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TITLE:

Force Package for the Canadian Arctic

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Executive Summary

Title: Force Package for the Canadian Arctic

Author: Major William H. Girard, Canadian Armed Forces, Currently studying at the Marine Corps School of Advanced Warfighting, Virginia, USA.

Thesis: The aim of this paper is to propose a force package that will serve as a credible deterrent to current and possible future threats for the defense of the Canadian north since the current disposition is not up to the coming challenges.

Discussion: Considering the upcoming threats for the Canadian north, the current strategy and capabilities for the Army should be adapted. A proper size force package will include new equipment to allow DND forces along with other agencies to have better maneuverability, efficient C2, and sufficient autonomy. Two options will be considered: a battalion size option using current equipment with mild enhancement, and an optimal option that will be a brigade size force with the requirement for new acquisitions and changes in overall army and other services.

Conclusion: The battalion size option is a good interim solution to current problems but will not be sufficient for the growing threats and the increasing role of the north in Canada's future.

Therefore, a brigade size capability for the Army joint with the Navy, the Air Force as well as other agencies like the Coast Guard and the RCMP, the provincial level of government, and private corporations in case of emergency under the 1st Canadian Division Joint headquarters is the optimal force package. It is an option that Canada can afford in a near future but will require some time to build up and train in the fashion that will make it relevant as a credible deterrent and a proper reaction force for major events in the north.

Introduction and Problem

Many interest groups from around the world, private and governmental, are already operating in Northern Canada, primarily for the exploitation of natural resources, transportation and other activities. Therefore, military presence in this region of the country will likely increase. Isaac Caverhill-Godkewitsch, as part of a study in the *Journal of Military and Strategic Studies Award* in 2011 on Canada's environmental security challenges, reveals how delicate the Arctic environment is, the pressing changing realities that Arctic countries must face, and the importance they will play in the world in the near future: "while the Arctic has been long thought as a distant, separate realm from the rest of the globe, it is highly vulnerable to different forms of environmental change; possibly more so than any other geographical region in the world. The most substantial cause of environmental change in the Arctic is undoubtedly the climate change."¹ The fragile Northern Canadian environment must be protected and defended for environmental and territorial reasons.

New infrastructures necessary for a more enduring presence in the North must consider the vulnerability of its environment, and its possible threats. Technologies that may damage the ecosystem must be kept to a minimum, and the military planners/operators must gain knowledge of the particularities of that complex environment. Even more complex challenges lie ahead for the Canadian Department of National Defence (DND) when Northern operations increase. Cooperation among services, allies, private corporations, and even future enemies is not just an option but also a necessity to ensure long lasting stability. The rising international interest in this area means that Canada must prepare itself. The present-day Canadian Army is ill prepared for an extended role in the Arctic and must develop a sound military strategy now in order to be ready

in times of need. Since the defense of Canada is the primary focus for the DND,² innovative ways to defend the country must include the Northern territory.

Canada can continue with its current practice of operating in the North with limited means and resources, but the pressure of outside interest in the vast northern territory will require the need for a greater capacity to intervene with force. The interest of commercial actors as well as foreign governments have their eyes set on the potential wealth of natural resources that the very large area of the Arctic has to offer. It is crucial for Canada to build a credible force that can intervene to respond to the multiple missions inherent to such a large territory. Developing a conceptual, well-adapted, and versatile force to this very particular environment is the scope of this work. Thinking strategically to develop a proper force package for Canada in order to meet the missions, and tasks of tomorrow should begin now to be in the forefront of the defense of the Arctic tomorrow. Today's shortfalls can become tomorrow's strengths. According a famous military historian, strategist, and former British General Fuller, "an obsolete army is the most expensive organization a nation can maintain"³ when talking about the purpose an army needs to fulfill, and the need for innovation.

The method for this paper consists of evaluating the threats, probable missions, and tasks that will be required for the Canadian government in the future. Then, considering the national strategy of defense and sovereignty of the territory, two options will be explored. The first option is based on the existing capabilities and will aim at finding the best force package the Canadian military services, along with other agencies, and civilian actors can put together to fulfill its role. This first option may show shortfalls in capabilities, by addressing these shortfalls, the DND can help develop a more relevant force packages that may require new structure, command and control (C2), and equipment to respond to future threats and missions. A second option will be developed based on a better understanding of the environment, potential adversaries, and option

one's shortfalls. The second option is an optimal force package that could enable the Canadian DND to take the lead on the defense of the Arctic territory in all types of terrain and likely missions but also respond in case of exceptional events. This optimal force package will suggest more formal links and training with other Canadian agencies, new equipment to better communicate, and project the force. The force package will try to introduce novel ways of thinking about the defensive approach centered on the Army, but involving many actors with interests and capabilities in the region.

After a review of the literature on the subject, the following will be looked at with more scrutiny: force projection, inter-service C2, autonomy of action of the force once deployed, rapid reaction to an event, credible deterrent to outside threat, and sustainment of deployed elements. A major challenge foreseen for any type of force package is its versatility in considering the vast array of tasks and missions. Therefore, the study focuses on the defensive mission in order to narrow the scope of the possible force. Compatibility of system and doctrine with important Allies like the United States and North American Treaty Organization (NATO) should also be considered in the development of a force that will likely work in conjunction with allied countries.

A proper size force package will include new equipment to allow DND forces along with other agencies to have better maneuverability, efficient C2, and sufficient autonomy. The aim is to build a force that will serve as a credible deterrent to current and possible future threats, and be able to fulfill most missions.

Tasks, Threats and Major Considerations

The types of tasks and missions right now are extensive, and the Canadian Forces do not have the required resources to meet their responsibilities in the Arctic. In order to fulfill its missions in the Arctic, Canada needs to "deliver a force that would be able to remain completely

self-sufficient for an extended period of time, appropriate to the unique circumstances of the different regions of the Arctic."⁴

When Canada's Chief of Defence Staff General Walter Natynczyk declared, "if someone were to invade the Canadian Arctic, my first task would be to rescue them"⁵ in 2010, Russian expansionist behavior was not as obvious as it is in 2015. Many NATO countries have decreased their military in the recent years under economic pressures and the "post-Afghanistan"; the consequence is a reduction in capabilities to intervene. On the other hand, Russia has been active when it comes to activities in the Arctic. Artur Chilingarov, member of the Duma and special representative to President Vladimir Putin for the Arctic, stated that NATO's capabilities in the Arctic region:

lacked the technical capability to enhance its military presence in the Arctic. Only our country has unique technical equipment capable of solving the problems of extreme Arctic conditions, and nothing can be compared with our fleet of icebreakers in terms of mobility and effectiveness.⁶

The two different views on the role of each of these two major arctic nations reflects the importance of the North between Russia and Canada and highlights the head start that Russia has in case of a conflict in the high north.

Canada concentrates its Arctic effort on search and rescue (SAR) operations for a very good reason since "each year, the Joint Rescue Coordination Center (JRCC) handles an average of 8,000 air and marine SAR cases, and Canadian Forces SAR aircraft conduct well over 1,000 missions per year. In 2008, for instance, Canadian Joint Rescue Coordination Centers (JRCC) handled 9,097 SAR cases across Canada."⁷ The 2011 First Air crash near Resolute Bay airport occurred at the same time and location of a yearly massive military exercise named OP NANOOK, this extraordinary coincidence gave the false sense of efficiency in mass casualty

SAR. The event revealed "despite the success of the First Air crash response in terms of timing and deployment of SAR personnel, this tragic accident underscored the need for improved SAR response in the North"⁸. Canadian SAR is in relatively good health and is a good model of adaptation to the environment, joint operations, and respects Canadian non-threatening use of resources.

When it comes to actual defense of the territory, the Canadian strategy is defensive in nature and does not seek expansion through the use of force. Although the threat of foreign forces to invade the Arctic is not imminent, the Arctic encompasses 40% of Canada's landmass, and must be considered as a potential battlefield. Any defensive force can also be used as an offensive tool by a government. If we consider that Russia's:

official state policy in the Arctic will be achieved by performing the following basic tasks: ... to create general purpose military formations drawn from the Armed Forces of the Russian Federation, [as well as] other troops and military formations [most importantly, border units] in the Arctic zone of the Russian Federation, capable of ensuring security under various military and political circumstances... this Arctic military group will be drawn from the armed forces of the Russian Federation as well as the power ministries [e.g., Federal Security Service [FSB] troops, border troops, and internal troops].⁹

That force has already taken form, and Russia claims that it has "a number of highly professional military units in the Leningrad, Siberian and Far Eastern military districts, which are specifically trained for combat in the Arctic regions."¹⁰ As far as future capabilities, Russia already has eighteen operational icebreakers and "plans to build a new nuclear-powered icebreakers starting in 2015."¹¹ Multiple events between the Russian military and NATO were recorded since Russia invaded Crimea in February 2014. The Defense News accounts for at least 15 dangerous incidents and 45 "near misses" ranging from "violation of national airspace, emergency scrambles, narrowly avoided mid-air collisions, close encounters at sea, simulated attack runs and other dangerous actions happening on regular basis".¹² Without starting a new

Cold War or arms race, Canada must consider the potential threat in its force development for the High North.

To counter the threat and to fulfill other roles in the Arctic, the Canadian Coast Guard, and to a certain extent the Navy are already combating potential terrorist operations and unlawful navigation water defense in close coordination with the United States (U.S.).¹³ The cooperation between the two countries in both air and navigation defense is not without difficulties, but it works well.

Efforts by governments to know more about the vast and hardly accessible High North help to prevent conflict and build an effective cooperation mechanism. For instance:

[The] US and Canada have joined efforts in mapping missions to determine the boundary of each country's Arctic continental shelves... mapping is important for resolving any conflicting claims by other Arctic nations...Canada and Russia occupy 75 percent of the Arctic Ocean's coastline. They each claim that the channels between their Arctic islands and coasts are their [internal waters]... the position of the United States is that the Northern Sea Route and the Northwest Passage are international straits.¹⁴

Other allied countries like Denmark also claim the North Pole to be theirs after surveying and mapping operations.¹⁵ When observing the overall defense of the waterways, the "subsurface threat is addressed through limited subsurface capability and detection and through sharing defense with United States as an ally".¹⁶

Potential environmental disaster responses are also need to be considered with the increase transportation and infrastructures in the Arctic. The project of the construction of the "Canadian Mackenzie Valley pipeline"¹⁷ is just one example of a possible environmental disaster due to new infrastructure. An oil spill in the fragile northern environment needs first responders to be rapidly deployed. The Canadian Army can deploy on site fast but is ill equipped to respond to such an event.

Canada's DND probable missions can be listed as such:¹⁸ inter-agencies C2, support to ground based SAR, interception, humanitarian assistance, disaster relief, major air disaster, and generic support for a wide range of Government of Canada missions. In addition to the types of required missions, many restrictive factors must be considered when developing a force package operating in the north. Because of global warming, the Arctic is slowly transforming into what is called the Sub-Arctic, therefore our knowledge of the Sub-Arctic is helpful to understand future operations in the Arctic. The *Operations in Cold Weather Canadian* doctrine manual describes, "successful movement (in the Sub-Arctic) is accomplished as a result of careful, detailed, comprehensive route recce."¹⁹ The change of terrain between the four seasons, and the vast varying terrain requires various types of transportation modes and considerations. The manual also stresses that "medium helicopters will be a huge asset for moving guns and ammunition around the battle space...helicopters in cold weather operations are extremely vulnerable...prime movers should be tracked if at all possible."²⁰ In the summer, terrain limitations come in the form of "an abundance of open lakes, streams and swamps which impede movement."²¹ Although the permafrost and the thick ice in the Arctic allow better movements, the already witnessed melting of that permafrost will render transportation hazardous in the future. Numerous mountainous areas are to be considered as well and come with their own set of considerations and specialized equipment requirements. Operations in extended period of darkness and the effect of the extremely low temperature bring their own set of obstacles that will not be discussed in detail but must be kept in mind as major limiting factors.

Option One Today

Building on what the Canadian Forces have today and adding affordable acquisitions to modernize is the traditional DND approach. It is also the approach used to develop the first

proposed model force package. DND already operates with the Arctic Response Company Group, which is organized and equipped with what is available nationally to them at the moment the exercise arises, depending on the required tasks. This approach is the best current alternative considering the limited amount of resources and the diversity of the missions that the North has to offer.

The basic fighting force is the infantry company-size. The company-size unit is a practical compromise in order to train and establish sovereignty in an isolated complex terrain without impacting the activities of the rest of the Canadian Forces. Battalion size exercises happened seldom and revealed a tremendous effort of pooling resources to transport, sustain and equip such a large force. When it comes to permanent military presence, leverage of the Canadian Rangers (originating from volunteers members of first nations population already living in northern Canada) given responsibilities, limited weapons access, means of military communications and proper transportation appears to be the preferred approach. The link between the Canadian Rangers and the regular forces when training in the North is vital for the latter, and can be leverage even more.

On the Air Force's side, existing resources like limited SAR, Canadian Force Base Alert, CF Arctic Training Center in Resolute Nunavut, and aircrafts such as the CC-130J, C-17, and CF-18 are assets that the Canadian Forces can count on for Arctic operations. The current capacity to air drop supply is efficient when feasible. Use of Airborne troops with limited survivability of less than a week without link up with ground human assistance is possible and has been conducted in a controlled environment by regular troops. As far as defensive air interception, temporary zone control is the strategy, and it relies heavily on the United States Air Force in case of a large continental threat. Independence in air interception would be preferred, but the current agreement with NORAD and NATO serves as a deterrent, although multiple

Russian air incursions occurred in Canadian airspace. When it comes to Unmanned Aerial Vehicles (UAV), the Canadian capabilities are non-existent. A long range, unmanned, flying platform with the capacity to observe and strike would be a tremendous tool for the Canadian government in this vast and harsh territory. It could also be used to transport specific equipment or supply to targeted locations by minimizing risk. The use of UAVs to enhance C2 cannot be overlooked in a battlefield that often separates headquarters and troops over great physical distances.

For the Naval component aspect to the defense of the north, the Canadian Coast Guard has eighteen icebreakers: two heavy, four medium, and twelve light models.²² They are managed by the Canadian Coast Guard Ice Operations Centers. Continuous investments in icebreaking capabilities are necessary and good relations between the DND, the RCMP and the Coast Guard must be maintained. Other non-Arctic nations like China are allocating resources for the construction of a new high-tech polar expedition icebreaker as well as investing in Arctic research.²³ The Canadian Coast Guard capacity in the Arctic is limited to maritime operations and in case of a heavier military type threat, its capacity to use force is also limited. The Canadian Coast Guard formed a Marine Security Enforcement Team (MSET) program with the Royal Canadian Mounted Police (RCMP) in 2005. It concentrates its activities in the Great Lakes-St. Lawrence Seaway area.²⁴ This type of inter-agency is a model than can be replicated with the DND to maximize resources.

Troop transportation by waterways is very limited and requires a port facility to land safely for a larger group force. The Coast Guard and the scientific community demonstrated a capacity to land small groups of about 10 persons with small vessels for exploration purposes and with experienced ship captains. The Royal Canadian Navy does not have an amphibious capability beyond small boarding party boats with few personnel on board. The Royal Air Forces

provide helicopter capability to the Navy, but a CH-47 CHINOOK could not land on any of the Royal Canadian Navy platforms. First responders and SAR uses CH-149 Cormorant and CC-138 Twin Otter by air, but they are also limited in the number of troops and equipment they can transport. Bringing troops, weapons systems, vehicles, supply, and airlift from the water is not possible for the Canadian Forces or the Canadian government.

When it comes to carrying troops in isolated northern locations, the Canadian helicopters fleet is multi tasked already, and a greater participation in the north would be too much for their limited number unless priorities change. Canada currently has 15 CH-47 CHINOOKS that can transport troops, equipment, and resupply but this limited amount over a vast territory is hardly sustainable in time of crisis. The CH-146 Griffon is limited to carrying six personnel and even less when including the bulky, winter equipment. It can serve as a good patrolling, limited fire support, observation platform, and as a support to C2. The limitations with helicopters are their dependence on an airfield nearby and limited range of operation. They are also very limited by the treacherous and rapidly changing weather in the north. The effect of landing with light snow makes it very hazardous for a helicopter, and requires special training for pilots for the security of the crew, the transport, and the platform. Tracked transportation vehicles are no longer in service in the Canadian Army. A light, efficient in the snow, as well as marshland type ground vehicle is a must to transport the bulk of the force in difficult weather. Survival is the main goal of cold environment warfare; troops can only survive so much in extreme conditions without human assistance; a large transport surface can provide a stronger force. The current snowmobile is the preferred de facto method of transportation, but can only carry two persons and is fuel intensive.

Many civilian industries like mining companies operate in the north with important infrastructures and competency in sustaining extensive operation in hard isolated areas of the country. In case of national emergency, these facilities could be used by the Canadian Forces to

A battalion sized force with extensive training amalgamating the Royal Air Forces CHINOOK, CC-130J, C-17, Canadian Rangers, Canadian SAR, and snowmobiles can be developed and trained with limited additions that would fulfill the needs for the Arctic. This battalion should preferably have airborne capabilities. Depending on the location and duration of the mission, temporary bases must be established for resupply, maintenance, and C2 purposes. Satellite communication for troops on the ground to communicate with the battalion headquarters once airborne or deployed beyond the reach of current radios is vital. A battalion size force would be able to maneuver an enemy and provide enough firepower with support of air to counter most threats to an area of northern Canada today. The difficulties faced by a potential enemy are similar to what was discussed, and very few nations or organized groups have the capacity to project a large group for an extended period in the Arctic or Sub-Arctic. This option reveals that a few additions like Bv-206 type vehicles, more troop transport helicopters, UAV, and satellite communications at platoon or at least company level, and even more cross training between the three services would make the current force much more efficient in the north. Such a battalion size force with its shortfalls addressed with today's technologies would still be an acceptable force without being the optimal force package.



Bv-206 type vehicle²⁷

Optimal Force Package

New platforms and technologies could be developed, acquired, and amalgamated to existing resources to become the ultimate Arctic force package. While maximizing the strengths of the different services and agencies within 15 years, the new acquisitions could serve for more than just northern operations. According to Canadian Army doctrine when thinking about future Arctic operations:

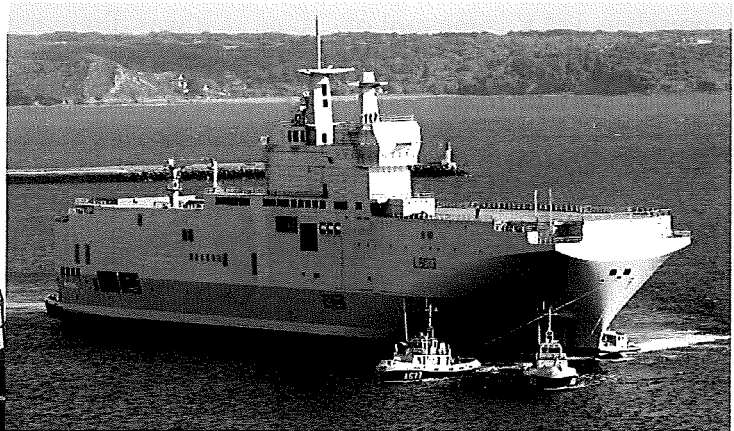
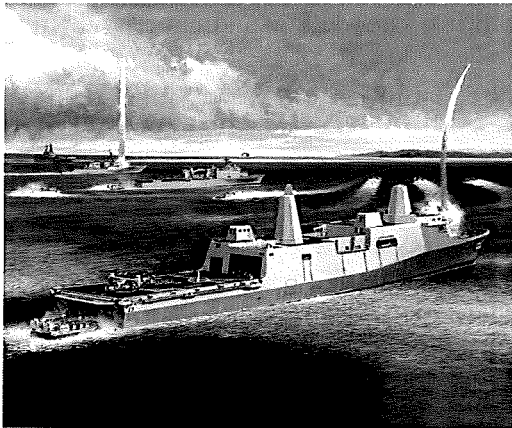
the most probable type of action in conditions of extreme cold will probably involve isolated, small unit actions where the ability to strike fast, cut supply lines, surround patrols, and deliver direct fire from protected weapons platforms will carry the day. This means that all-terrain; all-season vehicles capable of carrying out a number of combat and logistics functions are mandatory. Highly specialized high-mobility vehicles will be the key to success in the High Arctic and in the winter season.²⁸

The Royal Canadian Navy stands out as the service that can benefit the most from a northern force package of a mechanized brigade size and above. The Navy could provide with transportation to hard to reach areas, facilitate advanced amphibious landing capability, serve as a platform for helicopters maintenance and resupply, and an advanced C2 capabilities to isolated ground troops. A platform such as the French designed Mistral Class Amphibious Assault Ship

"has the payload capacity and versatility to carry up to 16 heavy helicopters and one-third of a mechanized regiment, plus two LCAC hovercraft or up to four landing craft."²⁹ The capacity to carry ground troops sheltered from the harsh elements as well as the possibility to bring to shore a large amount of different platforms like snowmobiles, troop transport tracked vehicles, artillery pieces, and so on either by heavy helicopters or with naval connectors would be a great force projection capability. It would also force integration of the three services to pool resources and train together, which is sometimes hard to achieve. The C2 capability of this type of ship also provides a mobile headquarters capability. Since an enemy will probably bring forces by sea transportation in the future by using the Canadian Northwest Passage, sea transportation will bring DND assets closer with the proper force package. Other options like the LPD-17 Class could be considered as well, as long as they can provide heavy helicopter payload, connector friendly shelter for ground forces, as well as being C2 capable.

LPD-17 Class Concept (Left)³⁰ and Mistral Class (Right)³¹

Arktos Amphibious Craft (bellow)³²



Another area where the Navy has already begun to take action is the missile defense system. According to *Defense News*, Canada is studying a recommendation to join the US continental missile defense system by providing radar sites or contribution to the research to improve the system.³³ The Navy is already participating "in a theater missile defense test in 2015, paving the way for new capabilities that could be outfitted on future warships."³⁴ Close coordination between the three services is paramount if the project moves forward. The intent is not to reactivate the equivalent of the Distant Early Warning (DEW) Line from the Cold War

years, but isolated radar sites, missiles on ships, and other support infrastructures may be built in the future to secure the north.

Close links with the Coast Guard icebreaking capabilities, knowledge, and experience of internal waters must also be integrated with DND. The SAR capabilities are already functional although not optimized, and would benefit from more integration with the Army and the Canadian Rangers structure. To bridge the gap between satellite observation and physical presence, UAV is the tool of choice as it was discussed earlier.

Another major shortfall is with the transportation of ground forces and their ability to sustain themselves for an extended period of time. Such vehicles are already part of the Canadian Army doctrine and are described as "all-terrain; all-season vehicles capable of carrying out a number of combat and logistics functions"³⁵ but are not part of the inventory. The number of vehicles would have to be sufficient to carry the bulk of a Canadian regular forces brigade and its logistical tail for an operational reach for at least seven days. Air resupply for certain logistical goods is possible, depending on the weather and terrain but cannot be solely relied upon.

The amount of energy required for cold climate operations in the form of fuel and batteries is already well known for the Canadian Forces, and the stress on the logistical system for energy is high. Enhanced autonomy to operate provided by lighter equipment and a reduced requirement for logistical resupply for power, and heat generation would benefit all aspects of the ultimate force package. Already existing alternative sources of generating energy like wind, motion, and solar paired with compatible and more efficient batteries are possible in the near future. The use of more renewable energy sources and energy smart practices would also reduce the ecological footprint of military operations in a very sensitive environment that is the Arctic.

C2 within the three services and other relevant governmental departments is fairly complex; therefore a headquarters higher than the brigade level is required. The First Canadian

Division headquarters is the best suited organization to coordinate all the assets amalgamated for an ultimate force package because of their mission, which consist of a "task-tailored, deployable joint headquarters at high readiness to C2 joint, inter-agency, multinational forces to achieve national objectives at home and abroad."³⁶

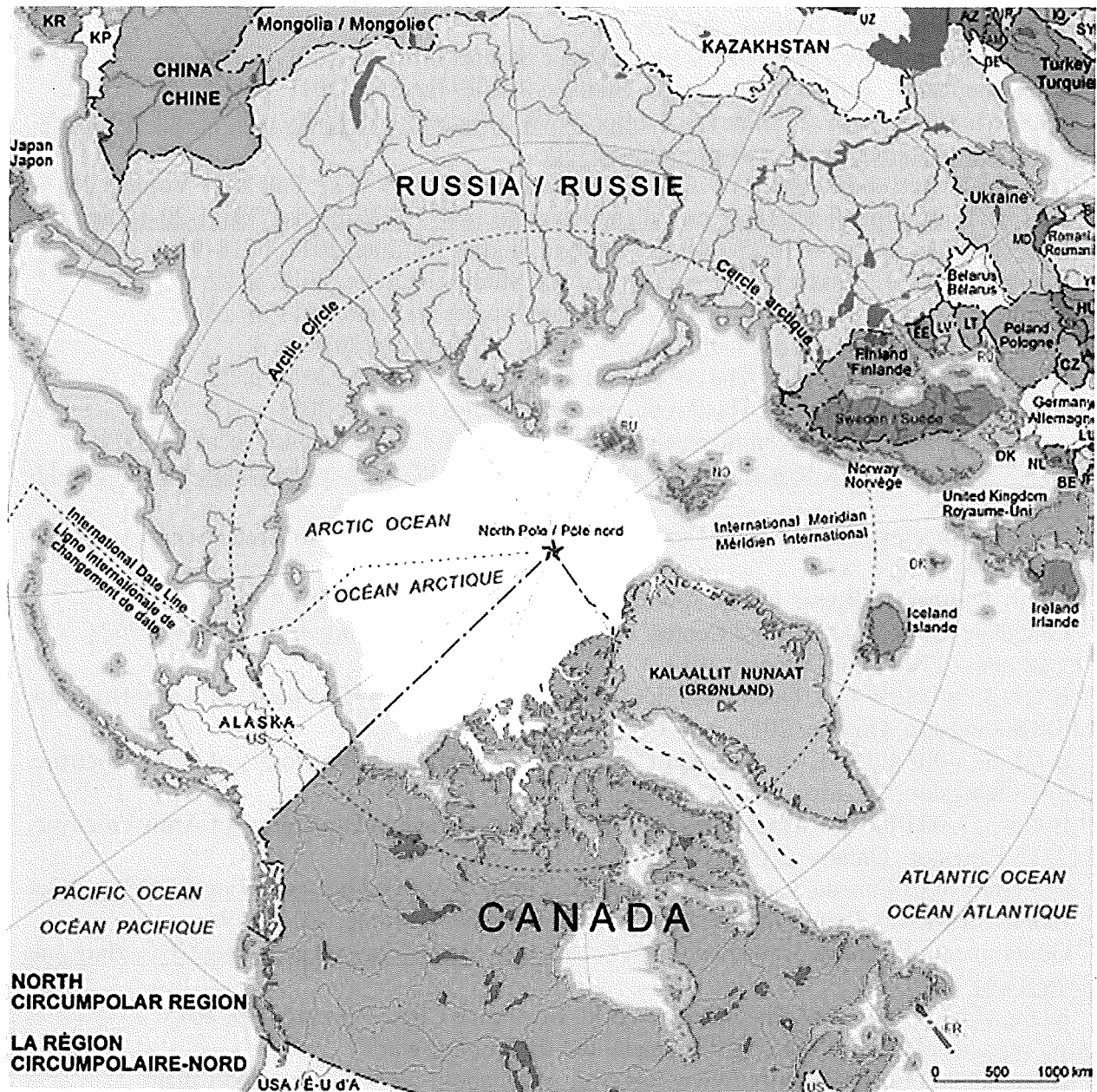
The nature of the DND to form a force tailored for a task, and the low probability of threat in the north does not require a permanent ultimate force package. To overcome the challenges inherent to newly formed task forces, the First Canadian Division headquarters should conduct joint (and interagency) training. These exercises can be either practical, on simulators or tabletop, as long as it is under a common headquarters. That Joint First Canadian Division headquarters should be able to coordinate with the First Canadian Air Division headquarters, the two regular forces maritime command, inter-agencies, and North American Aerospace Defense Command (NORAD).

Conclusion

There are multiple reasons why a better force package should be seriously considered in the near future by the DND: an increasing threat related to growing potential of natural resources in northern territories of the world, Russia's recent expansionist behaviors, current Canadian limited capacity to project a credible force in the Arctic and to sustain it, global warming becoming a pressing reality, and the responsibility for the Canadian government to protect a vast part of its territory. Today's capacities allow the projection of a limited amount of troops and can hardly sustain projected troops with great difficulties. Few acquisitions of new equipment, closer links between services and agencies, pooling and leveraging of national resources, and proper C2 supporting a battalion sized force in the north can be a starting point for a capable force package for defense in the north. This option fails to serve as a credible deterrent and is merely a

patchwork solution to a growing national shortfall. By anticipating the forces Canada will need in the future, it will be better prepared when the threat becomes real to assert the sovereignty of its territory. The capability to project a force of at least a mechanized brigade from an amalgamation of sea, helicopters and other connectors like amphibious boats or by airplanes, able to communicate over large areas with a proper C2 elements, and that can be sustained for months is possible. Such a force requires amphibious ships with a deployable Army headquarters, supported by air and UAV able to work with inter-agencies that conduct punctual exercises. Once on the ground, it needs transportation in all-terrain and all-season vehicles to execute combat and logistics functions. This force must be able to communicate with satellite systems at the lowest level of command spread over large distance. Most of the assets and capabilities acquired for fighting in the north can also serve purposes other than just Arctic defense. Force projection capacity in all weather will help defend the country with the largest coastal area of the world as well as bringing the DND services to work together even better.

The Arctic territory representation.³⁷



End Notes

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