf
- 136 Su-ern Yong, J. & De-Yun Wang, D. (2015) "Impact of noise on hearing in the military," *Military Medical Research*, Volume 2, Article number 6: <https://mmrjournal.biomedcentral.com/articles/10.1186/s40779-015-0034-5>
- 137 Aloe, J. (2019) "F-35 in Vermont: Number of homes in high-noise zone triples, sound mitigation years away," *Burlington Free Press*: <https://www.burlingtonfreepress.com/story/news/2019/05/30/f-35-vermont-homes-high-noise-zone-triple-help-years-away/1268897001/>

HOW LOUD IS A FIGHTER JET?

Sound is measured in decibels = dB

Loud noise over **65 dB** can harm hearing, cause headaches, increase stress, disrupt sleeping, impair learning and reduce quality of life.

Normal conversation is approx. **60 dB**

Lawn mower is approx. **90 dB**

Rock concert can more than **100 dB**

F/A-18 Super Hornet up to **118 dB**

F-35 fighter jet up to **121 dB**

CRASH RISK OF FIGHTER JETS

There is a heightened risk of crashes in communities near air force bases. This is because of the high speed and dangerous manoeuvres performed by military aircraft. In 2016, a CF-18 crashed in the CLAWR killing the pilot. The fighter jet was engaged in air-to-ground bombing training low to the ground when the accident happened.¹³⁸ At U.S. air force bases worldwide there have been many crashes and accidents. In Okinawa, Japan, there have been several accidents by the U.S. air force that have injured people and destroyed buildings angering the community.¹³⁹

In particular, the F-35, a single-engine plane with hundreds of deficiencies, is at an even greater risk for crashes. In 2019, a Japanese F-35 crashed into the Pacific Ocean killing the pilot.¹⁴⁰ The Japanese government then temporarily grounded its entire fleet of stealth fighters. Last year, an F-35 crashed on take off at Eglin Air Force Base in Florida and another crashed while refueling in California. In November 2021, a new British F-35 crashed shortly after take-off in the Mediterranean Sea.¹⁴¹ The pilot was not killed but the UK lost a new \$100 million USD warplane.

In January 2022, an F-35 crash-landed on the aircraft carrier USS Carl Vinson during operations in the South

China Sea. U.S. media reported that the crash damaged the 100,000-tonne Nimitz-class Vinson and injured the pilot and six sailors. This aircraft carrier is part of the U.S. Navy's 7th Fleet. The U.S. and its allies, including Canada, have engaged in dangerous, provocative exercises and operations off China's coast and throughout the Indo-Pacific region. In December 2021, the Canadian navy participated with the U.S. Navy's 7th Fleet in the ANNUALEX exercise to enhance interoperability, project power and as a show of force against China. However, more American and Canadian warships and fighter jets in the Indo-Pacific increase tension and insecurity in the region.

Worse still, the F-35 is made of 40% composite plastic that is toxic unlike older fighter aircraft such as the F-16 that has only 2% of this material.¹⁴² Former Pentagon aeronautical engineer and designer of the F-16, Pierre Sprey, warned that a crash of an F-35 would likely result in fire spreading toxic gas and smoke that under the certain weather conditions would be catastrophic for the community and would be like "chemical warfare."¹⁴³ If Canada buys the F-35 there will be an elevated risk of crashes with the potential for toxic fires for communities located near air force bases.

138 National Defence (2016) "CF188747 Flight Safety Investigation Report," NBC: http://www.forces.gc.ca/assets/AIRFORCE_Internet/docs/en/flight-safety/cf188747-fsir-28nov2016.pdf

139 Teramoto, D. (2021) "Woman shows Okinawa's plight with photos of U.S. copter crash," Asahi Shimbun: <https://www.asahi.com/ajw/articles/14422895>

140 Leone, D. (2019) "F-35 Pilot Was Disoriented When His Jet Hit the Water at More Than 683 MPH," National Interest: <https://nationalinterest.org/blog/buzz/f-35-pilot-was-disoriented-when-his-jet-hit-water-more-683-mph-61937>

141 Beale, J. (2021) "Probe after British F-35 fighter crashes in Mediterranean," BBC: <https://www.bbc.com/news/uk-59323895>

142 Ledbetter, S. (2013) "F-35 crash risks chemical exposure to BTV neighbors, analyst says," <https://www.mynbc5.com/article/f-35-crash-risks-chemical-exposure-to-btv-neighbors-analyst-says/3312370>

143 Ledbetter, S. (2013) "F-35 crash risks chemical exposure to BTV neighbors, analyst says," <https://www.mynbc5.com/article/f-35-crash-risks-chemical-exposure-to-btv-neighbors-analyst-says/3312370>

SOCIOCULTURAL HARMS OF FIGHTER JETS: WOUNDING THE LAND, WOUNDING THE PEOPLE

There are also severe sociocultural harms arising from the dispossession and militarization of land for air force bases and air weapons testing. For Indigenous people, these harms are compounded by the history of colonialism, natural resource extraction, racist government policies and the terrible legacy of residential schools. The federal government has prioritized the military and industry over the protection of the land and livelihoods of the Innu people in Labrador and the Dene and Cree people in Alberta and Saskatchewan. They lost their traditional territory for the establishment of military bases and weapons testing ranges.

Innu traditional territory is known as Nitassinan and Dene territory is known as Dene Ni Nenne.¹⁴⁴ For the Indigenous people, land is sacred, central to their identity and culture, and a source for their livelihoods. The loss and bombing of their lands have been traumatic for them resulting in high rates of poverty, suicide, alcoholism and drug addiction.¹⁴⁵ Elders in Sheshatshiu, Labrador and Cold Lake, Alberta have made these connections between the wounding of the land and the wounding of the people.¹⁴⁶ A new fleet of fighter aircraft will prolong the harm that has been done to these communities.

The next two sections examine the history of the expropriation of Indigenous land for the establishment of CFB Cold Lake and CFB Goose Bay to station and test fighter jets and the cumulative adverse impacts for Indigenous peoples.

COLD LAKE AIR FORCE BASE AND THE CUMULATIVE ADVERSE IMPACTS SUFFERED BY THE DENE AND CREE PEOPLES

In 1952, without consultation or consent from the Dene and Cree peoples, the Government of Canada under Prime Minister Louis St. Laurent leased 1.2 million hectares (3 million acres) land from the provinces of Alberta and Saskatchewan to establish an air weapons testing range.¹⁴⁷ The expropriated land was originally called the Primrose Lake Air Weapons Range, but is now known as the Cold Lake Air Weapons Range (CLAWR). The expropriation by the federal and provincial governments was a violation of Treaty 6 rights of the Indigenous peoples of Cold Lake, Beaver Lake, Heart Lake and Whitefish (Goodfish) Lake in Alberta and Treaty 10 rights of the Canoe Lake First Nation, Birch Narrows Dene Nation and Buffalo River Dene Nation in Saskatchewan.¹⁴⁸ From 1954, the Indigenous people were barred from accessing their traditional land that they used for hunting, trapping, fishing, gathering and ceremonies. They had used the land, which was sacred and possessed burial sites of their ancestors, from time immemorial. For seven years until 1961, the federal government paid minimal compensation to some of the First Nations and then stopped the payments. The Indigenous people were told by the government that the land would be returned to them in twenty years, but it was not returned. The First Nations made repeated claims to the federal Indian Affairs agency and to the DND to return their land and pay compensation, but they were ignored.

It was not until in 1991 that the federal government

144 Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press; and Cold Lake First Nations: <https://clfns.com/landsresources/>

145 Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press; Indian Claims Commission (1993) Primrose Lake Air Weapons Range Report, https://publications.gc.ca/collections/collection_2009/indianclaims/RC31-82-1-1993E.pdf and Kumar, M. and Tjepkema, M. (2019) "Suicide among First Nations people, Métis and Inuit (2011-2016): Findings from the 2011 Canadian Census Health and Environment Cohort (CanCHEC)": <https://www150.statcan.gc.ca/n1/pub/99-011-x/99-011-x2019001-eng.htm>

146 Interviews with Cold Lake First Nation members; and Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press;

147 4490 square miles = 11,600 square kilometres of land in northern western Alberta across the border with Saskatchewan. Canada (1993) Indian Claims Commission (1993) Primrose Lake Air Weapons Range Report, https://Publications.Gc.Ca/Collections/Collection_2009/Indianclaims/Rc31-82-1-1993e.Pdf

148 The Commission found the federal government breached the treaties. Indian Claims Commission (1993) Primrose Lake Air Weapons Range Report, https://publications.gc.ca/collections/collection_2009/indianclaims/RC31-82-1-1993E.pdf

finally agreed to set up an Indian Claims Commission and hold an inquiry into the historical land claim grievances of the Cold Lake First Nation and the Canoe Lake First Nation over the establishment of the CLAWR. Indigenous people gave emotional testimony about what the loss of land meant to their communities. Francis Scanie of the Cold Lake First Nation told the inquiry,

Primrose Lake was our livelihood . . . which was taken away. When Primrose Lake was taken away, it made us what we are today. We used to be proud people. It killed our pride, it killed our culture; it killed everything we stood for. We used to be a proud people; today we are welfare people. We wait for our welfare every month, and there are very few people that have jobs here.¹⁴⁹

The Indigenous people blamed the air weapons range for causing severe trauma in their communities. In the inquiry's final report in 1993, the Commission affirmed that the exclusion of the people of Cold Lake and Canoe Lake from the CLAWR "almost destroyed their livelihoods and their access to food and other resources. The results of that event continue as a sense of loss and a source of grievance in the community and the results are still painfully evident. The damage to the community was not only financial, it was psychological and spiritual."¹⁵⁰ The Commission recommended that the federal government settle claims with the First Nations. After two years without any action, members of the Cold Lake First Nation held a peace camp on the air weapons range and demanded negotiations.¹⁵¹

After years of negotiations, in 2002, the Cold Lake First Nations accepted a \$25 million settlement for

the loss of their land.¹⁵² For many band members, the settlement was too little and too late. Though the government delayed settlement with the First Nations and gave them limited access rights to the air weapons range, it gave petroleum companies drilling rights. Over the past twenty years, the CLAWR has become heavily industrialized with oil and gas projects. There have been many uncontrolled spills and blowouts that have killed animals and contaminated the water and the forest of the air weapons range.¹⁵³ Since 2013, there have been 58 reportable incidents of hydrocarbons in and around the CLAWR.¹⁵⁴ The area will become even more militarized with the planned arrival of a new fleet of fighter jets. Last year, the federal government awarded a \$9 million contract to Ellis Don for the building of a new fighter jet facility at 4 Wing Cold Lake, despite the fact that most of the reserves lack paved roads. The federal government is also investing in upgrading the facilities at 3 Wing Bagotville though many Indigenous communities are under boil water advisories and have inadequate housing across the country.

The accumulative harm from the militarization and industrialization of their traditional territory led the Beaver Lake Cree Nation (BLCN) to launch a landmark lawsuit against the Government of Canada and the Government of Alberta in 2008. The BLCN claim that the combined impacts of development in their territory left them with no meaningful way to exercise their Aboriginal and treaty rights. Under Treaty 6, the BLCN were assured the right to hunt and fish on their territory. However, in its case, *Lameman v. Alberta*, the BLCN argue that the 300 industrial developments approved by the governments including oil and gas, mining, forestry and the CLAWR cumulatively and adversely

149 Indian Claims Commission (1993) Primrose Lake Air Weapons Range Report, https://publications.gc.ca/collections/collection_2009/indianclaims/RC31-82-1-1993E.pdf (p. 106).

150 Indian Claims Commission (1993) Primrose Lake Air Weapons Range Report, https://publications.gc.ca/collections/collection_2009/indianclaims/RC31-82-1-1993E.pdf (pp. 85 and 176).

151 Turtle Island Native News (2002) "Historic Cold Lake First Nations Agreement Signed at Treaty Grounds," <http://www.turtleisland.org/news/news-coldlake.htm>

152 Turtle Island Native News (2002) "Historic Cold Lake First Nations Agreement Signed at Treaty Grounds," <http://www.turtleisland.org/news/news-coldlake.htm>; and Settlement Agreement between Province of Alberta and CLFN (2001): https://landuse.alberta.ca/Forms%20and%20Applications/CLFN%20-%20Application%20Appendix%20Settlement%20Agreement%202001_2014-03-05_PUBLIC.pdf

153 Pullman, E. and Lukacs, M. (2013) "Nobody understands' spills at Alberta oil sands operation" https://www.thestar.com/news/canada/2013/07/19/nobody_understands_ongoing_spills_at_alberta_oilsands_operation.html

154 Alberta Energy Regulator, Compliance Dashboard, <https://www1.aer.ca/compliancedashboard/incidents.html>

affected the land and wildlife denying the Indigenous people their rights.¹⁵⁵ The protracted case is now being heard by the Supreme Court of Canada. New fighter jets will prolong use the CLAWR and continue to harm the Indigenous peoples by denying them full access to and stewardship of their land.

GOOSE BAY AIR FORCE BASE AND THE CUMULATIVE ADVERSE IMPACTS SUFFERED BY THE INNU PEOPLE

In 1979, DND and NATO allies began conducting low-level fighter jet testing from the Goose Bay air force base in Labrador.¹⁵⁶ The Government of Canada signed lucrative, long-term agreements with European allies to use Innu land for low-altitude warfare training and encouraged NATO to establish a permanent flight training site at Goose Bay without consulting the Indigenous people. The Canadian, British, Dutch and German air forces flew up to 8,000 training flights annually until 2005 across a 100,000 square-mile area. The fighter jets flew at supersonic speeds 30 metres (100 feet) above the ground dropping bombs and missiles and strafing the land with aircraft-mounted automatic weapons until 2009.

Low-level fighter jet training and air weapons testing was prohibited in Europe, because it was so disruptive and dangerous. Yet, the Canadian government allowed these military practices on the traditional home and hunting grounds of the Innu who had lived on the unceded territory since time immemorial. The fighter jets thundered over Innu camps frightening the people and animals. The aircraft noise, exhaust fumes and bombs severely disrupted the Innu's traditional way of life.

The Innu complained to the federal government to no avail, so they began a campaign of nonviolent resistance. They repeatedly blocked the military base, occupied the runways and camped in the restricted bombing ranges to stop the fighter jets.¹⁵⁷ They also organized protests, peace walks and speaking tours to raise public awareness about their struggle and elicit support (see the photo below **Members of the Sheshatshiu Innu First Nation protesting the NATO low-level fighter jet testing in Labrador**). The resistance was led by courageous Innu women Tshaukuesh Penashue, Rose Gregoire and Francesca Snow who were also mothers with young children at the time.¹⁵⁸ These women were among the many members of the Sheshatshiu Innu First Nation who were continually arrested, imprisoned and fined for their nonviolent actions to protect their community and land.

The Innu's prolonged peaceful struggle successfully prevented NATO from establishing a permanent training centre in 1990, however the fighter jet training has continued and expanded. DND set up the Foreign Military Training Goose Bay (FMTGB) office to actively promote and coordinate the international use of the large low-level training area (LLTA) in Labrador.¹⁵⁹ The

155 Lameman v. Alberta, 2012 ABQB 195; see also Defend the Treaties, Beaver Lake Cree Nation: <http://www.beaverlakecreenation.ca/Defend-the-Treaties/>

156 Samson, C., Wilson, J., and Mazower, J. (1999) Canada's Tibet: The Killing of the Innu, Survival International: <http://assets.survivalinternational.org/static/files/books/InnuReport.pdf>

157 Cultural Survival: <https://www.culturalsurvival.org/publications/cultural-survival-quarterly/innu-women-and-nato-occupation-nitassinan>

158 LaDuke, W. (1990) "Innu Women and NATO: The Occupation Of Nitassinan," Cultural Survival: <https://www.culturalsurvival.org/publications/cultural-survival-quarterly/innu-women-and-nato-occupation-nitassinan>

159 Foreign Military Training Goose Bay, <http://www.rcac-arc.forces.gc.ca/en/training/foreign-military-training-goose-bay.page>

FMTGB advertises the area as a world-class training area with “freedom to fly” day or night and as a key transit point for tactical aircraft (fighter jets) between North America and Europe. In January of this year, the Germany army started winter training at 5 Wing Goose Bay. Canada’s CF-18 also use the area to practice dropping munitions and self-defence chaff and flares.¹⁶⁰ These fighter jet activities continue to disturb the Innu people.

Not only has Innu land been militarized, it has also been heavily industrialized without the Indigenous

people’s consent. Their traditional territory has been contaminated by mining waste and flooded by dams. The cumulative harm from the dispossession, militarization and industrialization of their land has led to great suffering and serious social problems, such as substance abuse and suicide, for the Innu people.¹⁶¹ Indigenous women have especially suffered by the arrival of the air force base and the NATO low-level fighter jet training in their territory as will be described in the next section.



Members of the Sheshatshiu Innu First Nation protesting the NATO low-level fight jet testing in Labrador. Photo credit Bob Bartel.

160 CBC (2018) “Look up, way up! Fighter jets running training exercises at 5 Wing Goose Bay,” <https://www.cbc.ca/news/canada/newfoundland-labrador/armed-forces-training-goosebay-1.4731539>

161 Innu Nation () Mineral Exploration in Nitassinan, A Matter of Respect: Innu Nation Guidelines for the Mining Industry https://miningwatch.ca/sites/default/files/innu_guidelines_0.pdf; Bird, L. (2019) “The Sheshatshiu suicide crisis ‘didn’t happen overnight.’ How does the community break the cycle?” CBC: <https://www.cbc.ca/news/canada/newfoundland-labrador/sheshatshiu-crisis-factors-and-long-term-solutions-1.5344199>; and Penashue, Tshaukuesh Elizabeth (2019) *Nitinikiau Innusi: I Keep the Land Alive*. Winnipeg: University of Manitoba Press; and Cold Lake First Nations: <https://clfn.com/landsresources/>

SEXUALIZED VIOLENCE IN THE MILITARY AND THE SEXUALIZATION OF WARPLANES

Another harm of the military is sexual violence. In statements given in 1989 and 1991, Innu social worker Rose Gregoire described the prostitution that began around the Goose Bay air force base. Gregoire explained, “The young women have gone to the military base and become prostitutes and alcoholics. They become pregnant and are then deserted. The military are raping Mother Earth and they are raping our daughters.”¹⁶² Sexual violence by and within the CAF continues to be a serious problem in Canada.

In his 2021 independent report on the military justice system, former Supreme Court of Canada justice Morris Fish wrote, “the nature, extent and human cost of sexual misconduct in the CAF remain as debilitating, as rampant and as destructive in 2021 as they were in 2015.”¹⁶³ After her independent review six years ago, former Supreme Court Justice Marie Deschamps concluded that there is an “underlying sexualized culture in the CAF that is hostile to women and LGBTQ members, and conducive to more serious incidents of sexual harassment and assault.”¹⁶⁴ Deschamps’ report included many recommendations for reform and led the DND to launch Operation HONOUR to deal with the problem of military sexual violence. However, soldiers derided the program and called it “Operation Hop on Her.” Unsurprisingly, the problem persists. The military established the Sexual Misconduct Response Centre and the Operation HONOUR Tracking and Analysis System (OPHTAS). The latest OPHTAS statistics show that from April 2016 to March 2019, there were 1077 reports of military sexual misconduct in all branches of the military

with the majority of the incidents being sexual assaults and sexual harassment.¹⁶⁵ Military sexual misconduct goes up the chain of command. Former Chief of Defence Staff Jonathan Vance and ten other senior CAF officials are facing allegations of sexual misconduct, which shows how pervasive it is throughout the institution.¹⁶⁶ In December 2021, it was reported that RCAF Lieutenant-Colonel Philip Marcus, a Canadian air task force commander posted in Kuwait, was relieved of his duties for making inappropriate comments against lower-ranking female CAF members.¹⁶⁷

Gendered and sexualized language and imagery have been common throughout the history of the air force in Western militaries. Crews have painted pictures of naked and semi-naked, lingerie-clad women on the nose of combat aircraft. The pin-up paintings were accompanied by slogans that combined air power with sex: “take off time,” “nightie mission,” “hard to get,” and “wild cargo.” The imagery also portrays the fighter jet as an extension of the pilot’s “manhood.”

In 2017, a mother in Okanogan County in the State of Washington took pictures of a phallic image in the sky and complained to the local news station that reported on the incident. A Boeing EA-18G Growler crew in the U.S. Air Force had used the contrails (the exhaust) from their fighter jet to draw a giant penis in the sky over the county. The crew was from the Naval Air Station on Whidbey Island. The transcript of the exchange between the pilot and the warfare officer onboard was widely publicized. The crew laughed as they planned their aerial antic saying “A big F\$%king giant penis,” “The shaft is going to be

162 Gregoire, R. and Penashue, Tshaukuesh Elizabeth (1989) Nitassinan: Our Land, Our Struggle, Peace Magazine: <http://peacemagazine.org/archive/v05n4p14.htm>; and Helwig, M. (1993) “Low-Level Flight Testing: Innu Women Fight Back,” Canadian Women Studies, 13 (2), pp. 52-53: file:///C:/Users/tlori/Downloads/admin,+cws13n3_helwig.pdf

163 Fish, M. (2021) Report of the Third Independent Review Authority to the Minister of National Defence: <https://www.canada.ca/en/departement-national-defence/corporate/policies-standards/acts-regulations/third-independent-reviews-nda.html>

164 Deschamps, M. (2015) External Review into Sexual Misconduct and Sexual Harassment in the Canadian Armed Forces, <https://www.canada.ca/en/departement-national-defence/corporate/reports-publications/sexual-misbehaviour/external-review-2015.html>

165 National Defence (2019) “2019 Sexual Misconduct Incident Tracking Report,” Operation HONOUR: <https://www.canada.ca/content/dam/dnd-mdn/documents/reports/2019/2019-sexual-misconduct-report-en.pdf>

166 Burke, A. (2021) “A military in crisis: Here are the senior leaders embroiled in sexual misconduct cases,” CBC: <https://www.cbc.ca/news/politics/sexual-misconduct-military-senior-leaders-dnd-caf-1.6218683>

167 Burke, A. (2021) “Canadian air task force commander relieved of duties in Kuwait after claims of inappropriate comments,” CBC: <https://www.cbc.ca/news/politics/forces-philip-marcus-sexual-misconduct-claims-1.6294183>



Source: Royal Canadian Air Force
[http://www.rcaf-arc.forces.gc.ca/en/on-windswept-heights-2/83-her-itage.page](http://www.rcaf-arc.forces.gc.ca/en/on-windswept-heights-2/83-heritage.page)

thick,” and “The balls are going to be a little lopsided.”¹⁶⁸ This sophomoric humour masks the fighter jet’s lethal missions. The Growler is an electronic attack aircraft that was used by the U.S. to bomb Libya and Afghanistan.

Nose art on military aircraft was common in the Canadian Air Force. This “Miss. Behavin’” image on the side of a Canadian Chinook helicopter was painted by Master Corporal Robert Bannen while serving in the recent NATO-led war in Afghanistan. The Chinook helicopter is equipped with machine guns and was used for heavy lift transport operations to support air assault and combat missions in Afghanistan. This nose art is a recent example of the sexualized portrayal and objectification of women by the Canadian military. It also derides the egregious misconduct by NATO in Afghanistan including war crimes and crimes against humanity committed by allied forces. This disturbing artwork is in the collection at the National Air Force Museum in Trenton, Ontario.

According to a 2018 military investigation, the American 69th Bomb Squadron on deployment to Qatar drew “dicks everywhere.”¹⁶⁹ The squadron is a U.S. Air Force unit that operates the B-52 Stratofortress, a long-range strategic bomber that can carry conventional and nuclear gravity bombs, cluster bombs and precision guided missiles. Phallic drawings were also discovered inside the bomber’s cockpit and throughout the base. This bomber has been used in the U.S. wars in Iraq and Afghanistan and in NATO exercises. There have also been many incidents of phallic-shaped contrails created by fighter pilots in the British Royal Air Force and the German Air Force, Canada’s NATO allies.

In an interview in 2014, retired U.S. Air Force General and former National Security Agency Director Michael Hayden compared the reliance on airpower to “casual sex” and suggested “it’s some sort of gratification without the commitment.”¹⁷⁰ At the U.S. Air Force’s 70th anniversary in 2017, President Trump described the masculinized prowess of American pilots in a speech he gave at Joint Base Andrews. Trump claimed that fighter pilots are “better looking than Tom Cruise, the face is equal, the body is bigger and stronger, they can definitely fight” alluding to the movie *Top Gun*.¹⁷¹ At rallies, Trump repeated these remarks about air force pilots being more handsome than male Hollywood stars and lauded the strength and stealth of the F-35. He said, “When our enemies hear our F-35 engines, when they’re roaring overhead, their souls will tremble and they will know the day of reckoning has arrived.”¹⁷²

Through this gendered discourse and sexualized imagery, the fighter pilot and his jet represent and reproduce a masculinized, militarized state. Sexualized culture and sexual violence continue to be major problems in the Canadian military and in the U.S. military, our closest ally. New fighter jets risk the perpetuation of this gender-based violence.

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- 168 Ziezulewicz, G. (2019) “The Navy’s probe into sky penis,” *Navy Times*: <https://www.navytimes.com/news/your-navy/2019/05/14/the-navys-probe-into-sky-penis/>
 - 169 Schogol, J. (2018) “An Air Force bomber commander told his airmen to stop drawing penises — they didn’t, and he got fired,” *Business Insider*: <https://www.businessinsider.com/air-force-b-52-bomber-squadron-commander-fired-over-penis-drawings-2018-11>
 - 170 Wong, K. and Sink, J. (2014) “President Obama clings to air power,” *The Hill*: <https://thehill.com/policy/defense/217627-obama-clings-to-air-power>
 - 171 Simpkins, J.D. (2019) “Trump: F-35 pilots ‘better looking than Tom Cruise’ with ‘bigger and stronger’ bodies,” <https://www.militarytimes.com/off-duty/military-culture/2019/12/20/trump-f-35-pilots-better-looking-than-tom-cruise-with-bigger-and-stronger-bodies/>
 - 172 Insinna, V. (2017) “Trump lauds F-35, promises sweet new tech in speech to airmen,” *Defense News*: <https://www.defensenews.com/air/2017/09/15/trump-lauds-f-35-promises-sweet-new-tech-in-speech-to-airmen/>

A GENDER BASED ANALYSIS: FIGHTER JETS ARE NOT GOOD FOR WOMEN AND ARE NOT FEMINIST

There is very little consideration of the adverse impacts on women in defence procurement and military operations. Very few women make, fly or maintain fighter jets or serve in the armed forces. The military and the defence industry are male-dominated, hierarchical workplaces. In Canada, women make up 20% of the aerospace manufacturing workforce and about 30% of the aerospace maintenance, repair and overhaul workforce.¹⁷³ Women account for only 16% of the Department of National Defence and Canadian Armed Forces.¹⁷⁴ Of the 28 commanders and chief warrant officers leading the wings across the country, only 3 are women.

Yet, in 2018, the federal government passed the *Canadian Gender Budgeting Act*.¹⁷⁵ Article 2 of the Act obliges the government to consider gender and diversity in resource allocation decisions and to make that information public to promote transparency and accountability. The government also developed a Gender-Based Analysis (GBA+) tool for departments to use to assess the gender and diversity impacts for government spending. The fighter jet purchase is one of the most expensive government spending programs in Canadian history, so a GBA+ report should be done and made publicly available.

In a letter dated February 2021, Canada's National Defence Corporate Secretary, Joanne Lostracco, wrote that DND has done a GBA+ report on the fighter jet procurement, but that report is not public.¹⁷⁶ Lostracco only mentions that DND is considering the gendered implications in the design of new base infrastructure for female aircrew and groundcrew. Lostracco is most likely referring to female washrooms and changerooms

for female pilots and personnel. She also claims that the federal government is trying to incentivize suppliers to increase the participation of under-represented groups, including women, in the Canadian aerospace and defence workforce. Yet, there is no government consultation with women as to what kind of work they want to do and how they want federal funding spent. Federal funding should go to where women are working or where they want to work. There is also no consideration of the impact of Canadian fighter jets on women and girls in the countries where they are deployed.

In July 2021, the Trudeau government made another \$90 million (\$71 million USD) annual payment to the DOD to participate in the Lockheed Martin F-35 development program despite the fact that Canada might not buy this fighter jet. By contrast, the federal government only spent \$45 million in 2020 on the Department on Women and Gender Equality (WAGE), according to the Public Accounts of Canada.¹⁷⁷ WAGE's Departmental Plan for 2019-2020 shows staffing of just 194 full-time equivalents. The WAGE plan states, "Gender-based violence remains one of the most serious and pervasive human rights issues in Canada and the world."¹⁷⁸ Gender-based violence has worsened across the country during the pandemic. Yet the financial and human resources allocated to this department with a mandate to advance women's equality and prevent gender-based violence are minimal and insufficient. The federal government spends twice as much annually to help develop an American fighter jet than it does to provide equality and safety programs for Canadian women.

173 Letter addressed to the author and dated February 2021 from Canada's National Defence Corporate Secretary Joanne Lostracco.

174 Statistics on the representation of women in the CAF as of February 2020, National Defence: <https://www.canada.ca/en/department-national-defence/services/women-in-the-forces/statistics.html>

175 Gender and Diversity, Impacts on Programs, Treasury Board of Canada Secretariat: <https://www.canada.ca/en/government/system/transparency/gender-diversity-impacts-programs.html>

176 Letter addressed to the author and dated February 2021 from Canada's National Defence Corporate Secretary Joanne Lostracco.

177 Public Accounts of Canada (2020), Volume 2: <https://www.tpsgc-pwgsc.gc.ca/recgen/cpc-pac/2020/pdf/2020-vol2-eng.pdf>

178 Canada (2020) Women and Gender Equality Canada 2020-21 Departmental Plan: <https://women-gender-equality.canada.ca/en/transparency/departmental-plans/2020-2021.html>

Worse still, since 1997, Canada has paid over \$772 million CAD (approximately \$613 million USD) to remain a partner in the F-35 development consortium. This amount is more than the Canadian government has spent over the same period on the former federal Status of Women office and the WAGE department combined. Thus, over the past two decades, Canada has prioritized the development of warplanes over the investment in equality initiatives for women.

"A FEMINIST FOREIGN POLICY IS INCOMPATIBLE WITH FIGHTER JETS"

Canada claims to have a feminist foreign policy, but women's groups, such as WILPF Canada and the Canadian Voice of Women for Peace, argue that there is nothing feminist about fighter jets. Fighter jets are fossil-fuel powered vehicles for fighting. They inflict great violence. They injure and kill women and girls (and men and boys), destroy civilian infrastructure, foment armed conflict and the climate crisis, and deprive countries from having adequate resources to invest in social and environmental programs. Fighter jets maintain Western domination with its threat of armed force and sustain a patriarchal system of militarism with a sexualized culture that is hostile to women. Fighter jets are antithetical to feminist foreign policy. Feminist foreign policy is not premised on weapons and violence and is not conducted by the military. A genuine feminist foreign policy for Canada would be based on nonviolence, disarmament, diplomacy and common security and would centre women and Indigenous peacebuilders.

PUBLIC OPPOSITION TO FIGHTER JETS

There is growing public opposition to fighter jets around the world and across Canada. The resistance to fighter jets and other weapons systems is part of a broader campaign against war and for peace. For over a decade, the Italian Disarmament Network has led the campaign "Tagli le ali alle armi" ("Clip the weapons' wings") to stop the Government of Italy from purchasing and producing the F-35s.¹⁷⁹ It was supported by the Forum Contro La Guerre's "Movimento NO F-35del Novarese" that protests the F-35 manufacturing plant and air force base in Cameri, Italy. There have been demonstrations and petitions to call on the Italian government to cancel the fighter jets. In Switzerland, "Schweiz ohne Armee," the Group for a Switzerland without an Army (GSoA), has a campaign UNTERSCHREIBE JETZT: STOP F-35! And is collecting signatures on a petition to force a referendum and stop the Swiss government from buying F-35s.¹⁸⁰

In the U.S., women's peace groups are protesting fighter jets and have launched targeted campaigns against the F-35. The WILPF Burlington branch is involved in the *Save Our Skies / Stop the F-35 From Coming to Vermont* campaign. The WILPF Madison branch is supporting the *Safe Skies Clean Water* coalition to stop the beddown of the stealth fighters in Wisconsin. Women have also been leading the *Peaceful Skies Coalition* against the training of fighter jets in New Mexico and Arizona.¹⁸¹

WILPF Canada is a member of the *No New Fighter Jets* coalition that was formed in Canada in the summer 2020.¹⁸² The coalition is comprised of approximately twenty-five peace groups and progressive organizations across the country that are working to ground the government's plans to buy new combat aircraft. The coalition has held three National Days of Action outside the offices of Members of Parliament, a Fast Against Fighter Jets, several webinars and banner drops on Parliament Hill. It has also initiated open letters,

179 Disarmo (Taglie Le Ali Alle Armi/Cut the Wings of Arms/No F35s)/Italian Disarmament Network: <https://www.disarmo.org/nof35/index.html>

180 Tegler, E. (2021) "Let's Crash This Luxury Fighter Jet At The Ballot Box! Swiss Blowback On The F-35 Buy," Forbes: <https://www.forbes.com/sites/erictegler/2021/09/01/lets-crash-this-luxury-fighter-jet-at-the-ballot-box-swiss-blowback-on-the-f-35-buy/?sh=14fabf66f71> and GSOA: <https://www.gsoa.ch/>

181 Peaceful Skies Coalition: <https://www.peacefulskies.org/>

182 No New Fighter Jets Coalition: <https://nofighterjets.ca/>

statements and parliamentary petitions to raise public and political opposition to the fighter jet purchase. Through the *No New Fighter Jets* campaign, the coalition has compiled a list of organizations resisting fighter jets (Appendix 2) and a list of documentaries, webinars, and videos about the harms of fighter jets (Appendix 3).

During the summer of 2021, the Canadian Foreign Policy Institute and the Canadian Voice of Women for Peace launched an open letter against the fighter jet procurement that was signed by over 100 notable Canadians.¹⁸³ Acclaimed musician Neil Young, journalist Naomi Klein, Indigenous leader Clayton Thomas-Mueller, former Member of Parliament and Cree leader Romeo Saganash, environmentalist David Suzuki, author Michael Ondaatje, and singer-songwriter Sarah Harmer are among the list of signatories. The letter received wide media attention.

Last fall, WILPF Canada and the Canadian Voice of Women for Peace sent a letter “Fighter Jets aren’t Feminist” to the Minister of Finance Chrystia Freeland, the Minister of Defence Anita Anand and the Minister of WAGE Marci Ien.¹⁸⁴ The letter calls on these female government leaders to cancel the procurement and to invest in the priorities of women: ending gender-based violence, investing in affordable housing and healthcare, and taking action on poverty and climate change. It also urges the government to implement the calls to action and justice in the two inquiry reports: *Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls* and in *Honouring the Truth, Reconciling for the Future: Final Report the Truth and Reconciliation Commission*.¹⁸⁵



Outside of the constituency office of Member of Parliament Bardish Chagger in Waterloo, October 2020. Photo credit Tamara Lorincz.

183 Canadian Foreign Policy Institute (2021) Open Letter “No New Fighter Jets for Canada”: <https://www.foreignpolicy.ca/nonewfighterjets>

184 WILPF Canada and Canadian Voice of Women for Peace letter (2021) “Fighter Jets aren’t Feminist”: https://wilpfcanda.ca/wp-content/uploads/2021/11/Women-Against-Fighter-Jets_Letter_v3.pdf

185 *Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls* and *Honouring the Truth, Reconciling for the Future: Final Report the Truth and Reconciliation Commission*.

LAND BACK: INDIGENOUS RESISTANCE AND WISDOM FOR RECONCILIATION AND HEALING

The Indigenous people in Canada, across Turtle Island and around the world are and have been on the front lines resisting the militarization and industrialization of their land. For decades, the Innu of Labrador and the Dene and Cree peoples of Alberta and Saskatchewan have constructed peace camps and engaged in nonviolent campaigns to protest the air force bases and fighter jet training.¹⁸⁶ As the federal government has now committed to reconciliation with Indigenous peoples, it must begin by returning and remediating their land. The expropriation of land from First Nations for military bases and weapons testing is a form of violent occupation that must come to an end. Land back is a crucial process of decolonization and it should start with demilitarization and the decommissioning of military sites. The process should be led by First Nations and informed by their traditional ecological knowledge and wisdom.

Though it required civil disobedience and litigation by First Nations, there are some significant examples of the federal government returning former military sites to them. In 1996, the government gave back Harvey Barracks, a military training site near Calgary that was used from 1901-1995, to the Tsuut'ina Nation.¹⁸⁷ In 2019, the federal government signed an agreement with the Treaty One First Nation to return to them the Kapyong Barracks land in Winnipeg.¹⁸⁸ The Treaty One First Nation comprises the Long Plain First Nation, Brokenhead Ojibway Nation, Peguis First Nation, Roseau River Anishinabe First Nation, Sagkeeng First Nation, Sandy Bay First Nation, and Swan Lake First Nation. The Treaty One First Nation consulted and

created a master plan to redevelop the former barracks into a mixed-use village with housing, a cultural campus, recreation centre, green spaces and other amenities that will benefit the First Nation.¹⁸⁹

Unfortunately, many military sites are highly contaminated, littered with exploded and unexploded ordnances and require costly remediation before they can be returned. Twenty-five years after the killing of Dudley George, an Indigenous man who was protesting the federal government's continued control of CFB Ipperwash, the government returned the military site on the shores of Lake Huron back to the Kettle and Stony Creek First Nations.¹⁹⁰ However, it will take another two decades before the site is fully decontaminated and able to be redeveloped.¹⁹¹ The federal government should return the military bases and the air weapons ranges across the country, like CFB Cold Lake, the CLAWR and CFB Goose Bay, back to the First Nations who are the rightful owners and stewards. By not buying combat aircraft, the federal government would have the resources to clean up contaminated military sites and return them to Indigenous people for stewardship and development.

At the Native Friendship Centre in Cold Lake, there are posters hanging on the walls about the Dene Laws, which are also known as the 'sharing laws.' The laws include "Do not harm people with actions" and "Love each other." The fighter jets have caused and are causing a lot of harm to the Indigenous people and their territory across the country. To heal relationships with Indigenous peoples, the government needs to

186 Turtle Island News (2001) Dene Su'lene Peace Camp: <http://www.turtleisland.org/news/news-aboriginalrights-coldlake.htm>

187 CBC (2006) "Military returns land near Calgary to First Nation": <https://www.cbc.ca/news/canada/calgary/military-returns-land-near-calgary-to-first-nation-1.583703>

188 National Defence (2019) Former Kapyong Barracks: <https://www.canada.ca/en/department-national-defence/news/2019/08/former-kapyong-barracks.html>

189 Treaty One Nation (2021) "MASSIVE ECONOMIC DEVELOPMENT AT KAPYONG TAKES HUGE STEP FORWARD: Final Master Plan Completed and Off to City Hall; Federal Government": <https://secureservercdn.net/166.62.112.219/c7r.1b6.myftpupload.com/wp-content/uploads/2021/11/Massive-Economic-Development-at-Kapyong-Takes-Huge-Step-Forward.pdf>

190 Dubinksi, K. (2020) "Quarter century after killing of Dudley George, Ontario provincial park land returned to First Nation,"

191 Dubinksi, K. (2020) "Quarter century after killing of Dudley George, Ontario provincial park land returned to First Nation," <https://www.cbc.ca/news/canada/london/ipperwash-provincial-park-returned-to-kettle-stony-point-first-nation-1.5715748>

stop the harm, to return the land and to invest more in reconciliation.

Overseas, Canada's fighter jets have fueled international conflict, destroyed communities and killed people. For international peace and security, the Canadian government must stop the deployment weapons systems and soldiers and work non-violently and diplomatically with other countries.

CONCLUSION: COMBAT AIRCRAFT OR CARE?

The Government of Canada has a choice: it can buy new fighter jets with all the attendant adverse impacts or it can choose not to buy them. If the government buys a new fleet, it means the prolonged militarization of Indigenous land in Canada, more bombs and missiles devastating the forest, more endangered species, more air pollution, more carbon emissions in the atmosphere, more contamination, more extreme noise, more nuclear threats, more armed conflict, more violence and more insecurity.

However, a decision *not* to buy fight jets opens the door to a new politics of peace and security and a real possibility of transformational change. Twenty years ago, the Labour Prime Minister of New Zealand, Helen Clark, courageously announced the cancellation of the contract for a new fleet of F-16 fighter jets from the U.S. and the disbanding of the combat wing of the air force. New Zealand still does not have fighter jets and an air combat capability.¹⁹²

Other countries, such as Ireland, Costa Rica and Panama, have also said no to fighter jets and armed force. In 1949, Costa Rica abolished its military and re-allocated investment to health care, education and social welfare. With its history of demilitarization, Costa Rica has shown impressive international leadership for disarmament and decarbonization. Canada should

***“LAND BACK IS A
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follow Costa Rica's and New Zealand's example.¹⁹³

Finally, the Trudeau government has an alternative to buying new costly, carbon-intensive combat aircraft with its soaring harms and risks, it could instead fully invest in a care economy. In early 2021, Canadian feminist economists, academics, activists and policy-makers released a statement and plan for a care economy to the federal government.¹⁹⁴ A care economy is based on inclusion, anti-colonialism, and anti-racism. The plan calls for greater investment in child care, elder care, health care, mental health care and education. A care economy with green jobs would help with the healing, recovery and reconciliation needed in Canada. Care in our foreign policy would mean more Canadian foreign aid to developing countries for sustainable development and more international cooperation. An ethic of care should guide Canada's domestic policy-making, procurement and foreign policy. To make this possible, Canada needs a just transition not only for the oil and gas sector, but also for the military and the aerospace and defence industries. Canada needs to begin a process of conversion from an economy and foreign policy reliant on fighter jets and armed force to a peaceful role in the world that cares for people and the planet. The first step is to say no to new fighter jets.

192 TV New Zealand (2018) Political lookback – Skyhawk Jets: <https://www.youtube.com/watch?v=i3MIqzoRU-A&t=2s>

193 Barash, D. (2013) “Costa Rica's peace dividend: How abolishing the military paid off,” Los Angeles Times: <https://www.latimes.com/opinion/la-xpm-2013-dec-15-la-oe-barash-costa-rica-demilitarization-20131208-story.html>

194 The Care Economy Statement (2021) Canada: <https://thecareeconomy.ca/statement/>

APPENDIX 1: SPECIFICATIONS FOR THE THREE FIGHTER JET OPTIONS

Manufacturer	Lockheed Martin F35/A	Boeing Super Hornet (F/A-18E/F)	SAAB Gripen E
Role	Fifth generation, multi-role fighter	Multi-role fighter	Multi-role fighter
Crew	Pilot	Pilot, Air Combat Officer (one seat or two seat configuration)	Pilot
Engines	Pratt & Whitney F135-PW-100	Two F414-GE-400 turbofans (9,800 kg thrust each)	One GE F414 Turbofan engine
Airframe	Length: 15.7 m, height: 4.4 m	Length: 18.3 m, height: 4.9 m	Length: 15.2 m
Wingspan	10.7 m	13.6 m	8.6 m
Wing Area	42.7m2	46.5 m2 (500 sq ft)	30 m2
Weight	13,290 kg (empty), 29,900 kg (approx. 70,000 lbs) (max)	13,387 kg basic, 29,900 kg maximum take-off weight (max) (approx. 70,000 lbs)	8,000 kg (17,637 lb empty), 16,500 kg (max)
Range	2,200 km	2,700 km	4,200 km (2,500 miles)
Combat radius (internal fuel)	1093 km	722 km (390 nmi, 449 miles)	1,500 km
Internal Fuel Capacity	8,278 kg (18,000 lb)	6,667 kg (14,700 lb)	3,400 kg (7,500 lb)
Ceiling	50,000 feet (15,000 m)	50,000 ft (15,000 m)	52,000 ft (16,000 m)
Max Speed	1,960 km/h (Mach 1.6)	1,960 km/h (Mach 1.6)	Mach 2
Capability	Low Observation Stealth Advanced sensors Networking and Data Fusion Capabilities Helmet Mounted Sight	Mission computers Heads-up Displays Radar and Infrared Sensing and Targeting Systems Electronic Warfare and Infra-Red Self Protection Systems	Incorporates advanced active and passive sensors A robust electronic warfare suite Avionics suite that segregates flight critical avionics from the tactical system

(cont. on next page)

Manufacturer	Lockheed Martin F35/A	Boeing Super Hornet (F/A-18E/F)	SAAB Gripen E
Weapons	<ul style="list-style-type: none"> • AIM-120 AMRAAM • AIM-9X "Sidewinder" Short Range Air-to-Air Missile • GBU-31 Joint Direct Attack Munitions (JDAM) Guided Bombs • Laser-Guided Bombs • Internal 25 mm GAU-22/A Cannon 	<ul style="list-style-type: none"> • AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM) • AIM-9X "Sidewinder" Short Range Air-to-Air Missile • Joint Direct Attack Munition (JDAM) and Laser JDAM • Conventional and Laser-Guided Bombs • AGM-154 Joint Stand-Off Weapon (JSOW) • AGM-84 Harpoon Anti-Ship Missile • M61 Nose-Mounted 20mm Cannon 	<p>Missiles:</p> <p>6 × IRIS-T (Rb.98) or AIM-9 Sidewinder (Rb.74) or A-Darter</p> <p>4 × MBDA Meteor (Rb.101), AIM-120 AMRAAM (Rb.99) or MBDA MICA</p> <p>4 × AGM-65 Maverick</p> <p>2 × KEPD.350</p> <p>2 × RBS-15F anti-ship missile</p> <p>Bombs:</p> <p>4 × GBU-12 Paveway II laser-guided bomb</p> <p>8 × Mark 82 bombs</p> <p>16 × GBU-39 Small Diameter Bomb</p> <p>Other:</p> <p>1 × ALQ-TLS electronic countermeasures (ECM) pod</p> <p>1 × Digital Joint Reconnaissance Pod</p>
Weapon Payload	8,160 kg (18,000 lb)	6,210 to 9,070 kg (13,700 to 20,000 lb)	5,300 kg (11,700 lb)

Source: Royal Australia Air Force for the F-35 and Super Hornet: <https://www.airforce.gov.au/> and SAAB: <https://www.saab.com/products/gripen-e-series>

APPENDIX 2: ORGANIZATIONS RESISTING FIGHTER JETS

Canadian Voice of Women for Peace:

<https://vowpeace.org/>

Disarmo (Tagli Le Ali Alle Armi/Cut the Wings of Arms/No F35s)/Italian Disarmament Network:

<https://www.disarmo.org/nof35/index.html>

Hamilton Coalition to Stop the War

<https://hamiltoncoalitiontostopthewar.ca/>

No F35s in Madison:

<https://www.facebook.com/nof35sinMadison/>

No Fighter Jets Coalition:

<https://nofighterjets.ca/>

Peaceful Skies Coalition:

<https://www.peacefulskies.org/>

Save Our Skies/Stop the F-35s from Coming to Vermont:

<https://www.facebook.com/pg/StopTheF35/posts/>

Sound Defense Alliance:

<https://sounddefensealliance.org/>

UNTERSCHREIBE JETZT: STOP F-35!

<https://stop-f-35.ch/>

Voices for Creative Nonviolence:

<http://vcnv.org/>

Women's International League for Peace and Freedom – Canada:

<https://wilpfcanada.ca/>

Women's International League for Peace and Freedom – Madison:

<https://wilpf-madison.org/author/wilpfmadison/>

Women's International League for Peace and Freedom – Burlington:

<https://www.pjcv.org/burlington-vt-chapter-wilpf/>

World Beyond War Canada:

<https://worldbeyondwar.org/canada/>

The **NoFighterJets Coalition** in Canada is comprised of the Anti-Imperialist Alliance (AIA) Ottawa, Canadian Voice of Women for Peace, Canadian Foreign Policy Institute, Canadian Friends Service Committee (Quakers), Canadian Peace Congress, Christian Peacemaker Teams Canada, Conscience Canada, Des montrealais contre les avions de chasse, Global Peace Alliance BC Society, Hamilton Coalition to Stop the War, Just Peace Advocates, Kingston Peace Council, Labour Against the Arms Trade, OPIRG Brock, Pax Christi Toronto, Peace Brigades International – Canada, Peace Alliance Winnipeg, Pivot2Peace, Press for Conversion! Magazine, Regina Peace Council, Socialist Action, The Global Sunrise Project, Victoria Peace Coalition, WILPF Nanaimo, World BEYOND War Canada, Women's International League for Peace & Freedom Canada. More information about the coalition and all of the group can be found here: nofighterjets.ca



APPENDIX 3: LIST OF DOCUMENTARIES, WEBINARS AND VIDEOS

Black Kettle Films (2012) Meshkanu: The Long Walk of Elizabeth Penashue:

<https://vimeo.com/57346500>

Brian Grandbois Speaks at Unist'ot'en Action Camp:

<https://www.youtube.com/watch?v=fNGyswBfQIk>

Filmmakers Patrick McCormack and Duane Peterson (2021) "Jet Line: Voicemails from the Flight Path," a 12-minute documentary made up entirely of recorded phone messages from people impacted by the F-35 noise in Burlington, Vermont:

<https://jetlinefilm.com/>

Maya Bastian, Air Show, a short documentary available on CBC Gem:

https://gem.cbc.ca/media/canadian-reflections/s01e215?cmp=sch-air%20show&fbclid=IwAR1yUQ4h-6DXfbFYuJOW5aUho-sMs6iWexquF_s1fUE8VyDMbU-4VN-nqJK-4

National Film Board (1990) "Hunters and Bombers" documentary film:

https://www.nfb.ca/film/hunters_and_bombers/

Webinar (2021): "Resisting Fighter Jets at Home and Abroad":

https://www.youtube.com/watch?v=sysLyS-Di6_4&t=4375s

Webinar (2021): "The Trauma of Fighter Jets":

<https://www.youtube.com/watch?v=jQzC3vs2h2g>

Webinar (2021) "Blue Scarf Earth Day Event Featuring Elder Tshaukuesh Penashue"

<https://worldbeyondwar.org/video-blue-scarf-earth-day-event-featuring-elder-tshaukuesh-elizabeth-penashue/>

