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KEEPING UP WITH ARCTIC REQUIREMENTS: THE CANADIAN FORCES AND THE FUTURE OF THE ARCTIC

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ABSTRACT

The Arctic has long been a part of the Canadian culture. Sparsely populated with only a fraction of Canada's population ever having even visited, the region has risen to prominence in recent years due to the prospect of greater access due to Global Warming. With the retreating ice comes access to natural resources and alternate trade routes. Increased traffic will heighten the risk of environmental accidents and the possibility of Search and Rescue incidents. Additionally, threats from terrorists and transnational criminals will increase as these entities look for an unguarded route into North America. Where once there were questions of sovereignty, with the reality that ice-free summers in the Northwest Passage have already occurred, and will increase in frequency and duration, Canada is at a crossroads for ensuring the sovereignty and security of its Arctic. Policy is in place, stating the importance of the Arctic to Canada, and the necessity to have a strong and capable presence. The CF is a key enabler to the whole of government approach that has been proposed. Current capabilities and near-future projects must be maintained and expanded. The planned Arctic Offshore Patrol Ships and domain awareness projects for space-based surveillance and monitoring must be leveraged and built upon. Canada must be progressive and develop and implement further capabilities such as Unmanned Aerial Systems to ensure that its interests are protected. We cannot wait to see what is going to happen in the Arctic, because if we do, it will be too late to affect it.

A vast ice-bound, impenetrable ocean is being transformed into a new Mediterranean Sea, a "middle sea" over which the world's powers will trade. Easier access and rising oil, gas and mineral prices will spark twenty-first century gold rushes, challenging the political will and governance capabilities of governments who, for decades, have largely ignored the Arctic.

- Michael Byers, Who Owns the Arctic?

INTRODUCTION

With global warming the Arctic has risen in prominence, both nationally and internationally, based on the realities and opportunities a shrinking ice cap provides. Where previously Canada's only concern with the Arctic was, as the shortest route between the United States and the USSR, gaining early warning of the 'big red bear' coming over the horizon but, with the end of the Cold War, this concern has ebbed as others rise to prominence.

In today's world the certainty that exploration and exploitation will increase and that seasonal transpolar navigation, commerce and tourism will be possible has heightened the interest in this once neglected part of the world. With these increases in use Canada, as an "Arctic Nation", will have an interest, responsibility and concern with the environment, sovereignty, trans-national crime and sea and rescue (SAR) responsibilities. Canada has a prominent role and a vested interest in securing the country's interests in this burgeoning region.

With numerous transits of the Northern Sea Route along Russia's Arctic coast having occurred in recent years and the latest by the *Ob River*, a liquid natural gas (LNG) tanker, in October 2012,¹ clearly commercial shipping is on its way to the Arctic. While Canada's

¹ World Maritime News, "LNG Tanker Ob River Prepares for Northern Sea Route" Last accessed 15 February 2013, <http://worldmaritimeneews.com/archives/68204>.

North West Passage is not experiencing identical conditions to the Northern Sea Route, it is only a matter of time before it becomes a viable maritime shipping route.

Key to all of this is Canada's capability to secure these interests. As things currently exist, the country cannot achieve this goal. In order to claim sovereignty and exert control over Canada's Arctic interests, it is paramount to identify these requirements now, so that there is time to research, develop and procure them, before the current projections on an ice-free Arctic season become a reality.

As a method to meet Canadian sovereignty requirements in the Arctic the Canadian Forces (CF) must commit to and develop its capabilities. As the ice continues to melt these capabilities will need to provide an excellent return on investment, while still offering the maximum benefit for a reduced cost. With both the sea and the land thawing, the issue of getting around the Arctic will not be as simple as it might appear on the surface and with this thawing, activity will continue to increase. With the vast distances involved, Canada must have a coherent strategy for conducting surveillance and monitoring and be able to then provide the assets necessary to enforce its sovereignty and security throughout the region.

In order to define what type of capability the CF will require several aspects of the Arctic need to be examined. Starting with an examination of the Arctic's past, present and future, I will review the past and present of the Canadian Arctic, with a view to what the future may hold. Second, I will analyze the various threats and issues that either currently exist, or are real possibilities for the future. Third, I will examine the current and near-future CF arctic capabilities and their ability to meet the current threats and

issues. Finally, I will review what capabilities will be required for the future and how they could impact Canada's ability to maintain the sovereignty and security of its northern region.

In the past the Arctic was viewed as an Inuit land and a place where adventurers went. During the Cold War it gained importance, but only because of its geographic position between the USSR and the North American continent. Today the realities of Global Warming are changing the accessibility and views of the Arctic. Based on present projections, how long until there is a true 'season' of open water? And with the thawing of the land comes the risk to infrastructure; thawing permafrost and increased water levels will affect what can be done and where it can happen.

There are numerous threats and issues that rise to prominence with greater access to the North, all of which will be related to sovereignty and security to some degree. While there are differences in the claims of the natural resources present, clearly there are large deposits of hydrocarbons, as well as other minerals. Additionally, fishing activity is sure to increase with greater access and ever rising world demand. The exploration and exploitation of these resources will drive several other issues. One of which will be the environment and the threat of pollution. With resource exploitation and increased maritime traffic the requirement for environmental protection will surely grow. Issues with the sensitive nature of the Arctic ecosystem, as well as the rights to enforce fishing and tourism, along with access to the Northwest Passage, must be addressed.

And while the Arctic still seems remote now, access will invariably attract interest. A terrorist attack in the North could prove devastating to a remote,

environmentally fragile area. And as an alternate route into the North American continent both transnational criminal and terrorist organizations will be sure to try to exploit any weaknesses if Canada fails to take action.

Canada's Arctic is a vast area. With more traffic and commerce Canada's obligations for providing Search and Rescue (SAR) will need to be examined and defined. Partnerships with other countries will have to be negotiated to ensure full coverage and to meet expected response times.

All the previous aspects concern sovereignty to one degree or another. Key among it all is the Northwest Passage and freedom of navigation. Several maritime boundaries have yet to be resolved, and with the seabed resources at stake, countries will all be keen to exert their control, clearly mark their territory and maintain sovereignty of their Arctic lands and waters.

Through all these existing and future issues Canada must forge a concerted response and be able to respond to issues and threats as they arise. And while the Arctic thaw appears to be accelerating with every study, it is currently still inaccessible with respect to many of the aforementioned issues. The CF has very limited capabilities as they exist now for operations in the Arctic. There is no icebreaking capability in the Royal Canadian Navy (RCN) at present and while the Royal Canadian Air Force (RCAF) can conduct some operations, it is limited by time/space/coverage. The Canadian Army maintains the Arctic Response Company Group (ARCG), but the only real existing capability are Rangers.

Balancing government priorities and other CF demands will be key to ensuring the CF has the right capability to meet the emerging demands of the Arctic. UVs have the capacity to provide surveillance and exert sovereignty through the surveillance of our Arctic approaches, both above, on and in the sea. Projected development of Unmanned Aerial Vehicles (UAVs) will see them capable a carrying significant payloads, and could be used to quickly insert SAR supplies while a full scale mission ramped up. Unmanned drones would be capable of conducting kinetic operations if required, and Unmanned Underwater Vehicles (UUVs) could detect and track both surface and subsurface contacts for further investigation.

While human intervention would always be required at some level, UV employment for Arctic sovereignty would be an effective means of minimizing the cost while achieving the mission.

Chapter 1: Past, Present and Future

The Past

While a definitive answer may never be known, it is generally agreed that the Arctic was first inhabited by man between 32000 and 28000 years ago along what is now known as northern Europe and Siberia. It wasn't until the crossing of the Bering land bridge some 14000 to 12000 years ago that man appeared on what is now Canada's north.² And it wasn't until a further 6000 to 5000 years ago that the North American Arctic began to see a broader increase in human habitation. With the glacial retreat several peoples migrated northward, and between these and the peoples living along the

² John McCannon, *A History of the Arctic: Nature, Exploration and Exploitation* (London: Reaktion, 2012), 34.

Northern Pacific coast of North America. This became the foundation of what are today's Inuit and Northern Aboriginal peoples.³

The next major development with respect to man in the Arctic was with European exploration. Originally, Vikings were the first to branch out across the Atlantic, first to Iceland, then onward to Greenland. Roughly around 1000 AD the Norseman Leif Eriksson reached the south of Baffin Island, before proceeding south to Labrador and Newfoundland.⁴ While no permanent settlements were established this Viking link to Canada's Arctic past, coupled with future explorers, has seemed to influence Canada's claims ever since.

With the discovery of North America by the remainder of Europe, interest in (what was to be) Canada's Arctic through this time was two-fold. One was the exploitation of the resources there, starting early on with walrus and narwhal ivory, whale oil and various furs, up through the 19th century with the discovery of coal, iron, lead and zinc.⁵ The other was the result of the famous cartographer Gerardus Mercator's 1569 map of the world, indicating both the Northwest Passage and the Northern Sea route. While his portrayal of the Arctic was wholly inaccurate, it indicated the two sea routes, past several fictitious islands,⁶ fuelling speculation of an alternate route from Europe to Asia.

Exploration of the Arctic Archipelago continued, with the first man to successfully transit the Northwest Passage being Norwegian explorer Roald Amundsen,

³ John McCannon, *A History of the Arctic*,...57.

⁴ Shelagh D. Grant, *Polar Imperative: A History of Arctic Sovereignty in North America* (Vancouver: Douglas & McIntyre, 2010), 42.

⁵ *Ibid*, 10.

⁶ *Ibid*.

traversing it in 1903 to 1906,⁷ again fuelling issues of northern sovereignty. While many British explorers and merchants before him left their mark, with names like Davis, Frobisher and Hudson marking significant geographic landmarks, he was the first to traverse the Northwest Passage.

Amundsen's success came shortly after, as of September 1st, 1880, all of the Arctic claimed by the British had been turned over to the newly formed nation of Canada. Struggling for an identity and bereft of resources Canada gave little consideration to the North. Over the next few years the ill-defined turnover of territory took some time to clarify and British interest in exploring the Arctic waxed and waned. And while Canada had been established it was still considered part of, and heavily influenced by Britain.⁸

At the turn of the 20th century, just as Amundsen was conducting his voyage, "Britain's apparent apathy toward newly claimed possessions and lack of interest in settlement would create an opportunity for other nations to challenge British title"⁹ in the Arctic. But this was also the time of the Klondike Gold Rush and there was much interest in the North. With this interest came the requirement for enforcement and what could be considered Canada's first act of sovereignty in the North. The North-West Mounted Police "began to enforce Crown law on the Northern frontier."¹⁰ This exertion of control, while guided by the need for law and order, was still the first step in Canada establishing sovereignty over its newly gained territory.

⁷ Ken S. Coates *et al.*, *Arctic Front: Defending Canada in the Far North* (Toronto : Thomas Allen, 2008), 39.

⁸ Shelagh D. Grant, *Polar Imperative*...166-167.

⁹ *Ibid*, 114.

¹⁰ John McCannon, *A History of the Arctic*...156.

Starting into the 20th century the Arctic remained relatively quiet, with Canada and other Arctic nations engaging in minor negotiations and recognition of some claims. After World War I the new national police force, the Royal Canadian Mounted Police (RCMP) made “a concerted effort during the 1920s and early ‘30s to establish new detachments throughout the Arctic and to regularly patrol the eastern parts of the archipelago, where foreigners were most tempted to question Canada’s sovereignty.”¹¹ The RCMP conducted several high Arctic patrols during this time and performed other functions of government in northern communities including the running of post offices and customs, all contributing to Canadian sovereignty in the area.¹²

It was by this point Canada’s Arctic sovereignty was relatively unchallenged as, through its system of post offices, RCMP detachments and other sundry bits of governmental apparatus Canada was, at least symbolically, exerting its sovereignty. It was on sound ground on the northern mainland and, any further north than that, no one else was particularly interested in at the time.¹³

During this period the RCMP had even commissioned a schooner, the *St Roch*, in order to conduct patrols in the Arctic. Starting patrols in 1929, it wintered several times in the Arctic, as well as being the first ship to transit west to east in 1940 to 1942. Another first came in 1944 when it made the transit east to west in a single season.¹⁴ Through much of Canada’s early history in the Arctic the RCMP have been key to Canada’s sovereignty claims there.

¹¹ John McCannon, *A History of the Arctic*...198.

¹² Ken S. Coates *et al.*, *Arctic Front*...48.

¹³ *Ibid*, 51.

¹⁴ *Ibid*, 52.

During World War II the Canadian Arctic was relatively quiet, compared with the activity in the Norwegian and Barents Seas, where convoys along the ‘Murmansk Run’ went as far north as 75 degrees North latitude.¹⁵ With security concerns for Alaska the United States was influential for several projects, particularly the Alaskan highway and this presence was a concern for some Canadians. However, on completion of the war, ownership of all facilities was passed to Canada and these “wartime developments actually strengthened Canadian sovereignty claims to its north by the end of the war.”¹⁶ All the weather stations, airfields and other infrastructure constructed because of the war had the added benefit of making the Arctic more physically accessible.

American security concerns persisted, and even heightened, because of the Cold War. Canada’s geographic position placed it along the shortest route between the Soviet Union and the United States. Construction of the Distant Early Warning (DEW) Line and establishment of the North American Aerospace Defence Command (NORAD) inextricably linked Canada and the United States and, again, caused concern over American influence and presence in the Canadian Arctic. But, with provisions for Canadian ownership of sites and other concessions it was viewed that “the best way for Canada to protect its sovereignty there was to assist with the monitoring, rather than fruitlessly standing on its rights.”¹⁷

Another sovereignty issue, that Canada could do little about, was submarine traffic in the north. “When submerged under the ice, nuclear submarines likely posed a threat to Danish and Canadian sovereignty, but it was theoretical rather than visible.

¹⁵ Michael G. Walling, *Forgotten Sacrifice: The Arctic Convoys of World War II* (Oxford: Osprey, 2012), 16.

¹⁶ Ken S. Coates *et al.*, *Arctic Front*...62.

¹⁷ John McCannon, *A History of the Arctic*...243.

Unless they came up for air, no one above knew they were there.”¹⁸ This was indicative of a shift in sovereignty concerns for Canada during the 1960s: that sovereignty over the land, including the islands of the Arctic Archipelago, was not the concern anymore, but the water between them and around them was.¹⁹

The first event that brought the prominence of the Northwest Passage to the fore was the transit of the *SS Manhattan* in 1969 through the passage. Then again in 1985, the American ship the *USCGC Polar Sea* also voyaged through causing Canada to extend its territorial limits and enact the Arctic Waters Pollution Prevention Act (AWPPA). By designating the islands as an archipelago Canada claimed the Northwest Passage as an ‘internal waterway.’ The United States was one of the first to disagree with this, ostensibly because of concerns that recognition of it could impact claims elsewhere. Regardless, while rhetoric heats up occasionally, the two nations have ‘agreed to disagree’ on the topic.²⁰

The Present

Looking at Canada’s Arctic today, before examining Canada’s capability to exert sovereignty, global warming and recent changes in the Arctic require a brief discussion. “In today’s Arctic, sovereignty matters because of climate change.”²¹ This statement clearly delineates the importance global warming has had in the Arctic in recent decades. During the twentieth century the Arctic has experienced an average increase in temperature of approximately one degree per decade, with significant increases in the

¹⁸ Shelagh D. Grant, *Polar Imperative*...332.

¹⁹ Ken S. Coates *et al.*, *Arctic Front*...81.

²⁰ Charles Emmerson, *The Future History of the Arctic* (New York: Public Affairs, 2010), 95-96.

²¹ Michael Byers, *Who Owns the Arctic? Understanding Sovereignty Disputes in the North* (Vancouver: Douglas & McIntyre, 2009), 8.

latter decades.²² After a previous low in 2007, Arctic sea ice hit a new all-time low in September 2012, 18 percent less than in 2007 and, even more astonishing; it represented half of what was frozen in the 1970s.²³ Also of concern is not just the melting of the ice, but the thinning of it as well, “by some 43 percent in the 25 years between the early 1970s and the late 1990s.”²⁴

The warming of the Arctic is impacting the land as well. Thawing of permafrost has a two-fold effect. One, it releases more methane and carbon dioxide into the atmosphere, exacerbating the impact of greenhouse gases in an already sensitive ecosphere and two, it impacts existing infrastructure in the Arctic. Thawing of permafrost has led to villages along the Bering and Chukchi coasts to be relocated due to the melting and subsequent erosion.²⁵ While the full effects of this have not been felt in the Canadian north its impact on existing communities cannot be discounted in the future.

The Canadian Rangers – made up mostly of Inuit and Aboriginals – have long been a symbol of Canada’s Arctic sovereignty, at least to Canadians in the south. Since their establishment they have given the military a permanent presence in the Arctic “and become the most recognizable symbol of Canada’s military presence in the far north.”²⁶

While normally operating near their local communities Rangers do conduct patrols, often

²² Terry D. Prowse et al., “Climatic Conditions in Northern Canada: Past and Future,” *Ambio* 38, no. 5 (July 2009): 257, <http://search.proquest.com/docview/207667930/13CC060C61F14306086/1>.

²³ Andrew Wong, “Rising Giant,” *Alternatives Journal* 39, no. 1 (Jan/Feb 2013): 32-33, <http://search.proquest.com/docview/1296744627/fulltextPDF/13CC06AF0CA427F50CC/1>

²⁴ Peter Wadhams, “Arctic Ice Cover, Ice Thickness and Tipping Points,” *Ambio* no. 41, 1 (Feb 2012): 23, <http://search.proquest.com/docview/917346802/fulltextPDF/13CC07428CB29DD5A72/1>.

²⁵ Charles K. Ebinger and Evie Zambetakis, “The Geopolitics of Arctic Melt,” *International Affairs* no. 85, 6 (Nov 2009), 1215.

²⁶ Ken S. Coates et al., *Arctic Front*... 133.

with regular members of the CF and, while derided by some critics as a pitiful show of force, are at least symbolic of Canada's Arctic sovereignty.²⁷

In recent years the Canadian government has been relatively proactive towards the Arctic, and this is partially reflected in the military activity recently seen. A series of annual exercises, like *Nanook*, have been Joint, interdepartmental operations in Canada's high Arctic.²⁸ The question to be answered next is whether these are the first steps toward an enhanced military presence in the Canadian Arctic, or just 'a flash in the pan' of federal politics?

The current government has espoused a pro-Arctic position since at least 2006, when many of the current projects were part of its election campaign. Subsequently the Arctic has maintained a prominent position with the Conservative Party, with Prime Minister Stephen Harper visiting every year since being elected. While some see it as rhetoric, others believe that the current government is committed to maintaining Canada's sovereignty in the North and improving CF and other departments' capabilities to do so.²⁹

The Future

The issue isn't so much today, but what tomorrow is going to bring. There is general agreement that global warming does in fact exist and, progressively with each study, appears to be accelerating. The science of predicting when an ice-free summer will occur is not exact, but there is general agreement that it could come as soon as the next 20 to 30 years. In addition to an ice-free summer, the winter will consist of mainly first

²⁷ Ibid...107, 173.

²⁸ Charles Emmerson, *The Future History of the Arctic*...123.

²⁹ Terry Ferge and Tony Penikett, "The Arctic Vacuum in Canada's Arctic Policy," Institute for Research and Public Policy, last accessed 18 April 2013, <http://irpp.org/po/archive/apr09/fenge.pdf>.

year ice making all the Arctic passable by icebreakers year-round. This reduction in the amount and type of ice will not only affect shipping, but also have implications for the design of oil platforms and other resource exploitation infrastructure.³⁰

The other uncertainty in the Arctic environment is the outlook for its flora and fauna. In recent years literally thousands of walrus have been congregating on Alaska's northwest coast due to a lack of sea ice. Polar bears are seeing a reduction in their habitat and could face extinction within the next 70 years. Fish stocks could be threatened by warming temperatures, or migrate to other areas, making cross-national management of fishing resources a possible issue. Thawing of permafrost and warming temperatures could also lead to an expansion of vegetation across the north, with unknown impact on the existing ecosystem.³¹

All of these factors will affect the Inuit and aboriginals to which the arctic is home. Reductions in sea ice and the thawing of permafrost will put both the Inuit environment and homes at risk. Many communities rely on frozen ground and ice for transportation. Hand in hand with the melting and thawing will come the shifts in the migratory patterns of animals that are relied upon for subsistence.³² The implications have yet to be discovered but the impact may be great, remembering that by their very presence, the Inuit give credibility to Canadian Arctic sovereignty.

Conclusion

³⁰ Peter Wadhams, "Arctic Ice Cover, Ice Thickness and Tipping Points,"...31.

³¹ Charles K. Ebinger and Evie Zambetakis, "The Geopolitics of Arctic Melt,"...1215, 1218-1219.

³² John McCannon, *A History of the Arctic*...300.

Over the years the Canadian government has paid much more ‘lip service’ to the Arctic than anything of substance. “[Canadian] poets, novelists, artists and filmmakers have done a better job than our politicians and business leaders in responding to the Far North.”³³ Engagement with the North has been superficial, and lagged far behind the other Arctic nations, in all facets of life from economic development through to military presence. “[T]he cost and logistics associated with maintaining even a modest presence in the Arctic, has historically led to Canada talking tough on Arctic sovereignty, but doing little in the way of action.”³⁴ The current Harper government seems more engaged than any previous and the threats and issues it faces, as well as the current plan to deal the Arctic will be the subject of the next chapter.

Chapter Two – Threats and Issues

Arctic security policy in the future will be about a more fragmented set of challenges – many of them civilian – arising from the Arctic’s growing economic importance and, partly as a result of climate change, its increased accessibility.

Charles Emmerson, *Future History of the Arctic*

There are many issues, and even threats, that exist when examining Canada’s Arctic and the country’s interests there. In order to be able to examine Canada’s current capabilities, and be able to propose what future capabilities will be required, these issues and threats must be examined to see to what extent they should and will influence decisions. They all have a sovereignty aspect to them, which will help to identify what their priority should be.

³³ Ken S. Coates *et al.*, *Arctic Front*... 192-193.

³⁴ Todd L. Sharp, “The Implications of Ice Melt on Arctic Sovereignty,” *Defence Studies* Vol 11, no. 1 (June 2011): 306.

Topics to be examined in this chapter include, first, natural resources in the Arctic to include not only hydrocarbons, but other minerals as well, and their exploration and exploitation. Also encompassed by this topic are the existing and potential fishing resources. Next will be the environment, and while global warming has already been discussed, the increases seen, and expected, in maritime traffic and tourism will be analyzed, as well as the potential for pollution from any increased activity in the north.

Also to be covered will be the potential for trans-national crime and terrorism. Without a proper presence and enforcement the Arctic has the potential to be Canada's most porous border, threatening not only Canada, but all of the North American continent. Increased activity across the Arctic will see the requirement for SAR grow, which will be problematic considering the enormous distance to be covered.

Finally, the issue of sovereignty and how it pertains to Canada's Arctic borders and the Northwest Passage needs further examination. What is the importance of Canada maintaining control of the Northwest Passage and what rights and responsibilities do we want to establish. Canada has been proactive in some aspects of Arctic governance and if future capabilities are going to meet coming challenges, future sovereignty issues need to be identified.

Natural Resources

When considering natural resources in the Arctic, the commonly cited figures from the United States Geological Survey state that the Arctic may contain up to 13 percent of the world's undiscovered oil and up to 30 percent of its undiscovered natural

gas, 84 percent of which will be located offshore.³⁵ The key being that it is offshore, and with Canada's arctic region lagging behind other areas like Russia, in its decrease in ice, Canada will have more time to develop strategies and capabilities to ensure resource development follows Canadian guidelines.

While immediate development may be stalled due to both too harsh a climate and world commodity prices that are currently too low to support the exploration and exploitation costs involved in the Arctic, demand is only going to increase. Eventually the growing appetites of the emerging markets, like China and India, will fuel sufficient demand to make Arctic production viable.³⁶ So while the Stockholm International Peace Research Institute (SIPRI) calls the Arctic "the world's next energy frontier"³⁷ the short-term energy prospects of the Arctic should not be overestimated.³⁸

The Canadian Arctic also contains a wealth of minerals. Exploration for mineral deposits and mining are already underway in Canada's North. Going from a country that, just over 20 years ago, wasn't even listed as a diamond producer, Canada is now ranked third in the world.³⁹ In addition, Baffin Island's Mary River iron ore deposit is considered one of the world's largest. However, similar to other ventures, the original Mary River project is being scaled down due to global market instability. Production is still scheduled

³⁵ Kenneth J. Bird et al., "*Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*," US Geological Fact Sheet 2008 3049, last accessed 3 March 2012. <http://pubs.usgs.gov/fs/2008/3049/fs2008-3049.pdf>.

³⁶ Franklyn Griffiths, Rob Huebert, and P. Whitney Lackenbauer, *Canada and the Changing Arctic: Sovereignty, Security and Stewardship* (Waterloo: Wilfrid Laurier University Press, 2011), 31-32.

³⁷ Kristofer Bergh and Ingmar Oldberg, "*The New Arctic: Building Cooperation in the Face of Emerging Challenges*," SIPRI Conference Report (April 2011), 4.

³⁸ Charles K. Ebinger and Evie Zambetakis, "The Geopolitics of Arctic Melt,"...1220.

³⁹ Rob Huebert, "Canada and the Changing International Arctic: At the Crossroads of Cooperation and Conflict," in *Northern Exposure: Peoples, Powers and Prospects for Canada's North* (Montreal: McGill University Press, 2009), 5.

to start in 2017, and the ore will be transported via bulk carrier to market.⁴⁰ These and other projects in the future will increase maritime traffic significantly.

Fishing in Arctic waters is on the rise as well, with “the fish stocks of the Bering and Barents seas already [having] been seriously depleted.”⁴¹ As discussed earlier, the effects on fish stocks and migration from global warming is not known at this time. But issues are already arising between countries, with Canada suspecting Greenland and Faroe Islands fishers of illegally fishing in Canada’s eastern Arctic.⁴² A more ice-free Arctic will only exacerbate this issue.

The Environment

In considering the Arctic environment, the role of marine traffic must be examined, as it will be the primary source of environmental impact. While traffic will increase due to exploration and exploitation of natural resources, there will also be increased traffic as a result of more tourism and, eventually, with improving ice conditions, trans-polar navigation, as these alternative shipping routes reduce distances between various markets.

The implications of an ice-free Northwest Passage means transits between East Asia and Atlantic can be shortened by up to 7000 kilometres when compared to the traditional Panama Canal route.⁴³ This could translate into trans-polar routing being 15

⁴⁰ Pav Jordan, “Baffinland Iron Mines Sharply Scales Back Mary River Project,” *Globe and Mail*, 11 January, 2013.

⁴¹ Lawson W. Brigham, “Thinking About the Arctic’s Future: Scenarios for 2040,” *The Futurist*, Vol. 41, no. 5, (September-October 2007): 28, <http://site.uit.no/arcticfutures/files/2012/03/Brigham-2007.pdf>.

⁴² Rob Huebert, “Canada and the Changing International Arctic”...20.

⁴³ Michael Byers, *Who Owns the Arctic?*...11.

percent more profitable than traditional routes by the end of the 21st century.⁴⁴ These facts will make the Arctic an attractive alternate to shipping companies, and it's just not the distance and cost savings these routes offer. As an alternate route the Arctic will have strategic benefits, and not just to Arctic nations. Being able to utilize northern routes would allow China and other countries to reduce their dependence on chokepoints like the Strait of Malacca,⁴⁵ reducing their risks, while increasing Canada's.

Tourism will also impact Arctic traffic and, in fact, already has. Each summer "more than 150 cruise ships visit the glaciers of western Greenland, while dozens explore the Baffin Island's ice-capped fjords. A few ice-strengthened cruise ships also sail the [Northwest] Passage."⁴⁶ With improving ice conditions and the rising popularity of eco-tourism, traffic can only be expected to increase.

All of this increased traffic will threaten the environment, with pollution at the top of the list. The Arctic is more susceptible to environmental damage due to its very nature – being a cold, inaccessible realm, far removed from resources that would be needed to combat an incident. When looking at a likely scenario of an oil spill, it is even more complicated and its impact graver, due to the impact cold has. Any evaporation is reduced, microbe consumption is difficult and general conditions for clean up are

⁴⁴ V.C. Khon et al, "Perspectives of Northern Sea Route and Northwest Passage in the Twenty-First Century," *Climate Change* 100 no. 3-4 (Jun 2010), 758, <http://search.proquest.com/docview/347834958/13CC9A9997E57D51BB0/1>.

⁴⁵ Olga V. Alexeeva and Frederic Classerre, "The Snow Dragon"...64.

⁴⁶ Michael Byers, *Who Owns the Arctic?*...41.

inhospitable.⁴⁷ The logistical implications of trying to clean up a spill in the high Arctic could impact the environment for decades after.⁴⁸

And the risks could be even greater, as dangerous cargoes are already using trans-Arctic routes to avoid more heavily populated areas. “Sensitive Nuclear Cargoes have been transported in summer across the Northern Sea Route between Europe and Japan,...[and] the sum of these transportation activities has placed unprecedented environmental pressures on the entire Arctic.”⁴⁹ Canada must be prepared to deal with these eventualities occurring in the Canadian Arctic, and prepared to respond to them appropriately.

Terrorism and Trans-National Crime

Currently terrorism and organized crime are not headline issues in the Canadian Arctic but they should be of concern as conditions become more favourable for travel, and also due to unfavourable conditions elsewhere in North America. Post 9/11 there has been a concerted effort to secure North American borders, but the focus has all been south, with little done in the Arctic. While “fortress North America [is being built], the far reaches of the Arctic still remain as an Achilles heel.”⁵⁰

The Canadian Arctic’s vulnerability has been highlighted by a couple of events in recent years. The first example is that of the Romanian who made it all the way to Grise

⁴⁷ Saara Hänninen and Jukka Sassi, “*Acute Oil Spills in Arctic Waters - Oil Combating in Ice*,” VTT Technical Research Council of Norway, (January 2010), 6, Last accessed 13 March 2012, http://www.iccopr.uscg.gov/iccopr/i/files/Acute_Oil_Spills_in_Arctic_Waters_11JAN2010.pdf.

⁴⁸ Todd L. Sharp, “The Implications of Ice Melt on Arctic Sovereignty”...301.

⁴⁹ Larsen W. Bingham, “Thinking About the Arctic’s Future”...28.

⁵⁰ Paul Dittmann, “In Defence of Sovereignty: Canadian Arctic Sovereignty and Security,” *Journal of Military and Strategic Studies*, Vol. 11 no. 1 (Fall 2008), <http://www.jmss.org/jmss/index.php/jmss/article/view/67/325>.

Fjord. In 2006, coming via Greenland, he was attempting to enter Canada illegally and return to Toronto, after having been deported.⁵¹ The second example from the same year, involved two Turkish nationals who attempted to jump ship in Churchill, Manitoba, purchasing train tickets to travel to Winnipeg.⁵² While neither of these cases relates directly to organized crime or terrorism, and all were apprehended, it highlights the possibility that Canada's northern reaches provide as an alternate entry point into North America.

And as the importance of northern shipping routes increase, there will be increased vulnerability of states' Arctic borders to threats such as terrorists, arms traffickers and human smugglers.⁵³ With the Russian Northern Sea Route presently experiencing open water for a month and a half at a time,⁵⁴ this avenue of approach is viable even now, and will only grow in the future. Both the criminals and the people being smuggled are desperate, and taking a more dangerous route that could lead to a greater chance of successfully entering the country would be worth the risk for many.

Also looking towards Russia, they have revamped and stepped up their Federal Security Service (FSB) operations due to "a variety of non-traditional security challenges emerging in [their] vast northern territories."⁵⁵ The Russian mafia is already heavily involved in their black market, including illicit trade in diamonds, with the fear being,

⁵¹ Michael Byers, *Who Owns the Arctic?*...17.

⁵² Nancy Teeple, "A Brief History of Intrusions into the Canadian Arctic," *Canadian Army Journal*, Vol 12, no. 3 (Winter 2010), 54.

⁵³ Włodzimierz Anoil, "The Arctic: An Area of Conflict or Cooperation?" *The Polish Quarterly of International Affairs*, 19, No. 4, (2010), 68, <http://search.proquest.com/docview/1022699633/fulltextPDF/13CCE8780CE60D8551D/1>.

⁵⁴ V.C. Khon et al, "Perspectives of Northern Sea Route"...758

⁵⁵ Katarzyna Zysk, "Military Aspects of Russia's Arctic Policy: Hard Power and Natural Resources," in *Arctic Security in an Age of Climate Change* (New York: Cambridge University Press, 2011), 102.

their reach extending to the Canadian Arctic and the diamond industry there.⁵⁶ The Canadian Arctic Security Interdepartmental Working Group (ASIWG) has listed organized crime and the diamond industry as an issue of concern.⁵⁷

With respect to terrorism, the north is equally exposed, either as a trans-shipment point, or it being specifically targeted. Just as smugglers and criminals could view the Arctic as an alternate entry point into North America, so could terrorists. Additionally, while not seen as a primary target, the Arctic's vast network of oil and gas pipelines is unguarded and susceptible to attack. While the risk to life would likely be reduced "even a limited terrorist operation in a remote area of Canada would have a profound and lasting impact"⁵⁸ on both the environment and the Canadian psyche.

Search and Rescue

Canada's Arctic is a vast area, and there is a national obligation to provide SAR coverage and, with increasing accessibility in coming years, Canada will be hard pressed to meet commitments. With improving conditions maritime traffic will increase and the potential to respond an emergency in the Arctic will increase.

One has only to look at the incident involving the *MV Explorer* in Antarctica in November 2007. This Canadian owned eco-cruise ship, which often operated in the Canadian Arctic, struck an iceberg and sank off the coast of the South Shetland Islands. With two cruise ships nearby, all crew and passengers were safely evacuated but the

⁵⁶ ⁵⁶ Nancy Teeple, "A Brief History of Intrusions"...52.

⁵⁷ Rob Huebert, "Renaissance in Canadian Arctic Security?" Canadian Military Journal, vol. 6 no. 4 (Winter 2005), 23, <http://www.journal.forces.gc.ca/vo6/no4/north-nord-eng.asp>.

⁵⁸ Paul Dittmann, "In Defence of Sovereignty"...21.

potential for disaster was great.⁵⁹ Imagine the response times and potential for disaster if this were to happen in the Canadian Arctic?

The benefit that limited SAR assets and coverage may have for the Arctic is the fact that it could be a bridge to further working relationships with other Arctic nations. With increasing tourism the possibility of an *MV Explorer*-like incident in the Arctic increases every year and all Arctic nations have concerns about their ability to respond.⁶⁰ “The [Arctic] Council’s 2009 Arctic Marine Shipping Assessment (AMSA) recommended that the eight Arctic states formulate a harmonized search-and-rescue instrument”⁶¹ in order to pool resources and meet coming challenges.

“Using SAR [as] a nonthreatening and apolitical issue”⁶² could open up the “partnership door”⁶³ between Canada and other nations. And, on one hand, would be an excellent way to improve Arctic SAR responses, it could also, on the other hand, bring the added benefit that improved relations could mean easier resolution of border disputes and improved potential for recognition of Canadian claims. This in turn, would solidify Canadian Arctic sovereignty claims.

Sovereignty, Maritime Borders and the Northwest Passage

⁵⁹ Michael Byers, *Who Owns the Arctic?*...68.

⁶⁰ Charles K. Ebinger and Evie Zambetakis, “The Geopolitics of Arctic Melt,”...1223.

⁶¹ Charles K. Ebinger and Evie Zambetakis, “The Geopolitics of Arctic Melt,”...1227.

⁶² Reginald R. Smith, “The Arctic: A New Partnership Paradigm or the Next “Cold War”?” *Joint Force Quarterly* 3 (July 2011), 122,
<http://search.proquest.com/docview/877014871/fulltextPDF/13CCF53721511365E53/1>.

⁶³ Ibid.

There are several boundary and territorial disputes between Arctic nations. In fact, every Arctic nation has at least one unresolved border issue with a neighbour.⁶⁴ Canada has one, that being in the Beaufort Sea with the United States. Two other issues worthy of mention are Hans Island, with Denmark, and the most contentious - the legal status of the Northwest Passage; internal waterway or international strait?

Starting with the easiest, Hans Island. While this small rock off the west coast of Greenland is currently disputed territory between Canada and Denmark, in the big scheme of things, it is just not that important. “Hans Island has no implications for the location of the maritime boundary between Greenland and Ellesmere Island, or for Canadian or Danish rights elsewhere.”⁶⁵ When surveyed, the border between the two countries was drawn up to the low water mark on the north and south side of the island, with just 875m between them. The truth about Hans Island is that it is an excellent focal point for domestic politics in each country, and can be used as a ‘nationalist drum’.⁶⁶ It will eventually require resolution but does not play a large part in actual Canadian Arctic sovereignty, only in politics and the media.

The boundary dispute in the Beaufort Sea with the United States is grounded in a more tangible issue – hydrocarbons. That being that the approximately 21500 km² maritime area in dispute holds reserves of them in the seabed. With the natural resources

⁶⁴ Todd L. Sharp, “The Implications of Ice Melt on Arctic Sovereignty”...314.

⁶⁵ Michael Byers, *Who Owns the Arctic?*...27.

⁶⁶ *Ibid*, 27-28.

involved neither country is likely to acquiesce but international law will provide the final arbitration.⁶⁷ Regardless, this is an issue that will be resolved.

The most contentious issue between Canada and numerous other nations, including the United States, is the status of the Northwest Passage. The fundamental issue is whether it is considered an international strait, and therefore ships have the right of ‘transit passage’, or is it an internal waterway of Canada, and therefore subject to Canadian jurisdiction and regulations.⁶⁸ There is no debate about who owns the waters, seabed and who the surrounding islands belong to, it is a matter of *control*.

Control is important because of the increasing traffic the Northwest Passage has seen, and will continue to see. In 2007, thirteen vessels made the transit in a single season,⁶⁹ and this will only continue to rise. The potential of the Passage is not just based on the distances and cost savings that could be made by the route, but also the size of ships that could make the transit. The ability of post-Panamax sized ships (U.S. aircraft carriers fall in this size) being able to utilize the Northwest passage could be significant.⁷⁰

“Canada has sovereign right over all living and nonliving resources in the subsoil (for example, oil and gas) and the water column (fish) up to 200 miles from its coastline,”⁷¹ so this is not the issue with the Northwest Passage. The heart of the issue is Canada’s control over the Northwest Passage, and its ability to regulate traffic. If it is deemed to be part of Canada’s internal waters then Canada has the right to restrict access

⁶⁷ Franklyn Griffiths, Rob Huebert and P. Whitney Lackenbauer, *Canada*...125-126.

⁶⁸ *Ibid*, 127-128.

⁶⁹ Lawson W. Brigham, “The Fast Changing Maritime Arctic,” *U.S. Naval Institute Proceedings* vol 136 no. 5 (May 2010): 56, <http://search.proquest.com/docview/742957020/13CD0E30A674300C72E/1>.

⁷⁰ Michael Byers, *Who Owns the Arctic?*...40.

⁷¹ Rob Huebert, “Canada and the Changing International Arctic,”...15.

and, even more importantly, because Canada would be generally happy to allow free and equal use to all, that Canada “could pass laws governing internal shipping via the Northwest Passage.”⁷² Being deemed internal waters would mean Canadian immigration, customs and criminal law would apply, as well as Canada being able to enforce ship specifications to be allowed to transit, such as ice-strengthen hulls and other features that would mitigate risk of an accident.⁷³

All of these aforementioned issues do deal with Canadian sovereignty, but they are also tangible legal issues that will be resolved in the long run. The international body of law that the Arctic boundary disputes fall under is the United Nations Convention on Law of the Sea (UNCLOS), of which 157 nations are a party to, including all Arctic nations, with the exception of the United States. And even though the United States has yet to ratify UNCLOS, it is preparing its submissions of claim generally in accordance with it.⁷⁴

As a signatory of the Ululissat Declaration, the United States, like the other four Arctic nations, “remain committed to this legal framework [UNCLOS] and the orderly settlement of any possible overlapping claims...[and] therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean”⁷⁵ As the declaration indicates, regardless of the other political machinations that has led to the United States delays in ratifying UNCLOS, they, like the other Arctic nations are

⁷² Ibid.

⁷³ Michael Byers, *Who Owns the Arctic?*...61.

⁷⁴ Charles Emmerson, *The Future History of the Arctic*...83, 97.

⁷⁵ The Arctic Governance Project, “The Ululissat Declaration 2008,” Last accessed 24 February 2013, <http://www.arcticgovernance.org/the-ilulissat-declaration.4872424.html>.

fundamentally committed to peaceful resolution of outstanding Arctic claims and disputes.

What delineates the above issues and Canada's Arctic is the difference between real and perceived threats to sovereignty. "There is a general misconception that equates challenges to Canadian Arctic sovereignty as being applicable to the entire Canadian north."⁷⁶ Canada, like all the Arctic nations, has a couple of areas that the claims and ownership of these particular regions is still in dispute. And while there is posturing on all sides they too will be eventually resolved.

The other area of perceived threats to our sovereignty from other nations is possible intrusions into our territorial waters. One such example was by the Chinese Icebreaker *Xue Long* ("Snow Dragon"), surprising many with its arrival in Tuktoyaktuk, NWT, in 1999. While the Chinese government had submitted a request to the Canadian embassy in Beijing to enter the area, it still caught many off guard and raised suspicions about Chinese interest in the Arctic.⁷⁷ Of course the Chinese, as a nascent world power, are also interested in the Arctic. As a large consumer they are interested in the potential of its natural resources and, as mentioned earlier, as an alternate shipping route for their maritime commerce. Their interest is only likely to grow and Canada will need to balance its cooperation with China with ensuring Canadian sovereignty.⁷⁸

⁷⁶ Rob Huebert, "Canadian Arctic Maritime Security: The Return to Canada's Third Ocean," *Canadian Military Journal*, 8 no. 2 (Summer 2007): 10.

⁷⁷ Olga V. Alexeeva and Frederic Classerre, "The Snow Dragon"...61.

⁷⁸ Aldo Chircop, "The Emergence of China as a Polar-Capable State," *Canadian Naval Review*, Vol. 7 n0. 1 (Summer 2011): 14.
<http://www.navalreview.ca/wp-content/uploads/public/vol7num1/vol7num1art3.pdf>.

Another incident that garnered international media attention was the 2007 planting of a Russian flag at the North Pole. It was actually done on the seabed at a depth of 4300m by a manned Mir submersible.⁷⁹ The flag planting was conducted under the guise of scientific research and some have argued that it was more for domestic consumption than international. The expedition leader “Artur Chilingarov, was a member of the Russian Duma and in the midst of an election campaign.”⁸⁰

Both of these incidents can be explained away; one as a misunderstanding, the other meant for national politics, but incidents like these can be more damaging to Canadian Arctic claims than any particular territorial or border issue. China is a rising influence in the world and, while Canada would want to maintain good relations, it can also not be seen as weak and ineffective in the north. And the year of Russia’s flag planting also saw the resumption of military flights over the North Atlantic and Arctic. This posturing by Russia could indicate a shift to more competitive geopolitics⁸¹ All of this reinforces the need for Canada to continue to develop its Arctic sovereignty capabilities.

Chapter 3: Current Capabilities and the Near-Future

Canadian Strategy

A “Canada First” strategy is politically sound, but the government is unrealistic if it is setting up “Canada only” expectations for the Arctic Region. Canada cannot afford the suite of necessary capabilities to defend our Arctic from any ‘possible’ aggressor.

- P. Whitney Lackenbauer, *From Polar Race to Polar Saga*

⁷⁹ Włodzimierz Aniol, “The Arctic: An Area of Conflict or of Cooperation?”...69.

⁸⁰ Micael Byers, *Who Owns the Arctic?*...88.

⁸¹ Geir Flikke, “Norway and the Arctic: Between Multilateral Governance and Geopolitics,” in *Arctic Security in an Age of Climate Change* (New York: Cambridge University Press, 2011), 64.

Before examining existing and near-future CF capabilities Canada's Arctic strategy needs to be examined from the whole of government approach, down through the CF policy and individual elements' approach to the Arctic. This discussion will help determine one, whether Canada and the CF are meeting their current objectives and, two, what capabilities will be required in the future to meet on-going demands in Canada's North.

First, an examination of the 'Whole of Government' perspective is required. This will start by using the most current document, "Canada's Northern Strategy" from the Department of Indian Affairs and Northern Strategy," issued in 2009. Broad issues are covered in the document, from ensuring the welfare of the Inuit and other aboriginal peoples, to government cooperation at all levels and respect for the environment. However, the one vision statement that is most applicable to the CF is that "we [will] patrol and protect our territory through enhanced presence on the land, in the sea and over the skies of the Arctic."⁸²

Patrols of the Arctic will not solely be the responsibility of the CF; The Canadian Coast Guard (CCG), RCMP, Canadian Border Services Agency (CBSA) and others will have parts in implementing this strategy. A disadvantage of such a broad policy statement is that it can be open to interpretation. But, looking at the basics of our current presence in the Arctic it remains much as it always has: for an inter-governmental team approach where the RCMP are spread out through numerous villages and hamlets

⁸² Department of Indian Affairs and Northern Strategy, *Canada's Northern Strategy: Our North Our Heritage, Our Future* (Ottawa, Minister of Public Works and Government Services Canada, 2009), 3.

throughout the North, the CCG is a regular presence in Arctic waters and the CBSA deploys people as necessary when required.

The current CF presence in the Arctic encompasses the Rangers which are spread out through numerous villages and hamlets much like the RCMP and are the most definitive CF symbol, not only on the ground, but in terms of overall, perceived presence. The army conducts occasional exercises with both Regular and Reserve army units, in addition to maintaining the ARCG. The RCN has stepped up its activities, but is still only a fleeting presence during annual summer exercises. The RCAF is responsible for aeronautical SAR and conducts some routine surveillance patrols. These activities, coupled with Joint Task Force North (JTFN) in Yellowknife, and Canadian Forces Station (CFS) Alert, on the northeastern tip of Ellesmere Island, are the current summary of the CF presence in Canada's North.

The government has committed to, at least in 'Canada's Northern Strategy' to "ensuring we have the capability and capacity to protect and patrol the land, sea and sky in our sovereign Arctic territory. We are putting more boots on the Arctic Tundra, more ships in the icy water and a better eye-in-the-sky."⁸³ Interpreting this statement in terms of the previous paragraph Canada has been steadily increasing its Arctic presence. Operation Nanook, a joint and combined exercise which started in 2007, has been conducted annually ever since, and has involved all elements of the CF, plus the CCG,

⁸³ Department of Indian Affairs and Northern Strategy, *Canada's Northern Strategy*,...9.

RCMP, CBSA, Transportation Safety Board (TSB) and others, to varying degrees, as well as international partners such as the United States and Denmark.⁸⁴

Operation Nanook

Operation Nanook is described as the largest Canadian “major recurring sovereignty operation conducted annually by the CF in Canada’s North”⁸⁵ and is one of the key ways Canada’s current government is demonstrating its commitment to Arctic sovereignty. The operation’s objectives are to assert Canada’s sovereignty in the North, enhance the CF’s ability to operate in the Arctic and improve coordination and interoperability between government departments and international partners,⁸⁶ which are all clearly targeted to exert Canadian sovereignty and improve CF capabilities in the North.

Examining the training goals of the operation over the years since its inception, it becomes apparent that the threats and issues discussed in chapter two are readily apparent to the Canadian government, as Operation Nanook has focused on most of these issues, in one capacity or another. Scenarios involving drug interdiction and security incidents have addressed training for a counter-crime and terrorism role. Several of these exercises have involved combatting oil spills, speaking to environmental concerns and the possible repercussions of natural resource exploitation in the region. Scenarios involving both maritime and aeronautical accidents have trained members for the demands of conducting

⁸⁴ Royal Canadian Air Force, “Op Nanook Showcases RCAF Capabilities in the North,” last modified 17 August 2011, <http://www.rcaf-arc.forces.gc.ca/v2/nr-sp/index-eng.asp?id=12013>.

⁸⁵ Royal Canadian Navy, “Operations and Exercises,” last modified 5 March 2012, http://www.navy.forces.gc.ca/cms/4/4-a_eng.asp?id=460.

⁸⁶ Canadian Joint Operations Command, “Operation Nanook,” last modified 15 March 2013, <http://www.cjoc-coic.forces.gc.ca/cont/nanook/index-eng.asp>.

SAR in the Arctic environment. In Addition to addressing sovereignty concerns, numerous patrols have been conducted, Vessel of Interest (VOI) location and tracking exercises performed and, in 2011, UAV operations were conducted for the first time in the high Arctic.⁸⁷

All of these training events have been staged to demonstrate both CF, and other government departments, capabilities in the Arctic, as well as to demonstrate Canada's resolve and commitment to its Northern sovereignty. As described by Canadian Joint Operations Command on its Operation Nanook webpage, the CF has "a significant role to play in forestalling sovereignty challenges, defending Canada against threats in the region, and protecting Canadians by supporting whole-of-government efforts to ensure appropriate responses to security and environmental concerns in the North."⁸⁸ Operation Nanook has been used to demonstrate CF Joint capabilities in a region considered significant by the federal government and "visibly express Canadian sovereignty while providing CJOC with eyes and ears in some of Canada's most remote areas."⁸⁹

CF Direction

In the *Canada First* Defence Strategy document, two of the three roles assigned to the CF involve the Arctic: defending Canada and defending North America.⁹⁰ As the Arctic becomes more accessible its importance to not only the security of Canada, but

⁸⁷ Ibid.

⁸⁸ Canadian Joint Operations Command, "Operation Nanook," last modified 15 March 2013.

⁸⁹ Ibid.

⁹⁰ Department of National Defence, "Canada First Defence Strategy," last modified 13 January 2012, <http://www.forces.gc.ca/site/pri/first-premier/defstra/summary-sommaire-eng.asp>.

also to North America, will continue to grow. Being a “strong and reliable partner”⁹¹ in the defence of the continent will require balancing the need to maintain Canadian sovereignty, particularly with respect to the Arctic, where the threat, even from allies, is perceived as greater with maintaining a positive working relationship with Canada’s close allies.

The expectation that, at ‘home’, the CF will *be aware* of evolving threats, *deter* any threats before they threaten the country and *respond* to any contingency anywhere in Canada⁹² will be particularly challenging in the North. The *Canada First Defence Strategy* details that the CF shall maintain the capacity to provide surveillance of both air and sea approaches to Canada, in addition to Canadian territory, maintain a 24/7 SAR capability for anywhere in Canada and be available to other departments to assist with “security concerns [such] as over-fishing, organized crime, drug- and people smuggling and environmental degradation.”⁹³ While demanding in any region, providing these capabilities in Canada’s North is even more demanding and complicated than any other region.

Policy states that “the [CF] must have the capacity to exercise control over and defend Canada’s sovereignty in the Arctic.”⁹⁴ The current government is focused on the Canadian military being the lead sovereignty presence in the Arctic, maintaining high

⁹¹ Ibid.

⁹² Ibid.

⁹³ Department of National Defence, “Canada First Defence Strategy.”

⁹⁴ Ibid.

visibility in the region, and ensuring it is ready and capable to respond to assist OGDs in responding to arising threats.⁹⁵

The Arctic Integrating Concept (AIC), published in August 2010 by the Chief of Force Development (CFD) details the strategic framework for the CF to work with OGDs and other Arctic stakeholders in order to achieve federal government objectives for Canada's North. The aim is to provide guidance for the development of future CF capabilities necessary for the Arctic.⁹⁶ Within this context the AIC makes certain assumptions, applies constraints and assumes risks in order to propose a way ahead.

Assumptions include that there is currently no direct threat to Canada's North, climate change will continue as predicted, the CF's core roles of defence will remain unchanged, the CF will not normally be the lead agency in responding to incidents in the Arctic and that world interest in the region will continue into the future.⁹⁷ These are important assumptions as they definitely shape what kind of capability the CF needs to develop, and without them, the scope of what would need to be examined quickly becomes unmanageable. They shape the response towards increasing CF capability in this region, through the assumption that climate change will continue to make the Arctic more accessible, but reduce the scale by indicating the lack of a direct threat and that the CF will normally be a supporting department, vice the lead for most responses required.

As for constraints on the development of future capabilities, the CF must continue to meet the government's commitments and priorities, attempt to balance the demands of

⁹⁵ Ibid.

⁹⁶ Department of National Defence, *Arctic Integrating Concept* (Ottawa: Chief of Force Development, 2010), 1.

⁹⁷ Ibid, 4-5.

an increasing Arctic commitment while still meeting other domestic and international obligations, respect and meet all legal and governmental direction, and ensure that minimal impact is made on the Northern environment and communities from CF operations and presence.⁹⁸ Starting backwards, the second two constraints are straight forward and fairly easy to comply with. The CF needs to maintain its focus on meeting government objectives, and not deviate into self-interest when developing Arctic capability. With respect to the environment, the CF already has a comprehensive environmental risk and mitigation process, and as long as it is stringently applied this constraint will be met.

Unfortunately the first two constraints are more problematic. It is the meeting of the government's commitments and priorities that will cause the conflict between Arctic commitments and other obligations. In a time of limited fiscal resources, DND is subject to budgetary restraints similar to any other federal department, meaning an increase in resources for the Arctic will inevitably influence and affect other commitments, if it is to remain a 'zero sum' game. As part of fulfilling its requirements, the CF may need to ensure it receives an up-to-date list of priorities and accurately communicates where shortfalls may be experienced without increased funding.

The risks outlined in the AIC include the fact that the CF, along with OGDs, may not be able to keep up with environmental, and other changes, in the Arctic. Development of situational awareness of the region may fall short in the near term. The CF, in support of other departments, such as the CCG and RCMP, will be hampered due to interoperability issues between the organizations and the lack of adequate SAR coverage

⁹⁸ Department of National Defence, *Arctic Integrating Concept*,...5.

could become a major issue as there exists significant uncertainty over how economic and geopolitical interests will increase Arctic commercial and air traffic.⁹⁹

All these risks come down to the uncertainty of whether or not global warming will be a linear change, or, as some recent studies have indicated, could follow a more exponential path. If changes happen along a more linear pattern and the government maintains its commitment to further developing CF Arctic capabilities, then the risks will be relatively low. However, if either of these changes, the impact will be significantly different. Any increase in the speed of global warming will affect how quickly the Arctic becomes more accessible, in turn increasing the other risks. It would increase traffic and economic exploitation, leading to increased exposure to SAR gaps and, if there was a major incident, the ability to coordinate a Whole-of-Government response. Similarly, even if climate change remains relatively linear, any reduction in government support and CF budget allocations would cause already tight programs to lag behind actual requirements.

CF Capabilities

Recent initiatives announced and created in order to enhance CF capabilities in the Arctic include Arctic Offshore Patrol Ships (AOPS) and a naval support facility in Nannasivik, an Arctic Training Centre in Resolute Bay, enhanced surveillance and monitoring (including SAR coverage), as well as an increase in army support, through the creation of Arctic Response Company Groups and an increase in the number of

⁹⁹ Department of National Defence, *Arctic Integrating Concept*,...5-6.

Rangers.¹⁰⁰ The issue with all these initiatives, all recently announced between 2007 and 2010, is that they may fail to deliver the intended capability or are at risk of falling victim to insufficient funding or government cutbacks.

The AOPS project was recently panned by Arctic experts Michael Byers and Stewart Webb at the Centre for Policy Alternatives and Rideau Institute. The reduction in scope and capability of the platform from what was originally intended may jeopardize the utility of the vessels, as currently planned. Reduction in their capability to handle thicker ice, plus reductions in the size, speed and range of the vessels, will reduce not only their Arctic capability, but also their general utility to the navy for conducting operations in locales other than the North.¹⁰¹

The additional threat is that, the longer it takes to complete the program, the greater the risk of it suffering cuts. From the original announcement in 2007, the ships were already to have started delivery. The revised plans now state that construction will start in 2015, with deliveries for 2018.¹⁰² The debate now centres on whether this hybrid platform is the most economical and capable to complete its intended missions. The report suggests that, due to fundamental differences in the roles required to patrol off the East and West coasts, versus in the Arctic, that the vessels will be poorly suited for either operational environment.¹⁰³ The report also cited the Maritime Coastal Defence Vessels

¹⁰⁰ Department of National Defence, *Arctic Integrating Concept*,...11.

¹⁰¹ Bruce Campion-Smith, "Tories' Proposed Arctic Patrol Ships Can't Handle Northern Waters: Report," *Toronto Star*, 11 April 2013, http://www.thestar.com/news/canada/2013/04/11/conservative_governments_costly_arctic_patrol_ships_cant_handle_northern_waters_report_says.html.

¹⁰² David Pugliese, "Planned Arctic Patrol Ships Not Up to the Job: Report," *Ottawa Citizen*, 12 April 2013, <http://www.ottawacitizen.com/news/Planned+arctic+patrol+ships+report/8230507/story.html>.

¹⁰³ Michael Byers and Stewart Webb, "Titanic Blunder: Arctic/Offshore Patrol Ships on Course for Disaster," Canadian Centre for Policy Alternatives, April 2013, 12-13,

(MCDVs), procured in the 1990s, as an example of how concessions in design ultimately lead to a compromised platform.¹⁰⁴ And although it's true that compromises were made, the navy has been able to fully utilize these vessels in a variety of roles, both as originally planned, and subsequently adopted.

The original deep-water port facility at Nannasivik was to include improvements to the existing airfield, a telecommunications network, working and accommodation spaces and two years of re-fueling storage. Unfortunately it was recently announced in February 2013, that Nannasivik is now to be reduced to a summer only refueling depot with no permanent staff and only half the originally planned fuel storage capacity. It will also have to rely on Arctic Bay airport, vice having its airfield repaired and improved.¹⁰⁵

The port facility is still listed as part of the federal government's economic action plan, under National Defence and the CF, with the outcome type being listed as 'sovereignty.'¹⁰⁶ The government originally committed 100 million dollars to the project, but states this money will not go as far as originally planned, while others think the announcement is a precursor to cancelling the project outright.¹⁰⁷ For current naval operations in the Arctic the navy is reliant on OGDs, in particular the CCG, to support operations. All Operation Nanooks involving deployment of naval ships to the Arctic have also required Coast Guard participation in order to provide fuelling support, as well as being on standby for escort icebreaking, if conditions were to deteriorate. While this is

http://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2013/04/Titanic_Blunder.pdf.

¹⁰⁴ Ibid, 8-9.

¹⁰⁵ Canadian Broadcasting Corporation, "DND Backtracks on Arctic Naval Facility," last updated 22 March 2012, <http://www.cbc.ca/news/canada/north/story/2012/03/22/north-nanisivik-plans-change.html>.

¹⁰⁶ Government of Canada, "Nannasivik Naval Facility," *Canada's Economic Action Plan*, last accessed 4 April 2013, <http://www.eap.gc.ca/en/content/nanisivik-naval-facility>.

¹⁰⁷ Canadian Broadcasting Corporation, "DND Backtracks on Arctic Naval Facility."

beneficial to departmental interoperability, it could be a complicating factor for extended contingency operations, when it is more likely that conflicting demands may limit the Coast Guard's ability to support naval operations.

The CF Arctic Training Centre (ATC), originally announced in 2007, was supposed to draw on existing infrastructure, expanding and adding wings to the Department of Natural Resources' Polar Continental Shelf facility in Resolute Bay. The facility was originally designed for 97 people, and DND's partnership would expand its capacity to 200.¹⁰⁸ Reporting in late 2011 indicated that construction had commenced on the additional wing, with great anticipation within the community.¹⁰⁹ Construction has continued through 2012, and the ATC is slated to open this coming summer.

The issue it now faces, similar to other DND and CF projects and commitments, is that Canadian army operations and exercises are under pressure due to planned cuts. The army is currently facing the largest cuts, with its projected annual budget to be reduced by 22% by 2015.¹¹⁰ And while the drawdown from Afghanistan will certainly ameliorate the cuts, they are still under pressure to reduce costs. The money has been spent on the training centre, but depending on government focus, the army may not go ahead with their original training plans for the Arctic.

Another important commitment touted by the government is the Canadian Ranger Modernization Project, where the CF is looking to increase the number of Rangers from

¹⁰⁸ David Pugliese, "Army to Scale Back Arctic Operations Because of Budget Cuts," *Ottawa Citizen*, 3 March 2013, <http://www.ottawacitizen.com/news/Army+scale+back+Arctic+operations+because+budget+cuts/8042743/story.html>.

¹⁰⁹ Jeanne Gagnon, "New Military Facility in Resolute," *Northern News Services Online*, 12 December 2011, http://www.nnsl.com/northern-news-services/stories/papers/dec12_11tc.html.

¹¹⁰ David Pugliese, "Army to Scale Back Arctic Operations Because of Budget Cuts."

4000, up to 5000 by this year. Other aspects of the project include replacing the Rangers' current Lee Enfield bolt-action rifle, as well as examining all equipment and clothing requirements.¹¹¹

Rangers are one of the great successes of Arctic sovereignty. Established in 1947, they are a sub-component of the Army Reserves, falling under the command of Commander JTFN in Yellowknife. Made up of local community members they fulfill “national-security and public-safety missions in those sparsely settled northern, coastal and isolated areas of Canada which cannot conveniently or economically be covered by other elements or components of the CF.”¹¹²

Their contribution to Arctic sovereignty cannot be overstated; they are the ‘eyes and ears’ of the CF in the North for the majority of the year. Whether conducting actual Sovereignty Patrols or during their day to day life of working, hunting and fishing the Rangers are relied upon to report any unusual events or observations that may trigger further investigations. Additionally, they provide local SAR coverage for their communities and act as subject matter experts and guides for Canadian troops from other regions during Arctic training and operations.¹¹³

As a force the Rangers have proven to be an extremely cost effective and efficient tool for Canada's Arctic sovereignty. As an indigenous force in remote areas, the presence of Rangers is a tangible representation of Canada's sovereignty and their

¹¹¹ Canada, “Sovereignty and Security in Canada's Arctic: Interim Report,” Standing Senate Committee on National Security and Defence, (Ottawa: March 2011), 7, <http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf>.

¹¹² Department of National Defence, *Canadian Rangers*, last modified 5 May 2012, <http://www.army.forces.gc.ca/land-terre/cr-rc/index-eng.asp>.

¹¹³ P. Whitney Lackenbauer, “The Canadian Rangers: A ‘Postmodern’ Militia that Works,” *Canadian Military Journal* vol. 6, no. 4 (Winter 2005-2006), 50-51.

success is not only directly military. The special circumstances and structure of the Rangers “serve as bridge between cultures and between civilian and military realms.”¹¹⁴ This, in turn, provides a positive image of CF Arctic sovereignty efforts and cements the force as an integral part the CF’s northern engagement.

The RCAF is also involved in Canada’s north. 440 Transport squadron operates four CC-138 Twin Otter aircraft out of Yellowknife for transport, utility and secondary SAR in Canada’s northern regions.¹¹⁵ The RCAF is also the responsible command for CFS Alert, “the most northerly, permanently inhabited location in the world, located only 817km from the geographic North Pole.”¹¹⁶ Both are limited, but important, contributions to the CF’s presence in the North. Further to these capabilities, the RCAF, “ along with NORAD, maintains four Forward Operating Bases in the Arctic for deployment of fighter aircraft when the need arises (at Inuvik, Yellowknife, Iqaluit, Rankin Inlet).”¹¹⁷

Similar to the other elements, the RCAF had several Arctic projects in development including improvements to Resolute Bay for converting the existing 2000m gravel runway into a 3000m paved runway capable of operating both strategic lift and fighter aircraft. Other improvements included fueling facilities and a logistics site for SAR operations. 1 Canadian Air Division (1 CAD) also suggested that the longer paved runway could also be used to support NORAD missions. Unfortunately, like the other

¹¹⁴ Ibid, 49.

¹¹⁵ Department of National Defence, “440 “Vampire” Transport Squadron,” last modified 13 July 2011, <http://www.rcaf-arc.forces.gc.ca/17w-17e/sqns-escs/page-eng.asp?id=413>.

¹¹⁶ Department of National Defence, “CFS ALERT,” last modified 9 December 2008, <http://www.rcaf-arc.forces.gc.ca/8w-8e/alert/index-eng.asp>.

¹¹⁷ Canada, “Sovereignty and Security in Canada’s Arctic: Interim Report,” 4.

services, the RCAF recently announced they would no longer be proceeding with these plans due to budgetary constraints.¹¹⁸

Another procurement process taking place is the replacement for the aging CC-115 Buffalo and CC-130 Hercules aircraft for SAR duties which has been dragging on for seven years¹¹⁹ and requires resolution in order to move the project forward and acquire new aircraft. If the more aggressive forecasts of Arctic sea ice melt are accurate, with the subsequent increase in marine traffic, new aircraft capable of providing coverage of Canada's North are a priority.

In addition to the SAR responsibilities, the RCAF also uses CC-140 Aurora Long-Range Patrol Aircraft (LRPA) in order to conduct surveillance for sovereignty, fisheries and pollution enforcement.¹²⁰ While it is an aging aircraft, the fleet is undergoing a mid-life upgrade that should adequately extend their flight life, as well as improve their surveillance capabilities. The issue with the Aurora and Northern employment becomes one not of capability but of priority. Again, in a resource stretched force, mission employment and priority may influence the availability of these aircraft to be utilized for Northern patrols, dependent on competing demands.

Revisiting the SAR requirements for the North, Canada, along with the other members of the Arctic Council, committed to SAR responsibilities by "signing the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the

¹¹⁸ David Pugliese, "Army to Scale Back Arctic Operations Because of Budget Cuts."

¹¹⁹ Defence Industry Daily, "Recue Required: Canada's Search-and-Rescue Aircraft Program," 20 March 2013, <http://www.defenseindustrydaily.com/rescue-required-canadas-searchandrescue-aircraft-program-03350/>.

¹²⁰ Canada, "Sovereignty and Security in Canada's Arctic: Interim Report," 4.

Arctic.”¹²¹ The agreement details the regions in the Arctic parties to the agreement are responsible for and stresses the need for cooperation between member states. So, in addition to the sovereignty implications providing SAR Coverage has, Canada has also entered a legally binding agreement with the other members of the Arctic Council to provide SAR in its Northern territories.

The Standing Senate Committee on National Security and Defence, in its interim report on Arctic Sovereignty, cited “two basic observations about search and rescue in the Arctic. First, the need is on the rise. Second, response times are potentially too slow given that Canadian Forces SAR air assets are based almost entirely in southern Canada.”¹²² The government and SAR authorities are reliant on contractors and private citizens to assist when SAR incidents occur in the North.

One example of this occurred in January 2013 when two hunters required rescue from an ice floe near the western shore of Hudson Bay. While a Hercules aircraft responded from Winnipeg, and located the two men, a private helicopter was contracted in order to expedite their rescue. Unfortunately, while landing on the ice floe, the helicopter broke through the ice and the pilot required rescuing by the stranded hunters. The military helicopter that had been dispatched to affect the rescue had to travel 15 hours from Cold Lake, Alberta in order to reach the location. Critics cited this as further evidence that Canada needs to station SAR assets further north in order to be able to

¹²¹ Arctic Council, “Task Force on Search and Rescue,” published on 29 December 2011, <http://www.arctic-council.org/index.php/en/about-us/working-groups/task-forces/282-task-force-on-search-and-rescue>.

¹²² Canada, “Sovereignty and Security in Canada’s Arctic: Interim Report,” 11.

respond in a reasonable amount of time to incidents that occur, especially in light of the increased use of the Arctic.¹²³

Hand in hand with increased SAR coverage of the North, Canada must also improve its surveillance and monitoring in general of the Arctic. One project, the Northern Watch Technology Demonstration Project, run by Defence Research and Development Canada (DRDC) was started in 2007 and slated to run through 2015. It is testing a combination of surface and sub-surface detection sensors in order to be able to monitor marine traffic at various navigational chokepoints in the Arctic, most predominately in the Northwest Passage.¹²⁴

It involves both sonar arrays and High Frequency Surface Wave Radars for the detection of ship and submarine traffic. Conditions are challenging and both systems are experiencing difficulties with the environment and their performance in it. The other issue that has yet to be solved for implementing systems like these is the difficulty in relaying the information captured from the actual sensor to where it will be analyzed. Communications satellites that would normally be used to relay information from remote sensors have poor coverage the further North you go, and once 70 degrees latitude is crossed coverage is almost non-existent.¹²⁵ Regardless of these limitations, with further development both sensors could prove very valuable for greatly increased Intelligence, Surveillance, and Reconnaissance (ISR) capabilities in the Arctic.

¹²³ Michelle Zilio, "Botched Contract Helicopter Highlights Gap in Canada's Arctic SAR Capabilities: Critics," *iPolitics*, 10 January 2013, <http://www.ipolitics.ca/2013/01/10/botched-contract-helicopter-rescue-highlights-gap-in-canadas-arctic-sar-abilities-critics/>.

¹²⁴ Canada, "Sovereignty and Security in Canada's Arctic: Interim Report," 4.

¹²⁵ Jim Hodges, "Commanding the Arctic: Canada Leads Search for Surveillance Options," *Defence News*, 1 March 2011, <http://www.defensenews.com/article/20110301/C4ISR02/103010308/Commanding-Arctic>.

The Canadian Coast Guard is responsible for implementing a national shore-based Automatic Identification System (AIS), including in the Arctic. This simple technology, in the form of a transponder and ancillary equipment, is currently mandated by the International Maritime Organization (IMO) to be carried on “all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size.”¹²⁶ It has a range of 40 to 50 nautical miles¹²⁷ and, if placed correctly, will provide excellent coverage of Canada’s Arctic, particularly in areas such as the Northwest Passage.

The final piece of the surveillance puzzle involves space based assets. Space based AIS has the potential to be of enormous benefit to surveillance and monitoring in the Arctic. Similar to land based AIS it will be able to track and report on vessels mandated to carry it and having active transponders. And while it is possible to disable a ship’s AIS, ships that do not have an active AIS transponder could be immediately flagged for further investigation when detected by other means.

Other means of detection could also be space based. DRDC’s Polar Epsilon Project, which “uses imagery and other information from RADARSAT 2, to enhance the land and sea surveillance capabilities of the Canadian Forces, giving the CF an all-weather, day-night eye on the North,”¹²⁸ is already providing surveillance and monitoring in Canada’s northern regions. Using ground based stations in Masstown, NS, and

¹²⁶ International Maritime Organization, “AIS Transponders,” last accessed 20 April 2013, <http://www.imo.org/ourwork/safety/navigation/pages/ais.aspx>.

¹²⁷ Department of Fisheries and Oceans, “Automatic Identification System (AIS),” last modified 16 May 2012, <http://www.ccg-gcc.gc.ca/eng/CCG/Maritime-Security/AIS>.

¹²⁸ Canada, “Sovereignty and Security in Canada’s Arctic: Interim Report,” 4.

Aldergrove, BC, the Polar Epsilon Project is fully into its implementation phase, providing near real-time data on movements and activity in the Canadian Arctic, including Arctic land surveillance, environmental sensing, near real time ship detection and maritime satellite surveillance.¹²⁹

Conclusion

As it currently stands, Canada is at a crossroads of whether it continues to meet its current objectives and if it will maintain course for the requirements of the future when it comes to ensuring Canadian sovereignty of its Arctic region. Government policy in ‘Canada’s Arctic Strategy’ clearly states that Canada, through the CF and OGDs, will maintain the capacity and capability to project a presence in the Arctic - on the ground, in the air and at sea.¹³⁰

DND policy is encapsulated in the *Canada First* Defence Strategy document, where two of the three roles detailed for the CF involve the Arctic. Defence of Canada and defence of North America both have an Arctic component and Canada is committed to its own defence, as well as its partnership with the United States. Finally the CF AIC document, gives strategic guidance on what and how the CF must work with OGDs and other stakeholders in order to fulfill the government’s direction.

Examining the recent initiatives implemented and planned for the near future by the current government Canada is maintaining, and even improving its Arctic

¹²⁹ Global Science Collaboration, “DRDC Maritime Surveillance Projects,” Last accessed 22 April 2013, <http://www.globalsciencecollaboration.org/public/site/PDFS/Maritime/Dyck%20D.%20Canadian%20Maritime%20Surveillance.pdf>.

¹³⁰ Department of Indian Affairs and Northern Strategy, *Canada’s Northern Strategy*,...9.

capabilities. Canada's multi-departmental reoccurring Arctic exercise, Operation Nanook, has taken place every year since 2007, demonstrating Canadian resolve in exercising sovereignty in the Arctic. Moving ahead with AOPS, the Nannasivik port facility and the CF ATC indicate the willingness for that commitment to grow.

The danger is in the fragility of these programs, and the others mentioned, to fiscal pressures. All three mentioned above have been reduced in scope or, not being completed yet, face possible cuts. For the near term plans these are even more at risk than ones already receiving funding. A procurement like the fixed-wing SAR replacement aircraft has experienced numerous delays and needs to be moved forward if Canada's to keep pace with the capabilities necessary to meet the Arctic's changing environment.

The challenge is developing the right capabilities to meet the future demands of exercising sovereignty over Canada's North. In addition to maintaining the current and near future projects mentioned in this chapter Canada, and the CF, must examine what existing programs can be expanded, and what emerging technologies could best be put to use for Arctic sovereignty, maximizing overall utility and flexibility in order to provide maximum benefit.

Chapter Four – Future Requirements

With a rapidly warming Arctic, the strategic plan for surveillance and domain awareness must embrace all of government and be flexible enough to evolve in light of long term climate changes. It cannot be static. A cornerstone of Canada's sovereignty is that we have the ability to know what is going on in our jurisdiction at all times – under the sea, in our air space and on land. Without that awareness, we cannot as a nation exert sovereignty.

- Joe Spears, *Watching Arctic Waters*

Canada's future in the Arctic must encompass not only an awareness of the domain, but also a presence to ensure the country's interests are protected. Innovation is key because whatever avenues are chosen, they must be both robust enough, and flexible enough, to be able to adjust to the spectrum of accessibility that may come to be in the coming years. This is because the science of global warming is not exact, and there is a spectrum of possible futures for the Arctic, from very limited access for many years to come to ice-free summers in the next decade. Science just isn't sure of the outcome.

But while science is never 100% when predicting outcomes such as these, all indications are that accessibility to the Arctic will continue to rise, as will the interest in access and exploitation of the region. Whether for its natural resources or as a new trans-global shipping route Canada must be prepared to deal with this eventuality. "The core issue of Canadian Arctic sovereignty is *control*; the core issue of Canadian Arctic security is about responding to *threats*."¹³¹ These issues of *control* and *threats* also relate directly back to this chapter's epigram, and what is required. Canada must be prepared to have in place the capacity to maintain domain awareness over its northern regions *and* the capability to enforce its laws and sovereignty when required.

Innovation and flexibility will be key to achieving this. In today's fiscal climate every capability must be leveraged to deliver maximum 'bang for the buck.' The government, and the CF, needs to focus on developing plans and contingencies that deliver a range of capabilities, able to service the requirements of the Arctic, and also be able to deliver capability for other regions and priorities. Any developments must cover a

¹³¹ Franklyn Griffiths, Rob Huebert and P. Whitney Lackenbauer, *Canada...*21.

spectrum, while being careful not to dilute any design to the point where it begins to lose too much.

Chapter two examined the possible threats to Canada's Arctic sovereignty and chapter three examined current and near-future capabilities that are in place in order to ensure the aforementioned control. This chapter will examine what capabilities are possible and realistic for development. Starting with the more conventional, such as ships, aircraft and evolutions of current surveillance and monitoring systems, to more innovative options from UAVs to submarines fitted with Air Independent Propulsion (AIP).

Responsibility and Jurisdiction

Revisiting the policy discussed in chapter three, *Canada's Northern Strategy's* most relevant statement with respect to sovereignty involving the CF is that Canada will “patrol and protect our territory through enhanced presence on the land, in the sea and over the skies of the Arctic.”¹³² The overall vision in *Canada's Northern Strategy* is a more holistic approach to sovereignty, encompassing not only this traditional interpretation, but also a government's responsibility to protect its citizens, not just from external threats, but also from things such as natural disasters and pandemics – so called human security.¹³³ With this in mind, clearly a whole of government approach is the policy, and rightly so.

¹³² Department of Indian Affairs and Northern Strategy, *Canada's Northern Strategy*...3.

¹³³ Paul Dickson and Heather Hrychuk, “Arctic Maritime Security: A review of Missions, Roles and Capabilities,” in *Naval Gazing: The Canadian Navy Contemplates its Future*, ed. Ann Griffiths and Eric Lerhe, 132 (Halifax: Dalhousie University, 2010).

The traditional “concept of sovereignty in the international state system is rooted in the exercise of territorial control and legitimate jurisdictional authority, traditionally manifested as defence and the rule of law.”¹³⁴ And while the coast guard plays a role in this, there are too many other federal departments that are stakeholders in executing the government’s policy to simply arm CCG ships and de-vest the CF of involvement in the Arctic.

The CF is a symbol of Canadian sovereignty, the same as any other country’s military, just as the RCMP is a symbol of Canadian law enforcement, the CCG a symbol of maritime safety and the CBSA of border security. All have important roles to play and the federal government has made it clear that it intends a whole of government approach, drawing on various departments and agencies for their specialties in order to provide the most robust response and to establish a clear purpose. Government policy states that Sovereignty is a daily exercise of good governance and stewardship, whether through “the operations of the Canadian Forces or the activities of the Canadian Coast Guard and Royal Canadian Mounted Police. We exercise our sovereignty in the Arctic through our laws and regulations, as we do throughout Canada.”¹³⁵

There are always alternative ways of doing things and accomplishing goals, but government direction is clear. And while some have put forth suggested solutions, such as arming, little examination of the real costs of such an undertaking have been

¹³⁴ Ibid.

¹³⁵ Department of International Affairs and International Trade, “Statement on Canada’s Arctic Foreign Policy: Exercising Sovereignty and Promoting Canada’s Northern Strategy Abroad,” last modified 29 January 2013, http://www.international.gc.ca/polar-polaire/canada_arctic_foreign_policy_booklet-la_politique_etrangere_du_canada_pour_arctique_livret.aspx?lang=eng.

conducted, nor an analysis of the implications in such a shift of mandate from one department to another. To stay within the scope of this paper, future capabilities will be examined in relation to the current government direction, and will not consider major shifts in departmental jurisdiction or responsibility.

Future Capabilities

It is this very balancing act that may determine whether a project should proceed or not. There are some radical ideas about how to go about solving Canada's dilemma of how to enforce its Arctic sovereignty. One idea is to arm CCG ships in order to provide them the tools to do enforcement. Michael Buyers has suggested that AOPS should not be going to the CF, and that the Coast Guard should receive armed icebreakers and be made responsible, in conjunction with the RCMP, Arctic enforcement duties.¹³⁶ While novel, the Senate Committee reviewing Arctic sovereignty and security heard no compelling evidence to make them recommend such a radical shift in CCG mandate and employment.¹³⁷

This not to say that interoperability between departments is not important. As previously stated, Canada must move forward with a whole of government approach and “the CCG is best positioned to develop and operate one of the primary dedicated enabling capabilities – ice navigation. This does not mean developing an armed CCG, with the consequent legislative implications.”¹³⁸ What it means is that the CF must continue to develop its interoperability with OGDs, continuing to improve the ability to work

¹³⁶ Michael Buyers, *Who Owns the Arctic?*...18.

¹³⁷ ¹³⁷ Canada, “Sovereignty and Security in Canada’s Arctic: Interim Report,”...19.

¹³⁸ Paul Dickson and Heather Hrychuk, “Arctic Maritime Security,”...156.

together and share information. Operation Nanook has been an important first phase but the CF must continue to expand on this. One program that should definitely continue is the opportunity for navigators from the navy to conduct Arctic deployments embarked in CCG ships, learning about the maritime Arctic environment and ice navigation, while striving to develop mutual understandings of how each organization works and what needs to be developed to improve communication.

One capability that would be of great benefit for domain awareness and interoperability would be to expand the Maritime Security Operation Centres (MSOC) to include an Arctic MSOC. Consisting of a partnership between DND, RMCP, CCG, DFO, CBSA and Transport Canada, with operations centres in Halifax, Victoria and the Niagara region,¹³⁹ expansion into the Arctic is a logical extension of this inter-departmental partnership. In conjunction with the development of other surveillance and monitoring, an Arctic MSOC could be located anywhere in Canada, and remotely receive information for sensors and assets in the Arctic, “advising the appropriate department, agency or first responder [of any] activities”¹⁴⁰ that fell under their jurisdiction or purview. The establishment of this centre would be a whole of government asset building on the current MSOC experience and be a focal point for coordinating Arctic activities.

Concurrent with the development of an Arctic MSOC the government must commit to continued support for domain awareness, surveillance and monitoring. The surest way to continue its development is to continue the current project into Polar Epsilon 2. Polar Epsilon 2 is an evolution from individual satellites, RADARSAT 1 and

¹³⁹ Government of Canada, “Maritime Security Operations Centres Project,” last modified 16 November 2011, <http://msoc-cosm.gc.ca/index-eng.asp>.

¹⁴⁰ Franklyn Griffiths, Rob Huebert and P. Whitney Lackenbauer, *Canada*...110.

2, into a radar surveillance constellation. This RADARSAT Constellation Mission (RCM) is to be a government owned asset. Individual satellites in the RCM will not have the same advanced capabilities of RADARSAT 2, but it will be an overarching system to support all of Canada and not just the Arctic.¹⁴¹

In its outline, it does have specific Arctic capabilities it will need to meet. For DND, it will need to be able to monitor Arctic activities in support of Canadian sovereignty as well as provide SAR support for the region. Environment Canada requires it to be able to monitor sea ice in navigable waters, DFO requires support for ice navigation and SAR support and Transport Canada's requirement is for support in regulating Arctic shipping.¹⁴²

The system will also have a broad range of other capabilities for supporting OGDs in other geographic areas and responsibilities which is actually an advantage to the program. By not being specific to the Arctic, but being able to add to surveillance and monitoring of the region it increases its overall utility to the government and hopefully avoids being cut, which is a risk, as it is not due to start until the 2016 to 2018 timeframe.

Revisiting ships, aircraft and other procurement projects for 'traditional' CF assets, without rehashing old arguments, the CF has to be clear what the requirements are needed for the intended capabilities and, while needing some compromise, must state unequivocally the minimum standards that must be maintained. The government then either needs to be willing to spend the required money, or understand the loss of

¹⁴¹ Chuck Livingstone, "Canadian Space Based Radar Surveillance Constellation Implementation Concepts," DRDC Technical Note, May 2012, last accessed 23 April 2013, http://cradpdf.drdc-rddc.gc.ca/PDFS/unc118/p536583_A1b.pdf.

¹⁴² Ibid.

capability, and its impact on the ability to exercise sovereignty, that those reductions will have in the Arctic.

In this view, while Byers and Stewart criticized AOPS¹⁴³ in their report as being an overly compromised design, with too many sacrifices being made to save money and make it more multi-modal, it is exactly what the navy needs. The way Canada currently operates in the Arctic is how we should continue to operate. The CCG is responsible for icebreaking duties throughout Canada and should remain so. In so much as the government wants a military presence in the arctic for reasons of sovereignty and security AOPS, even in its current, ‘watered down’ version fits the bill perfectly.

The demand for a naval presence in the Arctic is during the summer months, when ice conditions are at their best. Even if this season expands significantly, with periods of open water in the Northwest Passage, this demand does not change. Exercising in the Arctic now, during this period, is a high risk venture for warships, due to their designs and thin skins. AOPS will lengthen this operating season slightly, but more importantly, it will significantly reduce the risk of Arctic operations for the navy. It will provide added presence in the region, to augment the CCG already there, and will have less restrictions and more freedom than what current ships experience when deployed North.

There would be some slight risk to this plan if an incident were to take place, in the high Arctic, during the winter months, which required a military response. But this is a risk the government is clearly willing to take, or they would not be scoping the AOPS

¹⁴³ Michael Byers and Stewart Webb, “Titanic Blunder...12.

project as they currently are. And, realistically, it makes sense. AOPS is designed to give a military presence in Arctic waters when other maritime traffic is present, and this is during the navigation season, i.e., the ice-free summer months.

Another asset that has yet to be developed for the Arctic is UAVs. The 2004 Arctic Littoral Intelligence, Surveillance and Reconnaissance Experiment demonstrated the ability for UAVs to be employed in the Arctic.¹⁴⁴ In 2006 it was promised that this capability would be developed and employed to aid in maintaining Canada's Arctic sovereignty but, as of last year, the project is on hold until at least 2016.¹⁴⁵

As recently as 2012 Northrop Grumman has offered a modified Global Hawk UAV, named the Polar Hawk as a capability to do unmanned aerial surveillance in the Arctic. The Global Hawk has a range of 10000+ kilometres and an endurance of 30+ hours. NASA has operated a Global Hawk as high as 86 degrees latitude, controlling it using existing communications. Northrop Grumman proposes basing them in Goose Bay, NL and Comox, BC¹⁴⁶ and, given their range and endurance, they would be able to service Arctic requirements with little difficulty. The issue with this particular platform is one of cost however, does not discount Unmanned Aerial Systems (UAS) as a viable capability to provide real-time surveillance and monitoring of the Arctic. There are a host of manufacturers who would be willing to tender bids if the government made a commitment to the project.

¹⁴⁴ Franklyn Griffiths, Rob Huebert and P. Whitney Lackenbauer, *Canada*...104.

¹⁴⁵ David Pugliese, "Canada's Drone Squadron Still Stalled, with Neither Planes nor Troops," *Ottawa Citizen*, 27 December 2012, <http://www.ottawacitizen.com/technology/Canada+drone+squadron+still+stalled+with+neither+planes+troops/7749650/story.html>.

¹⁴⁶ K. Joseph Spears, "Unmanned Vehicles: Part of Canada's Arctic Strategy?" *Frontline Defence* Vol 9 No 5, (2012): 36.

Another suggested use for UAVs in the Arctic is from ING Robotics Aviation, proposing that small UAVs be based in communities across the Arctic in order to support SAR efforts. Instead of having to fly an aircraft all the way from southern Canada, a locally launched UAV could be employed to search and pinpoint a SAR incident, either allowing local ground SAR (most likely Rangers) or a directed SAR flight to complete the rescue. While there would be costs involved, these would be offset by the smaller UAV requirement, as well as the economic benefit of training and employing members of the local populace to operate and maintain the UAVs.¹⁴⁷

Looking to sub-surface surveillance, in addition to the deployable sonar array that is part of the Northern Watch Technology Demonstration Project, Air Independent Propulsion for the Victoria class submarines, or their replacements, warrants investigation. Diesel-electric submarines (SSK), like the Victoria class, are very quiet when submerged and running on batteries, but it is these very batteries that limit their endurance, especially at anything faster than a couple of knots. At a moderate speed most SSKs can last only an hour or two before requiring access to the surface in order to run their diesel engines to recharge their batteries.¹⁴⁸ This would obviously severely hamper their utility in the arctic, especially in any kind of ice conditions.

AIP is a system that allows a submarine to generate electrical power while submerged, alleviating the need to surface or ‘snort’ to recharge their batteries. This greatly increases their range and endurance, from hours to weeks, and would be of great

¹⁴⁷ Ian N. Glenn, “ING Robotic Aviation” (lecture, Canadian Forces College, Toronto, ON, March 28, 2013), with permission.

¹⁴⁸ Doug Thomas, “Submarine Developments: Air Independent Propulsion,” *Canadian Naval Review* Vol 3 no. 4 (Winter: 2008): 35.

advantage when operating in Canada's North, both in passing under ice and remaining covert for long periods of time. Numerous navies in the world possess AIP systems and Canada had been interested in them as far back as the early 1980s but chose not to pursue it as a mid-life refit option on the Victoria class.¹⁴⁹

As a technology and capability AIP, as a minimum, should be acquired on any replacement considered for the Victoria class. At this point it may be too much to consider for the Victoria class, as there is other important equipment they would also need to be truly ice capable, including updated and improved sonar that would be necessary to navigate under the ice cap.

Overall it must be remembered that sovereignty and security are the primary goals for the Arctic. It is a large part of Canada that is only sparsely populated, but with global warming and greater access to the North, it is becoming ever more important as its abundance of natural resources become more accessible. This, in addition to the advantages for maritime traffic that the retreating ice will reveal, all serves to indicate its importance.

Looking at how to focus a Canadian response, it is clear that a whole-of-government approach will lead to the greatest success. Different departments and agencies have certain strengths and expertise, and trying to redevelop these in different departments or agencies would be a waste of resources. Play to our strengths and work on our weaknesses is the way forward, and to not become distracted by other suggestions.

¹⁴⁹ Dalhousie University, Centre for Foreign Policy Studies, "Backgrounder: Victoria Class Submarines Northern Operations and Air Independent Propulsion," last accessed 23 April 2013, http://naval.review.cfps.dal.ca/pdf/AIP_Backgrounder.pdf.

Doing it this way will help to focus already tight resources on the capabilities that must be kept on track and those that remain to be developed.

Without projects like improved space-based surveillance and monitoring, an Arctic fusion centre like an MSOC, UAS for Arctic employment, or further development of ship and submarine capabilities for the North will cause Canada to end up in a game of catch up that may never be won.

CONCLUSION

As an Arctic nation Canada is not immune to the consequences of the transformation taking place in the Arctic. Various actors come to the Arctic as its increasing accessibility encourages both exploitation and development of this important region. Control of the Arctic will yield significant benefit to the country wielding this control. As challenges to Canada's command of its Arctic region have been made in the past, it is not inconceivable that disputes to Canada's control of its Arctic will be made in the future.

- Rob Huebert, "Canadian Arctic Sovereignty and Security in a Transforming Circumpolar World"

Canada has a long history with the Arctic. After North America was settled by Europeans, exploitation of the natural resources commenced soon after. Explorers also began searching for an alternate route to the Orient. With Roald Amundsen's successful transit of the Northwest Passage at the turn of the 20th century¹⁵⁰ interest in the region expanded from the exploitation of natural resources to concerns about Canadian sovereignty over the Northwest Passage.

Throughout the 20th century interest waxed and waned but was never really an issue due to the Arctic's general inaccessibility. The only real concern was during the Cold War with issues over the defence of North America and the possibility of a Soviet

¹⁵⁰ Ken S. Coates *et al.*, *Arctic Front...*39.

attack coming across the North Pole. The Canadian Arctic was more of a notion, part of Canadian culture, but in a more remote sense, interpreted through the stories of Farley Mowat and other authors.¹⁵¹ There was no concrete threat to Canada's sovereignty in the Arctic.

Even today, much of the concern about Arctic sovereignty is seen as political rhetoric. While there are clear signs that Global Warming is accelerating, it is an inexact science, and there is no definitive answer on when there will be a 'useful' ice-free season.¹⁵² Having stated this, Global Warming is a generally accepted reality and each day, year and decade brings us more access to the Arctic.

And this increased access means increased interest. The natural resources present span the gamut from untapped fishing grounds, undeveloped hydrocarbon deposits, through diamonds and other mineral resources. Combined with other sovereignty concerns about disputed borders and the status of the Northwest Passage have led to a heightened awareness and sensitivity regarding Northern issues. The future appears to be bringing greater access, and therefore Canada must be vigilant to the fact that its Arctic sovereignty may be challenged, especially in light of the resources and wealth that are at stake.

In addition to the interest in natural resources that Canada needs to be ready to demonstrate sovereignty over, the Arctic will increasingly be a security concern. As travel in the region becomes easier it could become an alternate conduit into North

¹⁵¹ The Canadian Encyclopedia, "Farley Mowat," last accessed 24 April, <http://www.thecanadianencyclopedia.com/articles/farley-mowat>.

¹⁵² Peter Wadhams, "Arctic Ice Cover, Ice Thickness and Tipping Points,"...31.

America for terrorists and smugglers. There have been numerous incidents in recent years that warrant the attention of the government,¹⁵³ and clearly indicate that sovereignty and security need to be developed in order to safeguard Canada's Arctic.

Currently the government is engaged in several projects to ensure Canadian sovereignty in the North. The RADARSAT series of satellites and space-based AIS are contributing to domain awareness while the Northern Watch Technology Demonstration Project has researched both surface and sub-surface detection and tracking systems. Major projects announced by the Conservatives are being progressed like the Nannasivik port facility and the CF ATC.

However, these CF projects have been scaled back and others, like AOPS, while still active, are under scrutiny, with critics suspecting further cuts may be to come.¹⁵⁴ Add to this long delays in moving forward on acquisitions on equipment like the fixed wing SAR replacement aircraft and the government is expressing more commitment than they are demonstrating.

Looking towards the future the government not only needs to maintain its commitment to current projects, but ensure it remains 'ahead of the curve' if they wish to guarantee the security and sovereignty of Canada's Arctic. If the Arctic ice continues to retreat at an increasing rate the timeline for procuring the necessary tools, like UAS and space-based assets, along with traditional vehicles such as new ships and aircraft, will become too tight. Development time is crucial to ensure to right choices are made and fiscal goals are met.

¹⁵³ Canada, "Sovereignty and Security in Canada's Arctic: Interim Report," 28-29.

¹⁵⁴ David Pugliese, "Planned Arctic Patrol Ships Not Up to the Job: Report."

Canada is on the cusp of either being well positioned to control its Arctic interests and maintain its sovereignty and security, or slip behind and spend years trying to recover. The minimum amount of commitments is being met and there is no room to allow projects to slide. The government must keep AOPS on track, commit to replacement SAR aircraft, and continue development of space-based surveillance and monitoring, while planning ahead for replacement technologies such as UAS.

Global Warming and global pressure are going to drive the world northward, in the search for natural resources, economic gain and alternate trade routes. Canada must be committed now to ensure it is in a position to control its Northern region when the rest of the world arrives.

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