# Operationalizing the Army's Arctic Strategy... One Extreme Cold Day at a Time

# LTC DAIJIRO "DON" KANASE

As the Arctic sea ice melts at an alarming 12.6 percent per decade, the Arctic will inevitably open more routes for commerce.<sup>1</sup> Additionally, the Arctic is a treasure trove, rich with natural gas, oil, and minerals. This opportunity for efficient commerce and natural resources presents tremendous competition as nations vie to use or claim these routes or extract these natural resources. Competition for the Arctic region can easily lead to crisis and armed conflict. Now more than ever, the Army's Arctic force must specialize to deploy, fight, and win in any contingencies in the Arctic and beyond. Within the U.S. Army's recently reactivated 11th Airborne Division, Arctic Infantry Soldiers are training in Arctic warfare and operationalizing the Army's Arctic Strategy every day.

Warfare in the extreme cold is not new. Armies have waged wars in this environment in the past such as during the Winter War of 1939 when the Soviets invaded Finland.<sup>2</sup> During this 105-day war, which was fought between November and March, soldiers fought in temperatures well below -40 degrees Fahrenheit (F). The massively outnumbered Finnish Army's roughly 300,000 soldiers initially crippled the Soviet Army, which had more than 700,000 soldiers. The Finns outmaneuvered the Soviets with their knowledge and experience in Arctic fieldcraft. The Soviets suffered well over 300,000 casualties, many from cold injuries, while the Finns only sustained 70,000 casualties.

The U.S. Army defines "extreme cold" as an environment between -25 and -40 degrees F, which are typical winter temperatures for those Soldiers who live and train in and around Fort Wainwright, AK. Some days, temperatures at Fort Wainwright fluctuate below -40 degrees. In these conditions, you can get contact frostbite by touching a car door with your bare hands, and cars that are not "winterized" with suitable battery, oil, and engine block



Soldiers in the 1st Infantry Brigade Combat Team, 11th Airborne Division dominate the high ground after seizing an objective. (Photos courtesy of author)

heaters may not start because the extreme temperatures can sap car batteries and thicken the engine oil. Roads are covered in packed snow for nine months of the year. While this may seem unnerving to some, this unique environment is exactly why Fort Wainwright is the ideal location for extreme cold weather training. The 1st Infantry Brigade Combat Team (IBCT), 11th Airborne Division is the U.S. Army's premier Arctic brigade that is innovating to dominate in the extreme cold environment.

# **Arctic Culture**

Interior Alaska has a unique blend of cultures, but communities are small and tight knit. People are friendly and welcoming. If anyone has car trouble and gets stuck on a road, others will stop and help to ensure no one is left in the cold. Strangers help each other because they know that the cold is unforgiving to everyone. The relationship between the civilian and military communities in interior Alaska is not just friendly, there is a familial warmth that is unlike any other place in the United States. Perhaps this bond exists because everyone experiences the cold together.

Inside the Army's Arctic culture within Fort Wainwright, Soldiers and Families take care of each other, often quickly sharing cold weather experiences to shorten the learning curve. Conversations can range from sharing tips on big game hunting, best ways to prepare caribou, deals on skis or ice fishing gear, to the latest Aurora Borealis photos. In a location where the population is relatively small and the cold is unforgiving, deep human connections become a cultural norm. This tight-knit culture permeates throughout the Soldiers and Families who call Fort Wainwright home.

The "Arctic Wolves" of 1/11 IBCT embrace the unique Arctic infantry identity. An organizational culture where Soldiers anticipate and wait for the extreme cold to begin collective training is unique — one that is different from any other in the Army. Everything is harder when it's -25 degrees. Soldiers must maintain water in liquid form, ruck without sweating, operate radios with trigger-finger mittens, and fire their weapons while subsequently preventing condensation. These are just some of the daily challenges Arctic Infantry Soldiers face while operating in the extreme cold.

There is no such thing as a day where it's too cold to train. Arctic Infantry Soldiers train on mastering Arctic fieldcraft every day during both individual and collective training. They do everything that Infantry Soldiers do in the lower 48 states but are also able to complete these tasks in extreme cold weather. According to the National Oceanic and Atmospheric Administration (NOAA), the average temperature in Fairbanks for January is -15 degrees F. Operations in the extreme cold call for a whole different way of thinking and functioning.

There are only two seasons at Fort Wainwright: summer and winter. Soldiers primarily spend the short yet beautiful summer months from late April through September on individual training, mountaineering, and winter preparations. Preparing for the winter may encompass completing machine-gun crew drills or establishing an Ahkio tent with thick gloves on so Soldiers can perform the same routine tasks during the winter. Winter preparation also includes a lot of classroom instruction on cold regions, cold injury prevention, and stove employment procedures in addition to more training on cold weather tactics and techniques. For the rest of the year, from October through March, units focus on collective Arctic training to take advantage of the cold weather that consistently surrounds Fort Wainwright.

# Arctic Tactics — Shoot, Move, Communicate

The Arctic is one of the most challenging environments that Army Infantry Soldiers can maneuver in. Not only can the enemy kill, but the extreme, harsh, and austere environment can be even more relentless and persistent in killing those on either side of the conflict. In the extreme cold, individual discipline is put to the test because any indiscipline may lead to permanent injury or death. If an Infantry Soldier forgets to bring a jacket or gloves to field training in the lower 48 states, the consequences may be minor. If this occurs during field training in the Arctic, the consequences are dangerous, making it unsafe for that Soldier to be in the field at all. Arctic Soldiers treat their cold weather clothing and equipment with the same care and seriousness as their weapon system.

**Shoot** — In the Arctic, sustaining life while maintaining one's weapon is counterintuitive. The human core temperature must remain relatively warm while one's weapon must remain cold. Whether the primary weapon is an M4 carbine or an M240B, all weapon systems are kept in the cold to prevent condensation. All weapon systems are susceptible to condensation, which will then freeze when reintroduced to the extreme cold. Soldiers keep their



Soldiers from 1/11 IBCT conduct a 15-mile road march prior to a platoon attack at the Yukon Training Area.

weapons outside, including when sleeping in their Ahkio tents. Soldiers place their weapons, ammo, and other gear outside of their tents to prevent condensation from forming. After firing their weapon systems, Soldiers immediately cover them up with a poncho, when time permits, to prevent condensation from occurring inside the barrel or inner mechanism.

**Move** — 1/11 IBCT Soldiers embrace a maxim that the division deputy commanding general of operations, Canadian BG Louis Lapointe, often states: "If you sweat, you die!" Arctic Infantry Soldiers conduct 15-30-mile ruck marches to get to ranges in the Yukon Training Area near Fort Wainwright. Rucking in -15 degrees is challenging because the pace must be slow enough to prevent sweating, which is dangerous in the extreme cold for two reasons. First, perspiration can easily lead to heat exhaustion, especially because inexperienced Soldiers tend not to drink water when it's cold. Second, when one sweats in the cold, that perspiration immediately turns to ice. When the body stops moving, that ice quickly creates conditions for hyperthermia.

The key to rucking long distances in the extreme cold is to walk at a pace that is neither too fast nor too slow. This pace is dependent on many factors but can typically range from 20-25 minutes per mile. As each squad drags an Ahkio sled that weighs more than 200 pounds, leaders must also take this into consideration when rucking to their objective rally point.

**Communicate** — Radio communication in the extreme cold is challenging because of many factors. Electromagnetic interference by ionospheric disturbances is frequent in the Arctic, which significantly degrades the effectiveness of skywave propagation. Using any kind of battery-operated equipment in the Arctic is not sustainable for long periods because batteries rapidly expire in frigid temperatures. The extreme cold also reduces the output voltage of batteries, which decreases the distance radios are able to transmit. Low battery voltage can also cause frequency drift to occur. Further, infantry movement frequently occurs in the low grounds and forested areas to prevent enemy detection, which hinders any line-of-sight radio transmissions. Also, retransmission sites on high grounds are difficult to get to in the snow and make easy indirect fire targets for the enemy.

High frequency (HF) and satellite radio communication is also challenging in the Arctic. The ionosphere in the Arctic has a dense level of electron precipitation that disrupts HF frequency. Simultaneously, satellite communication mainly relies on satellites that orbit the equator, while non-equatorially orbiting satellites are few, and hence, do not provide consistent satellite connectivity. Arctic Infantry Soldiers using dismounted radios often maintain their radios in thermal bags and keep them warm using hand warmers. Manipulating radio buttons with thick gloves becomes another challenging task that Soldiers must practice often.

### **Considerations for Arctic Operations**

There are a few unique, interrelated nuances when planning and executing Arctic operations: dichotomy of scale, command and control, time, and sustainment.

#### **Dichotomy of Scale**

When envisioning an Arctic operation, a likely scenario may involve specialized, decentralized units operating in key nodes. In extreme cold environments, nimble forces that can move through forests with snowshoes, skis, sleds, and snow machines can be more advantageous than an unwieldly large force that is dependent on road networks and power-generation requirements. Divisions and corps headquarters provide superior warfighting resources and a data-centric, analytical and coordination hub that will be crucial to fight and win the war against any peer threat in the extreme cold.

However, there will be a communication challenge between echelons of command when conducting warfare in the extreme cold. The challenge lies between the highly digitized, power-generated equipment that divisions and corps wield and the deliberately low-technology-enabled Arctic infantry forces. Typically for non-Arctic forces, battalions and brigades with a wheeled platform and powered communication systems can bridge the gap between actions on the ground and communicating with higher headquarters. However, Arctic infantry forces may not have a wheeled platform with powered communication systems nearby due to the austerity, effects of snow, and ruggedness of the environment. To be successful in the Arctic, Soldiers must be proficient on Arctic fieldcraft techniques of maintaining communications with their higher headquarters. During inevitable occurrences in which communication systems fail to operate in the extreme cold, the initiative of leaders to "cross-talk" with adjacent units and the philosophy of mission command become paramount.

During a recent field training exercise in the Yukon Training Area, an infantry battalion experienced a dichotomy of scale. The battalion command post (CP) had intermittent frequency modulation (FM), HF, and internet communications with its brigade headquarters. This was due to the combination of dense electron precipitation and lack of non-equatorially orbiting satellites during the evening of the battalion's attack. Compounding this issue, the



Arctic Wolves from 1/11 IBCT assault an objective during a platoon live-fire exercise at the Yukon Training Area in Alaska.



Snipers from 1st Battalion, 5th Infantry Regiment participate in a night platoon livefire exercise at the Yukon Training Area in Alaska.

battalion had sporadic FM communications with its companies that were only five kilometers away. Even with established communication windows, the company CP had even worse FM communications with its platoons. The CP consisted of a vehicle and warming tent in the woods. Platoons conducted movement and patrol base operations in the low ground and in thick vegetation.

In the blistering cold, a platoon that was a supporting effort conducted an attack without any battalion or brigade assets such as artillery support, mortars, or current intelligence updates from either aerial or ground sensors. This platoon also knew that if it sustained any simulated casualties, evacuation would be laborious on foot and time consuming. The platoon leader took initiative by communicating with an adjacent company for any intelligence updates. Since the platoon did not have 60mm mortars, it could not synchronize indirect fires in its attack. After the platoon seized the objective, the platoon leader was able to reach the company CP to inform them of the successful seizure of the objective. The company CP informed the platoon leader that the company commander was not located at the CP but was with the main effort platoon conducting an attack. Not knowing the situation with the main effort, the platoon leader sent a ski team to establish link-up with the company commander. While this occurred, the supporting effort platoon initiated a hasty defense.

While this successful platoon attack by the supporting effort may still seem like a failure of synchronizing resources and massing effects in modern U.S. Army training, this is the harsh reality of conducting operations in the extreme cold. Throwing more technology to tactical units to synchronize resources simply may not work. Trying to set conditions for a platoon or a company to maneuver with higher-level assets may not be realistic. What works: individual soldier knowledge and discipline in Arctic fieldcraft, mission command, initiative, communication windows, adjacent unit "cross-talk," and tactical patience.

# **Command and Control**

In the Arctic, commanders must get comfortable with not having immediate communications from subordinate leaders. Commanders must obviously establish robust primary, alternate, contingency, emergency (PACE) plans to mitigate unnecessary breaks in communication. Nevertheless, the Arctic will naturally enable commanders to exercise mission command as Arctic Infantry Soldiers operate with initiative. There are too many factors that can occur with a dismounted radio that can inhibit a successful radio transmission. The emergency protocol in the PACE plan may just be a reliable ski team that can swiftly go back and forth to relay critical information. A commander must have the tactical patience to accommodate the "E" of the PACE plan. Considerations like reinvigorating "commo windows" rather than monitoring a radio net 24 hours a day are very real requirements in the Arctic because of battery and electromagnetic spectrum management challenges.



Arctic Wolves from 1/11 IBCT establish an Ahkio tent during training in Alaska.

#### Time

Time is a key factor when planning an Arctic operation. Simple environmental planning factors for conducting reconnaissance, breaching an obstacle for an attack, or establishing an area defense may take three to five times longer in the extreme cold. Various factors contribute to this increase in time.

Even in intense cold environments from -5 to -25 degrees F, using mittens becomes important to prevent injury. In the extreme cold from -25 to -40 degrees F, thick mittens are crucial, and a balaclava must be worn over the face to prevent frostbite and facilitate breathing. When wearing balaclavas, Soldiers must remove eyeglasses or put on snow goggles because the exhalation fogs up eyeglass lenses, which then immediately freezes. Food consumption also increases as the body requires more calories to maintain heat. All these contribute to an increase in time to conduct any type of operation.

When planning Arctic operations, factors that form or reduce precipitation are important. Snowfall or ice fog hinders aerial assets, significantly hinders vehicular movement, and prevents visibility for all ground sensors, including the light infantry. Simultaneously, heavy snow or ice on the ground facilitates easier ground movement when Soldiers negotiate the terrain with skis, snowshoes, and sleds. Another potential benefit of the extreme cold environment is that snowfall is rare when temperatures reach -10 degrees F and below. This is because extreme cold environments have less humidity in the air to form precipitation.

An operational planner can make reasonable planning assumptions that in the extreme cold of -25 degrees F and below, precipitation may be unlikely and visibility may be favorable. However, any rise in temperature towards 0 degrees will likely establish a climate favorable for snowfall. Further, the sun's effects on snow and ice are also important. Both unimproved and improved roads can get icy as snow melts, even when below freezing. Icy roads can further impede sustainment operations and create havoc on vehicle operators.

# Sustainment

Sustaining a battalion or larger unit in the extreme cold requires a lot of time, a trafficable route, specialized vehicles, and redundancies. A route that is clear of not only enemy ambushes but also thick snow and debris is problematic for most of the Arctic region. Tracked platforms are significantly more effective than wheeled platforms for over-the-snow mobility. Water transport platforms (e.g., water buffalo, Hippo, Camel) can all freeze in a few hours without a warming mechanism. While an M978 Heavy Expanded Mobility Tactical Truck (HEMMT) fueler with snow chains on all its wheels can transport up to 2,500 gallons of fuel, sustainers at Fort Wainwright can only typically deliver 1,000 gallons during the winter to accommodate the heavy, uphill movement through the snow-packed mountain roads of the Yukon Training Area.

Maintenance operations in the extreme cold are equally time consuming. Small metal components, hoses, gaskets, pumps, and hydraulic systems easily get brittle and break. When a vehicle breaks down, maintainers require an

oversized, lighted warming tent to house the vehicle for repair. When the tent warms up to about 20 degrees F, maintainers can take off their mittens and have the dexterity of their gloved fingers to conduct repairs. Light is required because the Arctic is mostly dark during the winter months. Lights and warmth for the repair tent require a fuel-based generator, which compounds the logistical requirement to maintain vehicles in the extreme cold.

Conditions in the Arctic are unforgiving. The extreme cold environment is relentless and will not show mercy to anyone or anything. To thrive in this environment, one must respect, study, and embrace the dangers of the extreme cold. One must get comfortable with the discomfort that the extreme cold bears on all its inhabitants.

### Being Comfortable Being Uncomfortable — The Epitome of Thriving in the Arctic

The 11th Airborne Division's sobriquet is "Arctic Angels," and the response is fittingly, "Arctic Tough!" While Arctic Soldiers are keen on preventing cold weather injuries, Soldiers must also know the difference between being tough and being unsafe. Not wearing gloves in the extreme cold is outright foolish and dangerous, not tough. If fingers or toes get cold and numb, that is an immediate cause to pause training and immediately provide medical aid to prevent an injury. The first part of being "Arctic Tough" is knowing one's physical limits against the cold — and knowing how to prepare for the cold. Once the body or a body part loses heat, it has a very difficult time gaining heat unless one applies an external heat source such as a hand warmer or goes into a warming shelter.

The second part of being "Arctic Tough" is the mental aspect of being comfortable being uncomfortable. What this means is that Soldiers must not seek "cozy warmth" as the goal when outside in the extreme cold weather; they must be content with the body being a little uncomfortable, whether it is an itch or simply feeling a little uncomfortably cool. Even at night when resting in a sleeping bag inside a thermal shelter at below freezing temperatures, Soldiers must force themselves to accept that their minds and bodies are comfortable enough to get adequate sleep and rest. When this paradigm shift occurs, Soldiers leap from merely surviving to actually thriving in the Arctic. Being "Arctic Tough" means understanding the cold, along with its effects, and being smart about how to gain the initiative in this environment.



A 1/11 IBCT Soldier conducts marksmanship training at Fort Wainwright.

# Conclusion

Training for the next war in the extreme cold is hard — extremely hard because the environment is relentless. In the Soviet-Finnish Winter War of 1939, more than 60,000 Soviet soldiers succumbed to cold weather injuries. The Soviet soldiers' lack of cold weather clothing and individual knowledge and discipline of Arctic fieldcraft contributed to their cold injuries. On the other hand, the Finnish soldiers grew up in the extreme cold environment that subsequently became the battlefield in the war. Today's U.S. Arctic Infantry Soldiers are training hard in the extreme cold environment that surrounds Fort Wainwright. The U.S. Army is operationalizing its Arctic Strategy with the best clothing, equipment, and training specifically suited for the extreme cold. The U.S. Army's Arctic brigade is well on its way to becoming a specialized force to thrive in the extreme cold. When the U.S. Army's Arctic Infantry Soldiers fight in the next war that involves the extreme cold, they will be ready to fight and win.

#### Notes

<sup>1</sup> "Arctic Sea Ice Minimum Extent," NASA website, accessed from https://climate.nasa.gov/vital-signs/ arctic-sea-ice/#:~:text=Summer%20Arctic%20sea%20ice%20extent,covered%20in%20ice) %20each%20 September.

<sup>2</sup> Iskander Rehman, "Lessons from the Winter War: Frozen Grit and Finland's Fabian Defense," *War on the Rocks* (20 July 2016), accessed from https://warontherocks.com/2016/07/lessons-from-the-winter-war-frozen-grit-and-finlands-fabian-defense.

**LTC Daijiro "Don" Kanase** is the commander of 1st Battalion, 5th Infantry Regiment, 1st Infantry Brigade Combat Team, 11th Airborne Division, at Fort Wainwright, AK. He is a graduate of the Cold Weather Orientation Course from the Northern Warfare Training Center, AK. LTC Kanase is a former RAND Corporation research fellow and has a Master of Arts from the School of Advanced Military Studies, a Master of Business Administration from the University of Massachusetts, and a Bachelor of Science in mechanical engineering from the U.S. Military Academy at West Point, NY.