Survivability, Sustainability, and Maneuverability

The Need for Joint Unity of Effort in Implementing the DOD Arctic Strategy at the Tactical and Operational Levels

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Members from Canada's Arctic Response Company Group and the U.S. National Guard move to a preparatory training area 2 March 2014 to acclimatize their equipment during Exercise Guerrier Nordique 2014 in Iqaluit, Nunavut, Canada.

(Photo Cpl. Valérie Villeneuve, 35th Canadian Brigade Group)

As tensions between the United States and the Soviet Union developed in the years following World War II, United States military planners and strategists focused substantial effort and resources on the challenge of Arctic and cold weather warfare, in large part because of potential territorial disputes in areas where Russia bordered Alaska as well as the northern frontier of U.S. ally Canada. Challenged by operational and tactical difficulties in Korea's cold and mountainous environments as well as the threat of the Soviets' assumed superiority in cold weather operations, the U.S. Army conducted a series of exercises throughout the 1950s with names such as *Ice Cap*, *Lode Star*, *Nanook*, and *Deep Freeze*. It produced reports detailing experience and requirements relative to Arctic and sub-Arctic operations well into the late 1970s.[1]

However, by the 1980s, competing military and political demands forced Arctic operations strategy and planning into a dormant state that continued into the first decade of the new millennium. This decline in strategic interest reflected predictions that the Arctic would not become truly important again to strategic planners until "valuable deposits of critical war minerals should be discovered" and made critical by "worldwide scarcity" in more accessible regions.[2]

The Need for a Viable Arctic Strategy

Today, as war in Iraq and Afghanistan assumes a lower priority in NATO members' national defense strategies, and as the majority of forces are withdrawn from those countries, strategic planners are beginning to anticipate other plausible future conflicts of significant interest. Given that the previous decade has seen the opening of the Northwest Passage, resulting in an increase in commercial and recreational maritime traffic and a significant influx of business interests in the region, one can convincingly argue that an area of emerging strategic concern to the United States should be the Arctic.[3]

Of the world's current and aspiring Arctic powers, four of the five countries whose physical borders or territories cross the Arctic Circle seem to be recognizing the need to adjust defense capabilities and to be taking

steps to create or augment specialized ground-combat units to meet emerging Arctic demands.[4] Notably, Canada, Norway, and Russia have realigned entire units to focus on Arctic readiness and operations. However, the United States has no specialized Arctic warfare capability, despite Alaska holding a substantial portion of valuable territory bordering Russia—which recently has shown few qualms in seizing land with ambiguous territorial boundaries elsewhere.[5]

Though the U.S. Department of Defense (DOD) published *Arctic Strategy* in 2013, the document is, at best, a generalized approach to operations. Its content illustrates the U.S. military's lack of deep understanding regarding the Arctic problem set and is rife with general tasks that, without significant attention, are currently impossible to implement at the tactical and operational levels.[6]

In subsequent and supporting publications to the DOD's *Arctic Strategy*, the U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard have shown a focused and serious approach to preparing for Arctic operations. In contrast, the U.S. Army has thus far shown very little interest in the Arctic at the strategic level. This translates into a lack of readiness to respond to any contingencies that might arise for Arctic warfare.

Since there is no formal requirement for U.S. Army, Army Reserve, or Army National Guard units to prepare for Arctic warfare, current force generation structure and personnel management policies continue to undermine building specialty skills in active duty units needed to adequately defend U.S. interests in the Arctic. Also, on-hand Arctic equipment is outdated and inadequate for extended Arctic use. The United States has, as Siemon Wezeman points out in his multicountry study on Arctic military capabilities, fallen into the historical trap of confusing forces stationed in cold climates with Arctic-capable forces.[7]

For example, the Army maintains two combat brigades and multiple support units in Alaska that, although stationed in the north, do not have specific requirements to operate in the Arctic.[8] Historically, confusion between northern and Arctic warfare is a recurring phenomenon. It nearly always results in a large number of environmental and enemy-induced casualties when a northern-trained force that thinks itself well-suited to Arctic conditions confronts a true Arctic specialty force.[9]

Lessons Learned from Arctic Training

Recent U.S. military experience tends to confirm the misconception among Army personnel trained in northern warfare that they are Arctic-warfare capable. In February and March 2014, 14 soldiers from the 86th Infantry Brigade Combat Team (Vermont and Maine Army National Guard), the Army Mountain Warfare School, the 10th Mountain Division Lightfighter School, and the Asymmetric Warfare Group joined the 35th Canadian Brigade Group's Arctic response company for Exercise Guerrier Nordique. The exercise, for which U.S. participation was in its fourth year, occurred in the highest latitude in exercise history—the vicinity of Iqaluit, Baffin Island, Nunavut Territory, Canada. So impressed were the members of the U.S. Guerrier Nordique team with the challenges of Arctic warfare that they resolved to record their experiences in an effort to call the U.S. Army's attention

to its critical lack of ability to operate in Arctic environments.

As the members of the U.S. element learned during participation in Operation Guerrier Nordique, when temperatures drop to extreme lows, tasks become exponentially more difficult and in some cases impossible to perform using standard cold-weather techniques—such as those that may work at Fort Drum, New York or Camp Ethan Allen, Vermont. The level of cold in Arctic environments, especially when exacerbated by wind and physical terrain, requires a significantly different operational mentality and equipment design methodology than for northern warfare.

Put simply, despite the recent steps DOD has taken toward articulating an Arctic strategy and some increased military attention on the challenges of Arctic operations, current defense efforts do not fully recognize or appreciate the need for a joint ground presence and therefore fail to address the logistical, educational, and operational infrastructure required for successful tactical ground operations in the Arctic.

Members of the Vermont Army National Guard strengthen their position by building a snow wall for protection around their camp 5 March 2014 during Exercise Guerrier Nordique in Iqaluit, Nunavut, Canada.

(Photo by Cpl. Valérie Villeneuve, 35th Canadian Brigade Group)

Attaining the strategic goals outlined in DOD's *Arctic Strategy* will require the Army and joint ground warfighting community to focus major attention at the tactical and operational levels on survivability, sustainability, and maneuverability as applied specifically to Arctic environments.

It is vital to emphasize that the foundation of all operations in the Arctic is having human and material resources that can properly function in the extreme cold of the Arctic environment and provide a basic level of survivability. For example, if a person, vehicle, or flashlight fails as soon as it is exposed to a temperature of 50 degrees below zero Fahrenheit, it fails the survivability test and is therefore useless in Arctic operations.[10]

To illustrate, the author of this article observed, while interacting with the Canadian Rangers (comprised mostly of native peoples whose home and natural environment are the Arctic and sub-Arctic) that everything they used had a specific use for a specific condition. For example, seal skin, dog fur, and caribou fur all have slightly different advantages and properties that the Rangers know and employ properly according to environmental circumstances.[11]

The lesson learned was that understanding the nuances between pieces of equipment or resources that seem to have an identical purpose equals the difference between success and failure in an Arctic environment. As Arctic strategist Col. Charles McAfee pointed out, taking a piece of equipment that functions well in temperate or moderately cold weather and trying to adapt it to the Arctic environment by "[adding] kits, devices, and assemblages which complicate the item and increase the difficulty of maintenance" rarely meet Arctic survivability requirements.[12]

The 86th Infantry Brigade Combat Team's Guerrier Nordique 2014 contingent observed such deficiencies with their clothing, shelters, sleep systems, stoves, and packs. For example, normal military rucksacks, suitable for northern warfare, crushed the insulation in the Extreme Cold Weather Clothing System layers and

cut off blood flow to the arms and hands. This caused cold and numbness in hands and fingers to develop rapidly, and significantly increased the danger of cold weather injuries. Moreover, the Extreme Cold Weather Clothing System itself, while functioning decently in the cold weather of Vermont, exhibited major design flaws in Arctic conditions.[13]

Such challenges are not unique to U.S. forces trying to overcome the challenges of the Arctic environment. Despite Canadian advances in certain areas of survivability, such as with his cold weather clothing, the Canadian Army still struggles to solve critical challenges of Arctic warfare, such as the use of ceramic body armor and updated tent designs. That the Canadian Army continues to work through its Arctic tactics and techniques, with its wealth of institutional knowledge in Arctic warfare, is a telling indicator of the challenges of operating in such an extreme environment. This further underscores the need for the U.S. Army and joint community to begin focused preparation immediately.

Apart from equipment concerns, it is also important to emphasize the human dimension of survivability. In the author's conversations with the 35th Canadian Brigade Group's lead Arctic trainer, Master Warrant Officer Carl Pelletier, he frequently noted that the Arctic response companies have significant difficulty retaining young soldiers after their rotation into a winter Arctic environment. While the troops fare well during summer training, the misery and demands of the cold drive many soldiers to resign soon after returning from their first winter Arctic exercise.[14]

Pelletier's observations echo those of Col. Harold Hansen, an infantry officer writing about mountain and cold weather operations in 1957: "Operations in

National Guard soldiers from Maine and Vermont worked with members of the 35th Canadian Forces Brigade at Baffin Island, just south of the Arctic Circle, as part of Exercise Guerrier Nordique, 4 March 2014.

(Photo by Staff Sgt. Sean Keefe, Maine Army National Guard)

the Arctic and high mountains require a particular breed of man," he observed.[15] Hansen wrote this reflected the need for enthusiastic and committed volunteers like those that populated the ranks of airborne and special operations units. Hansen also noted that, in addition to the mental demands of the extreme cold, the techniques for operating in the cold often demand acquisition of skills such as skiing, which only a fraction of normal infantry troops can master.[16] For the U.S. Army and joint community, this means that developing the proper equipment only partially solves the challenge of aligning the proper resources to the survivability principle.

There is a significant challenge in recruiting and retaining personnel willing to spend considerable time under stressful conditions mastering Arctic warfare. As the United States moves toward implementing its Arctic defense strategy, it must devote considerable effort toward putting the proper resources in the hands of the proper personnel to establish the foundation for success in the Arctic.

As the Army creates a pool of human and material resources that enable survivability in the Arctic, it must concurrently deal with the issue of sustainability. Perhaps more than any other operational environment, the Arctic demands a logistic system that provides a continuous stream of support to its ground troops. Although other environments present hazards, such as a lack of water in desert operations, the cold of the Arctic greatly magnifies potential hazards and is utterly unforgiving. As 1st Sgt. Todd Gagnon of the Guerrier Nordique 2014 team observed, "There is no glide path [in the Arctic]. If you don't have the right supplies, if there is any pause in sustainment, everything shuts down."[17] Therefore, extraordinarily detailed logistic and sustainment planning must accompany the decision to move a military presence into the Arctic and conduct operations.[18]

Experiences in Exercise Guerrier Nordique 2014 on Baffin Island provide excellent examples of the challenges in supplying land operations. First, due to the thickness of ice on Frobisher Bay, which stopped any ship traffic, air was the only feasible option for transporting supplies and personnel to the logistics point. Second, once infantry platoons deployed from the point of debarkation, they could not perform as semi-autonomous light infantry maneuver elements due to the constant and rapid consumption of stove fuel. Rather, sustainment teams had to maintain a daily resupply run via snowmobile to the distant camps to provide each company with the required 64 gallons of fuel per day to melt water, heat food, and keep shelter interior temperatures around zero degrees Fahrenheit.[19]

However, these logistic lines were clearly unstable. Even in a noncombat environment, severe weather and multiple vehicle breakdowns always threatened the logistic team's ability to provide supplies to its deployed units.[20] In a combat environment, given surface-to-air threats to air resupply and the need for security during ground resupply, the job would be significantly more challenging. As many soldiers observed during a tense period when a storm delayed supply efforts and forced the Guerrier Nordique team to ration fuel, the easiest way to immediately incapacitate an Arctic force is to disrupt its supply lines.

While working out issues of sustainability and survivability, a unit must concurrently overcome challenges that address the critical task of maneuverability since that component enables a unit to accomplish the combat mission for which it was sent. As with non-Arctic operations, it is not until a unit can accomplish the basic soldier tasks of shoot, move, and communicate that it is truly prepared to operate in the Arctic as a military element capable of projecting force. As such, mastering the principle of Arctic maneuverability marks the transition into true Arctic combat effectiveness.

Winter combat actions in the Russo-Finnish War and certain battles of World War II illustrate that light infantry troops with cold weather clothing and skis do not constitute an Arctic force; and, when they face true Arctic formations, the large and well-equipped light infantry unit cannot match a light, maneuverable Arctic formation.[21] As Pelletier repeatedly stated during the Guerrier Nordique rotations, "Arctic warfare is a skill you must acquire over time … that is why the Arctic response companies do operations and the regular [Canadian] forces just survive."[22] In other words, the frequent personnel rotations in the regular forces degrade the Arctic knowledge base every few years, while the response companies' low personnel-rotation cycle enables them to build a more experienced force capable of transitioning from mere survival to Arctic

operations. Military researchers David A. Hoffman and Greg Netardus also underscore this point:

> One of the greatest detrimental factors [in] the U.S. Army [in regard to] Cold Weather Mountain operations is [the Army's] … need to constantly rotate personnel. There are very few soldiers who have the requisite skills to move into [an Arctic] unit and be proficient, either as a leader or as a unit member. These skills take years to refine and become a cohesive operational entity.[23]

In short, merely possessing the equipment and logistics required to fight in the Arctic is not sufficient for success—a unit must understand how to overcome the challenges and use its resources to project combat power. This can only be done by constantly training in the Arctic environment.

Apart from the support and personnel issues, one of the U.S. Army's major shortfalls with employing its limited Arctic resources is a lack of formal maneuver and sustainment tactics. Current doctrine, built upon experiences in relatively temperate environments, fails to address the changes that a force must make in its maneuver tactics to fight and win in an Arctic environment.

Arctic tacticians and practitioners repeatedly stress two main tenants of warfare that conflict with current trends in our brigade-sized, offense-heavy warfare: first, that the upper hand in an Arctic fight goes to the defender, and second, that the most lethal unit is the mobile small unit.[24] In the event of an Arctic conflict, it is likely that the need for extensive logistic lines and the difficulty in maneuvering non-Arctic combat vehicles or large dismounted formations will force opposing armies into mobile defensive lines and tactics resembling Lt. Erwin Rommel's mountain maneuvers in the 12th Battle of Isonzo during World War I.[25] The defender who can sustain its force against the enemy and the elements while simultaneously making slow, creeping progress towards its goal will win the day against an enemy who moves quickly but outruns its supply lines and leaves its soldiers at the mercy of the environment.

In developing Arctic maneuver and sustainment tactics, the U.S. Army and joint ground warfighting community will invariably need to augment its very few ski- and mountain-trained troops because, as Col. Walter Downing observed in his 1954 study on future Arctic warfare, the diverse landscape of "[ice] barrens, … muskeg, rugged mountains, and almost impassible scrub forests" will require forces to traverse snow, ice, rock, and swamp to reach their objectives.[26] To illustrate, during Guerrier Nordique 2014, a team landing on Frobisher's Farthest Island arrived at the beginning of the tidal fall. While the first team walked onto the island, subsequent teams to arrive faced the emergence of an ice cliff exposed by the falling tide, which required the use of basic mountaineering tasks to bypass the obstacle.

In addition to these terrain challenges, consider the effects of degraded communications due to ionospheric blackouts; inaccuracy of traditional compasses; and the difficulty in using the limited cover and concealment to hide a bullet's ice fog trails, vehicle exhaust plumes, and thermal indicators. One begins to see that Arctic maneuver doctrine will encompass a significantly different way of conducting small-unit warfare to maintain combat superiority.

At the root of the current lack of progress toward a unified joint Arctic and mountain operational requirement is the failure to unify efforts among the few elements scattered among several key organizations in the U.S. military that do practice these increasingly critical skills. In violation of a key doctrinal tenant specified in Joint Publication 1, *Joint Doctrine for the Armed Forces of the United States,* there is a decided lack of unity of effort within joint ground warfighting units toward establishing the tactical and operational capacity to fulfill the tenets of the DOD's *Arctic Strategy*. This begins with the failure to establish "a common philosophy, a common language, a common purpose" in the form of universal joint task list tasks that address Arctic and mountain operational requirements.[27]

The Northern Warfare Training Center in Alaska, the Mountain Warfare School and the associated 86th Infantry Brigade Combat Team (Mountain) in Vermont, U.S. Army-Alaska, the Marine Corps Mountain Warfare Center, and various elements of special operations forces all maintain independent small cadres of personnel with the requisite skill base for operating in Arctic environments. However, the distance and lack of a formal requirement to operate together results in an ad hoc and informal networking

Members of the Arctic Response Company Group face intense cold and prepare for a possible displacement 3 March 2014 during Exercise Guerrier Nordique in Iqaluit, Nunavut, Canada.

(Photo by Cpl. Valérie Villeneuve, 35th Canadian Brigade Group)

relationship that undermines our military's ability to make substantial headway in developing a joint Arctic warfare capability.

Conclusion

As Chad Briggs observed, "changing environmental conditions … create new security risks where none existed before."[28] He goes on to say that military threats likewise shift, demand a new strategic focus, and, in some extreme cases, require an entirely new tactical approach to maneuver warfare.

The Arctic region requires just such a shift in strategic focus. The time may well be coming when countries collide over their interests in the Arctic and sub-Arctic regions. Although we hope for peaceful expansion of business interests and governance into the Arctic, we must also prudently prepare to defend national interests at the top of the world against those who would oppose us or seek to exert control over the region. At present, we are not prepared for such a contingency.

In the face of such a clear and plausible danger, strategic-level leaders and planners should be aware that despite having articulated a formal Arctic strategy for DOD, current capabilities at the joint tactical and operational levels do not include adequately trained and equipped ground combat units who could perform successful Arctic operations. Furthermore, while a small contingent of leaders and instructors in various U.S. military units maintain a certain depth of knowledge in Arctic operations and the associated skills, the Army and joint community lack the critical institutional knowledge and the trained and experienced personnel necessary to quickly create and employ enough units capable of accomplishing the kinds of major operations that may be needed in the Arctic region. As the Arctic becomes indisputably more important and other nations with Arctic borders move toward increased operational capability in the region, every year of delay puts the U.S. military at further risk of being unprepared to defend its own interests or those of its NATO allies in the region. As Arctic explorer Vilhjalmur Stefansson wrote in his treatise *The Northward Course of Empire*, "There is no northern boundary beyond which productive enterprise cannot go until North meets North on opposite shores of the Arctic Ocean."[29]

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NOTES

1. There are numerous exercise reports filed with the U.S. Army Heritage and Education Center that focus on Arctic operations. The most notable follow: *ICE CAP*, Sixth Army, Exercise Ice Cap, Greenland, July & August 1960, general plan, Presidio of San Francisco, 30 December 1959. U253.2.I24.U543, Arch.; *ICE CAP*, 4th Infantry Division, Exercise Ice Cap, Greenland, 8 July-11 August 1960, final report, Ft Lewis, WA, 14 Oct 1940, U253.2.I24.U543, Arch.; *LODE STAR*, Fifth Army, "Final Report, Exercise Lode Star," Ft Carson, CO, 7 June 1956, UD463.A35, Arch.; *NANOOK*, Ralph W. Hunt, "Report of Operation Nanook," Engineer School, Arctic Research Section, Ft Belvoir, VA, December 1946, G630.A5.H86, Arch.; *SKI JUMP,* "Final Report, Exercise Ski Jump," Chicago, 26 April 1954, U253.2.S56.U54, Arch; *SNOW CHUTE*, 82nd Airborne Division, "Exercise Snow Chute," after action report, 12 January 1961, U253.2.S62.E93, Arch; *SNOW DROP*, "Snow Drop: Parachute Drop, Final Battalion Combat Team Airborne Field Exercise," report, n.d. UD483. S58, Arch.; *SNOW FALL*' Exercise Snow Fall, "Final Report," Camp Drum, NY, 29 February 1952, U253.2.S65.E93, Arch.; *SNOW FALL*, "General Plan," Pine Camp, NY, 5 November 1951, U253.2.S64.G46, Arch.; *SNOW STORM,* Exercise Snow Storm, "Final Report," 31 March 1953, U253.2.S67.E93, Arch.

2. Charles Moses McAfee, "The Strategic Importance of the Arctic," (student paper, Army War College, 1953), 21; Gerhard Baumann, "The Arctic-Strategic Center of the World," *Military Review* (Dec 1962): 85-97.

3. Anthony Harrigan, "Northern Defense Frontier," *Military Review* (Dec 1969): 3-8; Bob E. Edwards, "The Role of the Army in Polar Regions" (student paper, Army War College, 1960), 8. Interestingly, many of the Arctic strategists of the 1950s voiced common assertions that the Arctic, although potential key terrain during the Cold War due to the short distance between the United States and former USSR, would not truly reach its potential until the "mining potential of the Far North should be tapped … harbor areas and storage areas should be constructed … [and] giant vessels regularly ply the Northwest Passage," attracting sufficient government and business interest to require a military focus on the region.

4. Siemon T. Wezeman, "Military Capabilities in the Arctic," background paper, Stockholm International Peace Research Institute, 2012, 1.

5. "Siberian Scientists Prove Russia has Right to Huge Arctic Mineral Resources," *The Siberian Times*, 02 May 2014; Shaun Walker, Harriet Salem, and Ewen MacAskill, "Russian 'invasion' of Crimea Fuels Fear of Ukraine Conflict," *The Guardian*, 28 February 2014, http://www.theguardian.com/world/2014/feb/28/russia-crimea-white-house. Between the original draft of this paper and its publication, the intensification of the conflict in Ukraine hints that Russia's territorial ambition may be significantly stronger than many military and political analysts predicted.

6. U.S. Department of Defense, *Arctic Strategy*, 22 November 2013, http://www.defense.gov/pubs/2013_Arctic_Strategy.pdf; Alan L. Kollien, "Toward an Arctic Strategy" (student paper, Army War College, 2009).

7. Wezeman, 1.

8. Rex Finley, personal interview with author, 5 May 2014.

9. Harold D. Hansen, "The Adequacy of Mountain and Cold Weather Operation Capabilities in the U.S. Army" (student paper, Army War College, 1957), 12.

10. Edwards, 13.

11. Canadian Rangers, Personal conversation with author, 4 March 2014. During Guerrier Nordique, the author and the U.S. team members spent considerable time conversing with and learning from the Canadian Rangers. Comprised almost entirely of native Arctic peoples, the Rangers are the most knowledgeable Arctic practitioners in the Canadian Army. In one conversation, the Rangers detailed the differences between various types of skins and furs in relation to their water resistance, warmth, durability, and breathability. The Rangers choose what skin or fur they wear based on the conditions at hand.

12. McAfee, 21; Lauris M. Eek, Jr. "Maintainability of Military Motor Vehicles under Arctic Winter Conditions" (student paper, Army War College, 1969), 9-13.

13. The outer loft jacket and pants have no functional pockets for carrying equipment and, because standard fighting-load carriers also crush insulation and freeze when worn on the exterior, many soldiers during Exercise Guerrier Nordique 2014 resorted to carrying items in interior pockets where they were extremely hard to access. In contrast, the Canadian insulation system incorporates large exterior pockets that hold ammunition magazines, flashlights, maps, and other mission-critical combat equipment that typically resides in or on the fighting-load carrier. This design allows access to mission-critical gear, maintains insulation loft, and prevents equipment from fully freezing.

14. Carl Pelletier, Personal interview with author, 1 March 2014.

15. Hansen, 26.

16. Ibid. 14.

17. Todd Gagnon, personal interview with author, 10 March 2014.

18. Hansen, 22.

19. Pelletier.

20. Eek, 10.

21. Edwards, 18.

22. Pelletier.

23. David A. Hoffman and Greg Netardus, "Re: Arctic Warfare Research Paper," message to the author, 1 May 2014.

24. Vitalie Micov, "Modern Perspectives for Tactical Level Operations in the Arctic Region" (student paper, U.S. Army Command and General Staff College, 2013), 50; Edwards, 18; Walter A. Downing, "Future War in the Arctic" (student paper, Army War College, 1954), 16-17.

25. David A Grossman, "Maneuver Warfare in the Light Infantry: The Rommel Model," www.killology.com/maneuver_warfare.pdf.

26. Downing, 1-3.

27. Joint Publication 1, *Joint Doctrine for the Armed Forces of the United States* (Washington, DC: U.S. Government Printing Office, 25 March 2013), I-1.

28. Chad M. Briggs, "Environmental Change, Strategic Foresight, and Impacts on Military Power," *Parameters* (Autumn 2010): 76-90.

29. Harrigan, 3-8.