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STRONG SECURE ENGAGED: HOW UNDER-ANTICIPATING INFRASTRUCTURE REQUIREMENTS LIMITS CANADA'S ABILITY TO ADAPT AND ACT IN THE ARCTIC

Maj John Hallett

JCSP 44

Exercise *Solo Flight*

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CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 44 – PCEMI 44
2017 – 2018

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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Word Count: 5097

Compte de mots: 5097

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Eight states have territory north of 60 degrees latitude in the Arctic: Canada, Kingdom of Denmark (for Greenland and Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States of America.[1] In recent decades, the Arctic has become a region of growing geostrategic importance with the international community due to global warming opening accessibility to natural resource reserves and maritime transportation routes.[2] To help coordinate international efforts of Arctic stakeholders and tie into international bodies such as the United Nations, the Arctic Council was established in 1996 with the Ottawa Declaration.[3] Some universal issues addressed by the Council are the impacts of climate change, undefined continental shelf boundaries, militarization and subsequent national security concerns.[4] Although there is ongoing debate if these geopolitical dynamics constitute a competitive 'Arctic race' such as the Russian flag placement at the North Pole in August 2007, or a mutually beneficial 'polar saga', one of the common threads throughout many of the conversations is Arctic infrastructure.[5]

Historically an exceptionally adverse environment to access, global warming is making the Arctic more accessible. With this accessibility comes more attention internationally as well

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[1] Government of Canada, *Canada's Arctic Policy Framework: Discussion guide,* last accessed 13 April 2018, https://www.aadnc-aandc.gc.ca/eng/1503687877293/1503687975269, 19.

[2] Department of National Defence. *Russia's Arctic Interests: Implications for Canada Defence, Security and Foreign Policy* (Toronto:DND Canada, 2018), 2.

[3] Government of Canada, *Canada's Arctic Policy Framework: Discussion guide,* last accessed 13 April 2018, https://www.aadnc-aandc.gc.ca/eng/1503687877293/1503687975269 20

[4] *Ibid.*

[5] Department of National Defence. *Russia's Arctic Interests: Implications for Canada Defence, Security and Foreign Policy* (Toronto:DND Canada, 2018), 2.

as at home in Canada. With approximately 40 percent of its territory north of 60 degrees latitude, Canada is only second to Russia as the largest Arctic state.[6] The growing international attention and the increased annual activity trends reported by Transport Canada have amplified the requirement for the Canadian Armed Forces (CAF) to be able to project a presence in the Arctic.[7] This presence includes surveillance and monitoring, increased ability to conduct operations in the region and a rising demand to provide emergency response natural or man-made disasters.[8] To address the increased requirement to operate in the Canadian Arctic, the Government of Canada has outlined specific initiatives for the CAF in the new defence policy: *Strong, Secure, Engaged (SSE).*

Published in 2017, SSE details a new vision for the CAF and a framework for how the new vision will be implemented. The framework 'Anticipate, Adapt and Act' outlines 111 explicit initiatives to address current and future defence and security challenges.[9] Six of the 111 initiatives speak to the CAF's ability to operate in response to an anticipated rise in commercial interest to extract natural resources, research and tourism in Canada's Northern territory.[10] As infrastructure is required to support these demands, backing the anticipated need is a $4.9 billion infrastructure budget over the next 20 years.[11]

Although SSE outlines criteria and assigns resources, the historic gap between Canada's declared defence policy objectives and the resources allocated to support them has been a

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[6] Canadian Army Land Warfare Centre, *Northern Approaches: Army Arctic Concept 2021*. Kingston: Canadian Army Publishing, 2013, 10.

[7] Government of Canada, "Transport Canada: Transportation in Canada 2016," last accessed 18 April 2018, https://www.tc.gc.ca/eng/policy/transportation-canada-2016.html

[8] National Defence, *Department of National Defence and the Canadian Armed Forces 2017-18 Departmental Plan.* Ottawa: DND Canada, 2017, 15.

[9] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 6.

[10] *Ibid.,* 51.

[11] *Ibid.,* 103.

reoccurring problem and subject of ongoing debate since the early 1980s.[12] This paper argues that SSE is under-anticipating Arctic infrastructure resources required for the CAF to fulfill Arctic SSE initiatives. Focusing specifically on Arctic infrastructure required to support CAF operations and the framework of 'Anticipate, Adapt and Act,' this argument will be developed in three parts. First by reviewing CAF and civilian requirements in the Arctic, it will be demonstrated that SSE did correctly 'anticipate' a need for more Arctic infrastructure, however further analysis will question if the magnitude was enough. The second portion of the paper will analyze Russia's interest in the Arctic and their subsequent infrastructure actions as a globally recognized leader in Arctic operations.[13] Comparing Canada to Russia, it will be argued that SSE is under-anticipating the need for Arctic infrastructure which will in turn threaten the CAF's ability to 'adapt'. Finally, a review of SSE infrastructure funding and the potential political nature of infrastructure projects suggests that under-anticipating and under-resourcing infrastructure will threaten the CAF's ability to 'adapt' and 'act' in the Arctic.

Infrastructure is the backbone that supports operations, especially in remote areas such as the Arctic.[14] The fundamental role that infrastructure plays supporting CAF operations cannot be understated. From power generation, roads, airfields and ports to basic infrastructure to support life, infrastructure challenges repeatedly surface in many government policies regarding the Arctic. Although there are many categories and definitions of infrastructure, this analysis will be limited to ports and airfields as they are crucial to support CAF aspirations to enhance mobility,

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[12] Robert .M. Hartfield, "Planning without guidance: Canadian Defence policy and planning, 1993-2004." *Canadian Public Administration* 53 (2010), 330.

[13] Arctic Knowledge Hub, "Russian Federation Policy for Arctic to 2020," last accessed 16 April 2018, http://www.arctis-search.com/Russian+Federation+Policy+for+the+Arctic+to+2020

[14] International Facilities Management Association, *Operations and Maintenance.* (London: IFMA, 2014), 3; Canadian Joint Operations Command, "CJOC PLAN FOR THE NORTH," last accessed 16 April 2018, http://www.forces.gc.ca/en/about-org-structure/canadian-joint-operations-command.page; Indigenous and Northern Affairs Canada, "A new Shared Arctic Leadership Model." Last accessed 16 April 2018, https://www.aadncaandc.gc.ca/eng/1492708558500/1492709024236

reach or footprint in the Arctic.[15] Ports and airfields also offer a common denominator to compare Canada to Russia's Arctic needs and actions. Generally speaking, if SSE 'anticipates' ports and airfield requirements correctly, the CAF will be well positioned to 'adapt' and 'act' in the Canadian Arctic.

NEEDS ASSESSMENT OF CANADIAN ARCTIC INFRASTRUCTURE

The needs assessment for Canadian Arctic infrastructure will begin with a brief overview of the Government's stance on the Arctic and the historic involvement of the CAF. This will be followed by a review of operational level documents that will explore the military threat and CAF requirements to operate in the region. The needs assessment will conclude with an overview of the Northern community infrastructure requirements in order to provide several perspectives on the regional infrastructure requirements.

For years the Canadian Government has acknowledged the importance of the Canadian Arctic. In 2008 Prime Minister Stephen Harper noted "the geopolitical importance of the North and Canada's interest in it have never been greater" and his government developed supporting policies such as the *Canada First Defence Strategy,* the preceding defence policy to SSE.[16] Also published by the Harper Government in 2009 was *Canada's Northern Strategy* which promised "… more boots on the Arctic tundra, more ships in the water, and a better eye in the sky."[17] The CAF playing a role in a Whole of Government approach in the Canadian Arctic is not a new concept; typical missions include humanitarian assistance, disaster relief, search and rescue, and

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[15] International Facilities Management Association, *Operations and Maintenance.* (London: IFMA, 2014), 3.

[16] Canadian Army Land Warfare Centre, *Northern Approaches: Army Arctic Concept 2021*. Kingston: Canadian Army Publishing, 2013, 10.

[17] Government of Canada, "Canada's Northern Strategy: Our North, Our Heritage, Our Future." Last accessed 20 April 2018, http://www.northernstrategy.gc.ca/cns/cns-eng.asp

response to major air or maritime disasters.[18] These missions remain extant, and are now complemented by a new overarching SSE to enhance mobility, reach and footprint in Canada's North to address security threats and to defend our continent.[19]

With all the increased mobility, reach and footprint initiatives, SSE only contains one Arctic specific infrastructure project: the ongoing work to complete the Nanisivik Naval Facility.[20] Instead, SSE focuses on expanding equipment and extant organizations like the Arctic and Offshore Patrol Ship (AOPS) project and Canadian Rangers. The AOPS project, part of the National Shipbuilding Strategy, involves the delivery of five to six ice-capable ships to the Royal Canadian Navy.[21] These ships will provide an awareness of activities in Canadian waters while also increasing abilities of the CAF to operate in the North.[22] Irving Shipbuilding Inc. is currently scheduled to deliver the first vessel in 2018, with all vessels on schedule for 2022.[23] SSE also outlines a plan to increase the Canadian Rangers, part of a CAF reserve unit who work in remote regions by providing lightly-equipped, self-sufficient mobile forces in support of national security.[24] By enhancing and expanding the numbers, training and effectiveness of the Canadian Rangers, their improved capabilities will help increase the CAF's Arctic presence.[25]

Although the AOPS procurement and Canadian Rangers initiatives will improve the ability to operate in the Arctic, only listing one infrastructure project, the Nanisivik Naval

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[18] Canadian Army Land Warfare Centre, *Northern Approaches: Army Arctic Concept 2021*. Kingston: Canadian Army Publishing, 2013, 24.

[19] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 7.

[20] *Ibid.,* 79.

[21] *Ibid.,* 36.

[22] *Ibid.,* 35.

[23] Government of Canada, "Arctic and Offshore Patrol Ships." Last accessed16 April 2018, http://www.forces.gc.ca/en/business-equipment/arctic-offshore-patrol-ships.page

[24] Canadian Army, "Canadian Rangers" Last accessed 14 April, 2010, http://www.army-armee.forces.gc.ca/en/canadian-rangers/index.page

[25] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 80.

Facility, initially appears small compared to increased mobility, reach and footprint initiatives.[26] Considering the framework 'to anticipate', will five to six ships, more Canadian Rangers and the Nanisivik Naval Factility allow the CAF to 'adapt' and 'act' to the growing interest in the Arctic? Reviewing operational level CAF documents will help ascertain if SSE is correctly anticipating the requirements to operate in the Arctic or if it lacks focus on infrastructure.

Canadian Joint Operations Command (CJOC) is the operational command level responsible for the CAF northern operations.[27] Their last operational guidance for Arctic operations, *Plan for the North,* pre-dates SSE by three years, however it was developed to coalesce multiple sources of strategic and operational guidance. In addition to providing historic infrastructure challenges that could be addressed by SSE, it remains the overarching guidance for CAF operations in the North.[28] In response to SSE, CJOC developed an *Arctic Campaign Plan* to supplement extant Arctic initiatives.[29] Reviewing these documents outlines the assessed threat to the Canadian Arctic and it 'anticipates' an infrastructure requirement for the CAF to 'adapt' and 'act' in the Arctic.

Lack of infrastructure in the Arctic has traditionally been a security wall; Lester Pearson coined the Government's defence posture as a "scorched ice policy."[30] Back in 2009, the Chief of Defence Staff General Natynczyk was asked what the CAF would do if someone invaded the Canadian Arctic; he responded "first task would be to rescue them."[31] CJOC continues this line

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[26] *Ibid.,* 7.

[27] Canadian Joint Operations Command, "CJOC PLAN FOR THE NORTH," last accessed 16 April 2018, http://www.forces.gc.ca/en/about-org-structure/canadian-joint-operations-command.page

[28] *Ibid.,* 1.

[29] Canadian Joint Operations Command, "ARCTIC CAMPAIGN PLAN-OPERATIONAL DESIGN ENDORSEMENT," 3000-1(J5 RDIMIS# 441648) Canadian Armed Forces, Fall 2017, 2.

[30] A, Lajeunesse, and P. Whitney Lackenbauer, "The Canadian Armed Forces in the Arctic: Building Capabilities and Connections." *Journal of Military and Strategic Studies, 16*(4), (2016): 43. http://jmss.org/jmss/index.php/jmss/article/view/615

[31] *Ibid.*

of thought with an assessment of no foreseeable conventional military threat to Canada's North.[32] The debate whether this statement underestimates potential threats, most notably Russia with their substantial military investment in their Arctic, is outside the scope of this paper; however a low threat does not negate the requirement for the CAF to operate in the Arctic. CAF is the lead for search and rescue in the North and CJOC identifies the requirement to deter against emerging threats by maintaining a presence and having the ability to respond to a northern threat.[33]

CJOC does not explicitly identify a requirement for more infrastructure, however it does state "limited infrastructure is perhaps the most significant impediment to operating in the North."[34] The ability to rapidly deploy and sustain a force of any size into the small, geographically separated communities is exceptionally challenging as a logistical chain cannot be established without supporting infrastructure such as ports and airfields.[35] To address this shortfall, one of CJOC's lines of operation is infrastructure and capability development with two main points: the Nanisivik Naval Facility and the establishment of Northern Operation Hubs.[36]

Referenced in both CJOC and SSE, the Nanisivik Naval Facility is on the northern portion of Baffin Island.[37] Designed to include refueling services, a base to conduct moderate repairs and upgrades, temporary storage and a helicopter landing area; it is an excellent complementary piece of infrastructure to support the aforementioned APODs procurement

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[32] Canadian Joint Operations Command, "CJOC PLAN FOR THE NORTH," last accessed 16 April 2018, http://www.forces.gc.ca/en/about-org-structure/canadian-joint-operations-command.page

[33] *Ibid.,* 8.

[34] *Ibid.,* 10.

[35] *Ibid.,* 38.

[36] *Ibid.,* 39.

[37] *Ibid.,* 7.

project.[38] Unfortunately, due to soaring cost and project management issues, the project has been significantly reduced in scope to an unmanned fuel depot.[39] Although SSE commits to finishing the de-scoped project, a minimalistic approach to basic supporting infrastructure is incongruent with the initiative to enhance the ability to operate in the Arctic.[40]

Following CJOCs *Plan for the North*, in order to deliver strategic effect anywhere in the North at any time within 24 hours, a systematic establishment of supporting infrastructure in the form of Northern Operation Hubs is required.[41] The concept of these hubs is to enable a rapid, sustained projection for CAF operations. They can range in size from large logistical hubs that can support strategic airlift, down to forward operating bases that support the employment and sustainment of forces in selected areas.[42] Northern Operation Hubs are an excellent concept that aligns with SSE initiatives, however neither CJOC nor SSE allocate resources to establish them. Although SSE allocates $4.9 billion to infrastructure, not specifically targeting Arctic infrastructure beyond the de-scoped Nanisivik project is incongruent with Arctic initiatives.[43] How can the CAF expand operations in the Arctic and remain able to 'Anticipate, Adapt and Act' without a specific infrastructure plan to support the projection and sustainment of forces?

For example, SSE sets specific goals to expand capabilities in the cyber domain;[44] this initiative is further supported by another specific milestone of creating cyber operators.[45] SSE

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[38] A, Lajeunesse, and P. Whitney Lackenbauer, "The Canadian Armed Forces in the Arctic: Building Capabilities and Connections." *Journal of Military and Strategic Studies, 16*(4), (2016): 41. http://jmss.org/jmss/index.php/jmss/article/view/615

[39] *Ibid.*

[40] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 80.

[41] Canadian Joint Operations Command, "CJOC PLAN FOR THE NORTH," last accessed 16 April 2018, http://www.forces.gc.ca/en/about-org-structure/canadian-joint-operations-command.page

[42] *Ibid.,* A2-4/19.

[43] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 103.

[44] *Ibid.,* 15.

[45] *Ibid.,* 69.

sets similar expansion of capabilities goals in the Arctic without further supporting infrastructure milestones. Currently the CP-140 Aurora search and rescue aircraft is limited to paved runways in Churchill, Whitehorse, Inuvik, Yellowknife and Iqaluit, a very spatially separated layout considering the vast size of the Canadian Arctic.[46] Although there are many gravel airstrips that can support other search and rescue aircraft like the Buffalo, the austerity of many of these airstrips can limit their usability with limited fuel and de-icing facilities to support sustained year round operations.[47] Setting specific milestones to correct these current deficiencies, similar to the cyber milestones, would set the conditions for the CAF to project and sustain Arctic operations.

Based on the low threat to the Canadian Arctic, some argue expanding CAF capabilities in the region risks being perceived as an aggressor in militarizing the Arctic.[48] This stance would overlook the existing infrastructure gap with Northern communities as highlighted in the minister of Indigenous Affairs Mary Simon's recently released *Shared Arctic Leadership Model*. No matter who she spoke with regarding Arctic concerns, closing the infrastructure gap was often at, or close to, the top of the list to improve socio-economic conditions.[49] Similar concerns were raised in a recent Auditor General's *Civil Aviation Infrastructure in the North* report that studied 117 communities where airfields where the only reliable year round form of transportation.[50] It found that poor remote airport infrastructure hampers medevacs, delivery of

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[46] Royal Canadian Air Force, "CP-140 Aurora," last accessed 02 May 2018, http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cp-140.page

[47] *Ibid.*

[48] MacDonald Laurier Institute, "To Compete with Russia in the Arctic, Canada will need to Balance Hard and Soft Power," last accessed 16 April 2018, https://www.macdonaldlaurier.ca/to-compete-with-russia-in-the-arctic-canada-will-need-to-balance-soft-with-hard-power-aurel-braun-and-stephen-blank-for-the-arctic-deeply/

[49] Indigenous and Northern Affairs Canada, "A new Shared Arctic Leadership Model." Last accessed 16 April 2018, https://www.aadncaandc.gc.ca/eng/1492708558500/1492709024236

[50] Canada, Office of the Auditor General, "2017 Spring Reports of the Auditor General of Canada to the Parliament of CanadaReport 6—Civil Aviation Infrastructure in the North—Transport Canada." National Defence, Spring 2017, 1.

fresh foods and medicines, and that some of the existing airfields were too short to handle modern aircraft.[51] It concluded with chastising Transport Canada for being remiss in ameliorating the known airfield shortfalls over the last few years.[52]

To make matters worse, roads, runways and ports are deteriorating with melting permafrost so not only is more infrastructure required, extant infrastructure is deteriorating at an increasing rate.[53] Alaskan infrastructure studies indicate changing permafrost causes an estimated 10-20 percent increase in maintenance costs over routine wear and tear.[54] With these increased costs to an already challenged and insufficient infrastructure portfolio, current federal programs underestimate the unique challenges of Arctic infrastructure.[55]

With the requirements for the CAF to enhance mobility, reach and footprint along with better ports and runways required to support Northern communities, it can be concluded that there is an undeniable need for more infrastructure in the Canadian Arctic. Although SSE does correctly 'anticipate' a need for more Arctic infrastructure, with only one specific project, the Nanisivik Naval Facility, there appears to be a gap between stated SSE objectives and resources to support these objectives. To further investigate this potential gap to determine if SSE anticipated enough infrastructure to set the conditions to 'adapt' and 'act' in the Canadian Arctic, Canada will be compared to Russia's Arctic needs and subsequent actions in the following section.

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[51] *Ibid.,* 2.

[52] *Ibid.,* 3.

[53] Indigenous and Northern Affairs Canada, "A new Shared Arctic Leadership Model." Last accessed 16 April 2018, https://www.aadncaandc.gc.ca/eng/1492708558500/1492709024236

[54] Larsen P.H., Goldsmith S., Smith O., Wilson M.L., Strzepek K., Chinowsky P., Saylor B, "Estimating future costs for Alaska public infrastructure at risk from climate change." *Global Environmental Change*, 18 (3) (2008): 442.

[55] Canada, Office of the Auditor General, "2017 Spring Reports of the Auditor General of Canada to the Parliament of CanadaReport 6—Civil Aviation Infrastructure in the North—Transport Canada." National Defence, Spring 2017, 1.

RUSSIA ANTICIPATES, ADAPTS AND ACTS WITH INFRASTRUCTURE

To establish a baseline for comparing Canada to Russia, a general overview of what the Russian Arctic means to the nation and their subsequent action plans is required.

Russia is the largest of five littoral states of the Arctic Ocean and according to their 2008 defence strategy they seek to "maintain the role of a leading Arctic power."[56] Similar sentiment was stated in Russia's 2013 National Security Council declaration that the Arctic must become the "basic strategic resource base of Russia."[57] This overt strategy is due to several national interests. First, one fifth of Russia's $1.3 trillion Gross Domestic Product is generated from the Arctic region. [58] This is predominately driven by oil and gas resources which also contribute to some contested continental shelf claims and subsequent natural resource reserves. Second, no other country has a comparable Arctic population to Russia with roughly 9 million people living in a wide network of cities and settlements.[59] Third, Russia has an unmatched and growing military presence in its Arctic as it allows them significant freedom of maneuver into international waters and it allows them to exert control over Arctic resources.[60] From a robust Northern Command structure, a powerful Northern Fleet, the active resurrection of old Cold War military infrastructure and new construction projects, Russia has identified a need and an action

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[56] Arctic Knowledge Hub, "Russian Federation Policy for Arctic to 2020," last accessed 16 April 2018, http://www.arctis-search.com/Russian+Federation+Policy+for+the+Arctic+to+2020

[57] Department of National Defence. *Russia's Arctic Interests: Implications for Canada Defence, Security and Foreign Policy* (Toronto:DND Canada, 2018), 2.

[58] MacDonald Laurier Institute, "To Compete with Russia in the Arctic, Canada will need to Balance Hard and Soft Power," last accessed 16 April 2018, https://www.macdonaldlaurier.ca/to-compete-with-russia-in-the-arctic-canada-will-need-to-balance-soft-with-hard-power-aurel-braun-and-stephen-blank-for-the-arctic-deeply/

[59] *Ibid.*

[60] *Ibid.*

plan to be an Arctic leading nation.[61] In 2015 Russia allocated $4.27 billion over five years to Arctic programs.[62]

While Russia has a lot of military capabilities beyond Canada such as nuclear programs, ballistic missiles and air craft carriers, there are still some strong parallels to draw from Russia's stated needs and actions. Although not stated in the same SSE mantra of 'Anticipate, Adapt and Act,' Russia has similar initiatives to enhance Arctic capabilities and have actively built supporting infrastructure with seeming success so they serve as a good baseline comparison to see if Canada is on the right track. The focus of this comparison will be on Russia's actions with their Navy, Air Force and Army, more specifically the airfields and ports to support them as these facilities set the conditions to enhance mobility, reach and footprint.

The Russian plan for the Navy is robust. Through new construction and the re-invigorating of some Cold War ports, Russia is establishing a series of 'dual use' Naval ports across their entire Arctic coast; these can support coast guard services, commercial craft and the Navy's Northern Fleet.[63] Exact numbers are hard to quantify, however the US Naval Institute indicates there are at least 10 possible sites being developed in some capacity.[64] According to Russian Northern Fleet Command, Russia plans to create military infrastructure on virtually all of the archipelagos and islands of the Arctic Ocean to monitor above-water and underwater environments.[65] Russian President Vladimir Putin echoed this by saying "We should strengthen the military infrastructure. Specifically, I'm referring to the creation of a united system of naval

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[61] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 46.

[62] Russia News Agency, "Russia may spend $4.27 billion on Arctic exploration - deputy PM," last accessed 02 May 2018, http://tass.com/economy/789203

[63] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 46.

[64] *Ibid.,* 46.

[65] *Ibid.,* 48.

bases for ships and next-generations submarines in our Arctic."[66] The sheer volume of Russian port infrastructure dwarfs SSE's Nanisivik project. Canada's Arctic coast line is approximately 180,000km long (with over 36,000 islands) compared to Russia's 24,000km.[67] With seven times the Arctic coastline and thousands of islands not connected by road or air to patrol, Russia developing ten Arctic ports compared to Canada developing one suggests that SSE is under-anticipating port requirements to enhance the ability to operate in the Arctic.

The Russian plan for Air Force infrastructure is also robust. The Federal Agency for Special Construction announced in 2016 that they are currently building nine airfields and supporting infrastructure in the Russian Arctic.[68] As of Sept 2017, these projects are at various stages of completion and on track to be completed in the next couple of years.[69] These airfields are in addition to the six airfields that will be reconstructed to support Army operations.[70] Just in case Russia mis-anticipated an airfield location, their Naval aircraft carrier *Admiral Kuznetsov*, is part of the Northern Fleet with "five or six carrier battle groups" on the books for future projects.[71] The debate of whether Russia could field these carrier groups in their current fiscal environment is beyond the scope of this paper, however it is key to note the adaptability one carrier offers with respect to exerting air power in a region.

Although Canada's Arctic land mass of 4 million square kilometers is smaller than Russia's, the spatial challenges of the vast landscape are similar.[72] Based on Russia's approach

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[66] *Ibid.*

[67] Diplomat and International Canada, "The arctic, country by country," last accessed 02 May 2018, http://diplomatonline.com/mag/2012/10/the-arctic-country-by-country/

[68] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 49.

[69] *Ibid.,* 49.

[70] *Ibid.,* 54.

[71] *Ibid.,* 59.

[72] Diplomat and International Canada, "The arctic, country by country," last accessed 02 May 2018, http://diplomatonline.com/mag/2012/10/the-arctic-country-by-country/

of dispersed and numerous airfields to increase operability in the region and the lack of airfield projects in SSE would indicate a gap. Not resourcing a Northern Operation Hub concept in SSE, one that appears to be working for Russia, will likely continue to limit the CAF's ability to project into the Arctic. With Russia executing 16 runway projects and aircraft carrier capabilities and CJOC stating limited infrastructure is an impediment to CAF operations, it is likely that SSE is under-anticipating airfield requirements.

Russia's infrastructure plan for the Army follows the same trajectory as the Navy and Air Force. Direct numbers are difficult to ascertain, however Army infrastructure to bolster or create operational hubs is sprouting up in as many as 60 locations in the Russian Arctic compared to Canada's lone Arctic Training Center.[73] In addition to suggesting that Northern Operation Hubs appear to be a sound strategy to operate in the Arctic, two other points come to light from studying Russia. One is the re-activation of Cold War infrastructure and the other is their 'dual use' strategy.

Although not a hard principle, generally speaking the re-activation of pre-existing infrastructure allows for quicker project completion timelines.[74] Often fewer resources are required to resurrect old infrastructure than to complete similar scope projects from scratch.[75] This creates shorter project timelines that are cheaper and more conducive to the short Arctic construction seasons. Although Canada does not have the same amount of past Cold War sites as Russia, there are still opportunities to re-activate Cold War and old industry sites such as large abandoned mines or the abandoned port of Churchill to start creating Northern Operation Hubs.

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[73] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 46.

[74] Brookings, "The Case for Spending More on Infrastructure Maintenance" last accessed 24 April 2018, https://www.brookings.edu/blog/up-front/2017/01/31/the-case-for-spending-more-on-infrastructure-maintenance/

[75] *Ibid.*

The other interesting point to note is Russia's 'dual use' strategy to help government agencies, local communities and industry; a strategy that helps share the financial burden of infrastructure costs between partners.[76] SSE states a goal to work with partners in the Arctic, however it lacks details and measureable milestones in comparison to other initiatives.[77] To give a different example, SSE set growth objectives for the CAF, more specifically a goal of "increasing the representation of women by 1 percent annually over the next 10 years to reach 25 percent of the overall force."[78] Comparing explicit goals such as this to Arctic initiatives of work with partners lacks measureable milestones and puts the successful completion of the initiative at risk.[79]

Concluding our Russian comparison, clearly the number of infrastructure projects and the collective strategies used to complete them outstrips Canada's Arctic actions. Russia's seeming success in Arctic operations supported by a high volume and variety of infrastructure is an example of the resources required to allow military operations in an Arctic environment. Although Russia has more strategic interest in their Arctic than Canada has in theirs, SSE clearly states an initiative to "enhance the mobility, reach and footprint of the CAF in Canada's North to support operations."[80] From the non-existent to single digit number of SSE infrastructure initiatives compared to Russia's actions, it appears that SSE is under-allocating resources to infrastructure in order to 'adapt' and 'act' in the Arctic. However, it would be premature to

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[76] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 49.

[77] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 113.

[78] *Ibid.,* 23.

[79] *Ibid.,* 113.

[80] *Ibid.,* 80.

make a final conclusion without examining the large, clearly articulated and fully funded infrastructure budget allocations of SSE.[81]

DEPARTMENT OF NATIONAL DEFENCE (DND) INFRASTRUCTURE

Before an analysis of SSE infrastructure budgeting and the Arctic can occur, a quick overview and history of DND infrastructure is required. The Assistant Deputy Minister of Infrastructure and Environment (Adm(IE)) is responsible for maintaining infrastructure for the DND and the CAF.[82] This infrastructure portfolio entails over 20,000 buildings, 5,000 kilometers of roads, and 3,000 kilometers of water works at an estimated value of $26 billion.[83] The maintenance and operational costs of this portfolio consumes about 10 percent of the annual defence budget and has historically suffered cuts in favor of other government budgets.[84]

In 2010, DND stated that budget cuts dating back to the 1990s had resulted in a significant amount of the infrastructure portfolio needing refurbishment or repair.[85] This resulted in an Auditor General's report in the fall of 2012 that identified a number of infrastructure management shortfalls; most notably was the under-allocation of funding to maintain the infrastructure portfolio.[86] An industry standard to spend on maintenance is 1.4 percent of the infrastructure replacement cost annually.[87] In addition to under-allocating maintenance funding to this industry benchmark, the CAF has been plagued with challenges that

[81] *Ibid.,* 6.

[82] National Defence and the Canadian Armed Forces, "Assistant Deputy Minister Infrastructure & Environment," last accessed 2 May 2018, http://www.forces.gc.ca/en/about-org-structure/assistant-deputy-minister-infrastructure-environment.page

[83] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 76.

[84] *Ibid.*

[85] Office of the Auditor General, "Report of the Auditor General of Canada to the House of Commons, Chapter 5 Real Property." National Defence, Fall 2012, 1.

[86] *Ibid.*

[87] *Ibid*., 2.

limited their ability to spend these reduced allocations.[88] This under-spending on infrastructure has created a large maintenance debt that has yet to be repaid.[89] To rectify the shortfalls of the Auditor General report, a new infrastructure management framework under Adm(IE) was created in 2014. Although Adm(IE) is taking active steps to manage the infrastructure portfolio in-line with industry and legislative standards, SSE creates some challenges for Adm(IE).

Over the next 20 years, SSE allocates $4.9 billion to infrastructure in order to maintain the DND's portfolio.[90] Initially this looks like a large sum, however when benchmarked against the industry standard 1.4 percent of the replacement cost annually, DND's $26 billion infrastructure portfolio must get $364 million annually. $4.9 billion equally distributed over 20 years is only $245 million, over $100 million short of the industry standard in the Auditor General's report. These allocations overlook the maintenance debt incurred by years of underfunding and the increased costs of maintaining an aging infrastructure portfolio that is only getting older and more costly to repair.[91] As of 2012, almost half of the buildings were over 50 years old.[92]

If holistic maintenance allocations are over $100 million short annually, there is a very high risk that infrastructure budgets will be completely consumed by more operational and politically sensitive DND projects in the southern portions of Canada. Arguably this infrastructure budget was created in consultation with Deloitte, a global defence costing expert with expertise from allied nation's infrastructure. However, there is no indication that Deloitte has any Arctic experience; this could jeopardize proper funding allotments to Arctic

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[88] *Ibid.*
[89] *Ibid.*
[90] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 103.
[91] *Ibid.,* 102.
[92] Office of the Auditor General, "Report of the Auditor General of Canada to the House of Commons, Chapter 5 Real Property." National Defence, Fall 2012, 2.

infrastructure initiatives.[93] With insufficient funds and competing priorities from the extant infrastructure portfolio, how can the CAF find funds to expand northern operation capabilities?

Financing issues of Arctic initiatives are limiting for many Arctic states as they regularly directly compete with other military spending priorities.[94] One such challenge created by SSE is a $225 million budget that funds a range of 'green' infrastructure projects to reduce DND's carbon footprint by 2020.[95] Although noble, this direction clearly establishes project priorities within Adm(IE), especially with a 2020 deadline. With this explicit direction, which the Arctic lacks, it is reasonable to believe that green infrastructure initiatives will tend to get a disproportional amount of focus in the short term and risk further prolonging any Arctic maintenance and repair projects.

Another challenge of Arctic infrastructure projects are the costs, with most infrastructure project costs in North America doubling since the year 2000.[96] The combination of isolated locations, fuel cost to transport building materials and short building seasons have caused an even higher increase to Arctic construction costs.[97] This fact became abundantly clear with the Nanisivik Naval Facility project. In December 2013, a docking and refueling station was approved by Defence Minister Rob Nicholson at a cost of $258 million.[98] Due to rising construction costs, the project was de-scoped to a seasonal fueling station at a reduced

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[93] Deloitte, "Infrastructure and Capital Projects," last accessed 2 May 2011. https://www2.deloitte.com/global/en/pages/infrastructure-and-capital-projects/topics/infrastructure-and-capital-projects.html

[94] MacDonald Laurier Institute, "To Compete with Russia in the Arctic, Canada will need to Balance Hard and Soft Power," last accessed 16 April 2018, https://www.macdonaldlaurier.ca/to-compete-with-russia-in-the-arctic-canada-will-need-to-balance-soft-with-hard-power-aurel-braun-and-stephen-blank-for-the-arctic-deeply/

[95] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 16.

[96] Elliot, Long "Soaring Infrastructure Costs Threaten Infrastructure Push," last accessed 05 May 2018. http://www.progressivepolicy.org/wp-content/uploads/2017/10/PPI_Construction_2017.pdf

[97] *Ibid.*

[98] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 7.

construction cost of $130 million.[99] Although not a DND project, the proposed $85 million Iqaluit deep water port by the Nunavut Government with an operational timeline of 2021 also highlights the costs of Arctic projects.[100] Comparing the $130 million Nanisivik project and $85 million Iqaluit project, they account for approximately 35 and 25 percent respectively of the annual $364 million SSE infrastructure budget. That is a large percentage of funds to commit to Arctic projects when Adm(IE) must maintain a $26 billion infrastructure portfolio that is underfunded for maintenance, continually aging and in a sub-optimal state after years of maintenance neglect. Focusing on southern infrastructure projects allows limited budgets to go farther and works better in the political environment of DND infrastructure.

Defence related costs often consume large portions of discretional budgets; which exposes military infrastructure projects to political agendas.[101] "Given the cyclical nature of public support for defence expenditures, defence policy will receive, except in emergencies, what funds that are available and not funds white papers and rational strategies and commitments demand."[102] This can cause military allocations to change pending election cycles and platforms, consequently impacting procurement and infrastructure projects. In the case of SSE, reviewing the 20 year planned cash flows, a large majority of the allocated funds are not expended until after the next national election.[103] Another political example is Prime Minister Jean Chretien's decision to cancel the European Helicopter 101 (EH101) contract for the

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[99] *Ibid.*

[100] Editorial, *CBC News,* 3 Oct 2017. http://www.cbc.ca/news/canada/north/iqaluit-port-nirb-screening-review-1.4320269

[101] E. Cohen, "Appendix: The Theory of Civilian Control." In *Supreme Command* (New York: Free Press: 2002), 226.

[102] A. English, "From Combat Stress to Operational Stress: The CF's Mental Health Lessons from the 'Decade of Darkness'." *Canadian Military Journal* 12, no. 4 (2012): 9.

[103] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada, 2017), 102.

Maritime Helicopter in 1993; this is still having lingering effects today.[104] Likewise, the replacement project for the CF-18s is being impacted by political influence due to debates on anticipated needs and associated replacement costs.[105] Although these are procurement examples, the same discourse happens with infrastructure projects.

For example, the Nanisivik Naval Facility was originally estimated at $100 million in 2007.[106] Navigating the project approval processes caused the project estimate to rise to $258 million; this came with commensurate political interest.[107] To help manage the political discourse surrounding cost increases, the project was de-scoped to reduce costs. This type of political discourse on infrastructure projects extends timelines and becomes yet another construction challenge. Political influence can also impact project prioritization that is difficult to quantify. Although there is a project prioritization matrix within Adm(IE), it is reasonable to believe that politically sensitive infrastructure projects in denser voter areas such as Halifax, Trenton or Petewawa will receive more attention and resources over northern infrastructure initiatives.

Arguably SSE should not have to explicitly outline every Arctic infrastructure maintenance or new construction project. However the combination of a $4.9 billion infrastructure budget being underfunded for current requirements, green energy initiatives competing for resources, and the political nature of higher cost Arctic infrastructure projects, there is no room for Arctic initiatives. As such, it is reasonable to believe there will be minimal to no additional infrastructure projects completed in the Canadian Arctic in the near term beyond

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[104] Canadian Military Journal, "The Chretien Legacy," last accessed 5 April 2018, http://www.journal.forces.gc.ca/vo4/no4/comment-eng.asp.

[105] National Defence and the Canadian Armed Forces, "Fighter Jets," last accessed 05 May 2018, http://www.forces.gc.ca/en/business-equipment/fighter-jets.page

[106] Ernie Regehr and M, Jackett, "Circumpolar Military Facilities of the Arctic Five," *The Simons Foundation*. (Sept, 2017): 7.

[107] *Ibid.*

the Nanisivik Naval Facility. As demonstrated by Russia's actions, infrastructure is required to 'adapt' and 'act' in the Arctic. Without more port and airfield projects, SSE aspirations to enhance mobility, reach and footprint of the CAF in the Arctic will remain an aspiration.

CONCLUSION

SSE contains numerous milestones and resources for achieving a wide variety of defence initiatives. Although SSE correctly is anticipating the requirement for more infrastructure to operate in the North, it is under-allocating commensurate resources to increase Arctic infrastructure and subsequently allow the CAF to 'Anticipate, Adapt and Act' in the region. This under-allocation was not only in the amount of infrastructure required, but in the funding to maintain the existing infrastructure portfolio.

Drawing on Russia's strategy, there are a few observations that SSE could leverage to enhance Arctic capabilities. First, dispersed infrastructure in operational hubs appears to be sound strategy to enhance the mobility, reach and footprint. Second, a 'dual use' approach of leveraging Northern community, industry as well as military requirements would share the financial burden of infrastructure costs and would address the multiple concerns raised by CJOC, the minister of Indigenous Affairs and the Auditor General's Northern Report. Third, re-activating old Cold War and industry sites often presents a cheaper and faster way of establishing operational hubs. Canada has legacy sites that could be re-activated in a similar manner to the Russian example in order to support Arctic operations.

The biggest consideration moving forward is the need for creative solutions while leveraging a Whole of Government approach. Although many government documents articulate

Arctic infrastructure requirements, the leadership role remains relatively vacant and could be filled by the CAF through SSE. Although this paper portrayed political involvement in infrastructure in a negative sense, this is predominately because of competing agendas. If infrastructure requirements of numerous stakeholders were integrated and aligned strategically, political involvement could enable projects which would address Northern community infrastructure deficiencies and set the conditions for the CAF to meet the SSE mandate for enhanced mobility, reach and footprint in Canada's North.

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