Airborne Joint Forcible Entry Operations in an Extreme Cold Weather Environment

2ND INFANTRY BRIGADE COMBAT TEAM (AIRBORNE), 11TH AIRBORNE DIVISION

"Today and for the foreseeable future, the Arctic presents a harsh and demanding environment for Army operations and activities. The environment is often cited as the greatest adversary to Arctic operations. Extreme temperatures, long periods of darkness and extended daylight, high-latitudes, seasonal challenging and changing terrain, and rapidly changing weather patterns define Arctic conditions."

— "Regaining Arctic Dominance: The U.S. Army in the Arctic"[1]

Joint forcible entry operations (JFEO) are extremely complicated and inherently risky operations. Airborne infantry brigade combat teams (IBCTs) of the U.S. Army are specially equipped, manned, and trained to perform JFEO anywhere in the world. There are five airborne IBCTs in the U.S. Army but only one Arctic airborne IBCT capable of conducting JFEO in extreme cold weather (ECW) environments. The 2nd IBCT (Airborne), 11th Airborne Division, headquartered at Joint Base Elmendorf-Richardson, AK, is the only Arctic airborne unit in the U.S. Army that is suited to provide the joint force with an airborne assault-capable formation able to operate in the ECW and alpine environments posed by the Arctic region.[2] Year-round operations in Alaska and across the globe have provided 2/11 with many lessons learned, experiences, and newly recovered expertise in the Arctic.

Paratroopers from the 1st Battalion, 501st Parachute Infantry Regiment, 4th Infantry Brigade Combat Team (Airborne), 25th Infantry Division, "Spartan Brigade," conducted a joint forcible entry operation onto Donnelly Drop Zone as part of Joint Pacific Readiness Multinational Readiness Center rotation 22-02 on 11 March 2022. (Photo by MAJ Jason Welch)

Two of the Army's most recent examples of successful airborne assaults in support of JFEOs include Operation Urgent Fury in Grenada in 1983 and Operation Just Cause in Panama in 1989. Both JFEOs offered unique challenges during the airborne assault, but both occurred in the warm temperatures of tropical or sub-tropical areas of operations (AOs), allowing for reduced combat load, increased speed of maneuver, and minimal sustainment requirements upon initial entry. Operating in the Arctic increases the paratrooper's combat load, slows down maneuver, requires immediate survivability, and calls for a more robust sustainment capability.

This article, by way of warfighting function (WfF) and reconnaissance, offers readers our experience over recent years and highlights the importance of maintaining airborne-capable forces as part of the joint force while directly supporting the U.S. Army's Arctic Strategy.

Great power competition amongst the U.S., China, and Russia has come to the forefront of the geopolitical landscape. To address this changing landscape, the U.S. Army's 2021 Arctic Strategy named both the U.S. and Russia as Arctic nations, while defining China as a "Near-Arctic Nation," with all three nations competing for access in the Arctic geographical region.[3] The strategy contends that, "The [U.S.] Army needs to generate forces able to compete effectively by, with, and through allies and partners, to pose dilemmas to adversaries as they seek to gain access to and compete in the region [Arctic]."[4] With this strategic competition in mind, and the Arctic becoming an increasingly important competition space, it is critical that the U.S. Army possess the capacity to project its forces and execute its role in JFEOs in this contested region of the globe. The great state of Alaska provides the critical power projection platform needed to accomplish the Arctic Strategy, and 2/11 IBCT (ABN) remains postured to serve as the Arctic-capable force and answer the nation's call.

Since the end of the Global War on Terrorism (GWOT), 2/11 has turned its attention to regaining Arctic dominance as prescribed in the Arctic Strategy. Detailed planning, tough and realistic training, and exercises incorporating the Army's WfFs (command and control, movement and maneuver, intelligence, fires, protection, and sustainment) have led to the successful execution of operations in an ECW environment during the past 24 months. Arctic Warrior 21, held in February-March 2021, and the U.S. Army Pacific Command's (USARPAC's) Joint Pacific Multinational Readiness Center-Alaska (JPMRC-AK) exercise, held in March 2022, afforded 2/11 IBCT (ABN) an opportunity to conduct joint forcible entry in extreme cold weather. The following lessons learned, organized by WfF, provide serious planning considerations for the successful execution of ECW operations and airborne assaults in particular.

Command and Control

While airborne operations in the Arctic have the same command and control requirements as any other airborne operations in a contested space, the environment alone presents several unique challenges. Airborne units require clear commander's intent and simple mission orders that enable disciplined initiative by every paratrooper in the airborne task force. Airborne forces operate decentralized immediately upon entry into an area of operations. Little groups of paratroopers (LGOPs) maneuver individually at first and then form small teams as they maneuver to their assault positions. Just as with all other airborne forces, radio-telephone operators and leaders must place their individual weapon into operation, quickly followed by the radio system they are carrying. Arctic airborne forces use communications systems similar to other U.S. Army units, but ECW conditions can shorten the battery life and normal operating functions by more than 75 percent. Shortened battery life places greater strain on Arctic paratroopers by requiring them to carry extra batteries in an already heavy sustainment-packing list.

As a result, units must train to fight in the Arctic without relying on technology that may not function properly. Newly fielded Improved Tactical Network (ITN) systems enhance the communications capabilities of Arctic airborne forces by providing end user devices, like cell phones, that enable increased situational awareness. Additionally, these systems employ self-healing Tactical Soldier Mesh (TSM) frequency band communications that alleviate many of the traditional line-of-sight radio retransmission requirements. Despite the exciting possibilities of these new technological capabilities, relying on them presents challenges to the Arctic airborne force. Touchscreens frequently fail to function in sub-zero temperatures, and use of the network increases the power requirements for individual radio batteries.

These communication challenges, as well as potentially unresponsive and unsustainable equipment in sub-zero temperatures, require leaders to consider other options for communicating mission orders. Arctic conditions

Paratroopers from C Company, 3rd Battalion, 509th Parachute Infantry Regiment, conduct an attack during Arctic Warrior 21 on 11 February 2021. (Photo by John Pennell)

have demonstrated success in sustained operations by establishing standardized reporting criteria and adhering to disciplined reporting during established communication windows. These procedures allow paratroopers to conserve batteries, reduce electronic signature, and ultimately decrease paratrooper load. Executing this standard operating procedure is only feasible when commanders provide clear mission orders and intent that enable initiative down to the smallest units.

Movement and Maneuver

Commanders and paratroopers must learn to appreciate and plan for the Arctic region's potentially devastating, and at times unpredictable, effects on movement and maneuver. Operating in the Arctic requires more time, and survivability becomes paramount to any operation upon entry. Without considering individual survivability, maneuver forces cannot close with and destroy the enemy. Failure to appreciate the impacts of an Arctic environment and the persistent reality of basic survival tasks needed in sub-Arctic conditions influence tactical execution.

The 2/11 IBCT (ABN) faced these realities during the execution of Arctic Warrior 21. During this demonstration exercise conducted in Alaska's Donnelly Training Area, 2/11 paratroopers experienced sub-zero temperatures as low as -40 degrees Fahrenheit (F) immediately after airborne insertion. Before proceeding to assault objectives or attempting to expand the lodgment, the assault force was required to erect warming shelters upon arrival to their assault positions. In doing so, the speed at which the ground force commander was able to set the force and prepare for critical airland capabilities increased from four hours to as much as 24 hours. This highlighted the importance of adjusting doctrinal tactical concepts of JFEO key tasks to account for individual survivability. Maneuver timelines must be realistic, as it takes longer to conduct operations due to the nature of the environment.

In an Arctic environment, the combination of terrain, weather, and sustainment load severely reduces the speed at which paratroopers can move dismounted. Dismounted paratroopers often maneuver through multiple snow depths while on foot, skis, or snowshoes. Squads and sections pull Ahkio groups (sleds filled with warming tents; critical components such as shovels, hacksaws, and axes; and fuel and water for survival). Leaders account for the increased load of each individual paratrooper. One of the most significant planning factors centers on clothing, due to the heat generated through physical exertion. Accordingly, leaders must carefully monitor uniforms and proper layering during all phases of a JFEO, respecting the adage that "if you sweat, you die."[5] Individual conditioning under increased loads minimizes the physical and mental toll exacted by operations in Arctic ECW environments.

Additional mitigations include avoiding additional layers of clothing until arrival at the first static position, and once movement has commenced, planning a rest stop 30 minutes into travel to allow individuals to adjust their clothing as necessary.

Leaders must also account for increased assault distance travel time and bounding techniques to accommodate slower movement. An additional ECW consideration is to emphasize the centrality of flanking fire to provide sustained machine-gun supporting fire throughout a slow assault.[6] Finally, JFEO planners must deliberately plan the constant rotation of reserve troops to allow for timely reorganization of initial assault elements to prevent early culmination. The environment is draining and taxing on a paratrooper's body. Even the most physically fit paratrooper may not survive in the Arctic.

Ultimately, successful JFEOs in an ECW Arctic environment require an understanding of individual loads, procuring and training on the right equipment, and planning and operating under the tactical constraints associated with the environment. Planners must consider the balance between the fight with adversaries and the fight with environmental conditions in order to achieve mission success. Planning and synchronizing the infiltration of the brigade's organic reconnaissance assets is critical to the brigade fight.

Reconnaissance

Common to airborne JFEO execution within 2/11 IBCT (ABN) is the insertion of the cavalry squadron's dismounted reconnaissance troop between 48-72 hours prior to the main body's airborne assault. Multiple planning considerations must occur when operating in an ECW environment. Planning considerations for this 80-paratrooper element manifest most critically regarding the sustainment of the unit during insertion, infiltration, and reconnaissance execution.

The insertion of dismounted reconnaissance requires additional support to fulfill the unique sustainment and protection needs in an ECW environment. Ahkio groups are an immediate requirement to protect the teams. Additionally, ECW will both drain and consume batteries faster than temperate conditions. Because of this degradation, units must plan on increased battery expenditure and subsequent resupply. These batteries are critical in supporting mission command requirements both from the recon teams to the mission support site (MSS) and from the MSSs to the troop command posts to higher headquarters. With a basic load of ammunition, radios, batteries, optics, the modular sleep system, Extended Cold Weather Clothing System (ECWCS) clothing, and minimal food and water, the large Modular Lightweight Load-carrying Equipment (MOLLE) rucksack is above optimal weight for an individual paratrooper. Both the brigade and squadron commander must plan to deliver critical sustainment commodities via door bundles, containerized delivery system (CDS), Joint Precision Airdrop System (JPADS), or other delivery means available for use.

A paratrooper from 1st Squadron, 40th Cavalry Regiment prepares to move out after an airborne operation in Alaska on 22 February 2017. (Photo by SSG Daniel Love)

During the infiltration to reconnaissance positions, skis and snow machines provide enhanced over-the-snow capability and increase tempo. When jumping with skis, each paratrooper is required to utilize the Airborne pack (AIRPAC) side-mount container system that constrains the unit to jumping over the ramp of a C-130 variant aircraft. Over-the-ramp operations limit jumper payload and have other paratrooper requirements. An additional capability for infiltration is the employment of snowmobiles/snow machines that directly enhance the depth and speed of infiltration, reduce paratrooper fatigue, and carry the critical sustainment commodities previously mentioned. However, their use increases the need for fuel and creates vulnerabilities to the reconnaissance troop through visual and audible signatures during movement. Airborne delivery of one snowmobile/snow machine requires one 12-foot "fast box" exited over the ramp of a C-17 or C-130 in the same manner as a CDS, creating the need for additional aircraft for infiltration.

During the execution of the troop's reconnaissance of named areas of interest (NAIs), six reconnaissance teams can report simultaneously on six different locations for short durations. In an ECW environment, however, this short duration planning factor requires a 50-percent reduction due to the increased requirement to rotate paratroopers out of the surveillance site and into the hide site or MSS to prevent cold weather injuries. The Ahkio tent creates a uniquely large signature compared to a typical unsheltered hide site and requires an increased distance between the hide site location and the surveillance site to decrease the risk of compromise. Long duration observation, more than 24 hours, reduces the number of NAIs that a reconnaissance team can effectively cover in an ECW environment. Each of the two platoons within the dismounted reconnaissance troop can effectively cover one NAI for as long as their sustainment package allows.

Infiltration of reconnaissance assets prior to the BCT's main body presents distinct challenges in ECW, but their employment is critical to mission execution of the BCT's JFEO. Despite these challenges, 2/11 IBCT (ABN) continues to develop planning considerations for effective employment in an ECW environment, which ensures full use of this critical BCT asset in Arctic environments.

Intelligence

Arctic environments increase the complexity of providing intelligence support to maneuver operations after initial entry. The most significant impact occurs to the connectivity of organic intelligence systems, such as the Trojan Spirit and Tactical Ground Station (TGS) systems of record. Satellite constellations routinely operate at lower latitudes than Arctic regions, resulting in low angle satellite shots which increase the difficulty of gaining and maintaining satellite connectivity for most systems. Interfering mountainous terrain and aurora activity further complicate connectivity, but robust primary, alternate, contingency, emergency (PACE) plans will do much to mitigate the potential loss of any one intelligence system.

For example, if the Trojan is unavailable, then establishing connectivity by employing the Army Tactical Network through the Modular Communications Node-Advanced Enclave (MCN-AE) makes satellite constellations more accessible. Joint Battle Command Platforms (JBCP) can then send intelligence updates and graphics. Although these obstacles are difficult to overcome, thorough pre-planning between the brigade's S2 section, Military Intelligence company (MICO) commander, and systems maintenance technician (353T), along with determining the most suitable brigade intelligence support element (BISE) location that facilitates satellite connectivity, reduces the risk of losing connectivity. In the Arctic, use of the BCT's organic unmanned aerial systems (UAS), such as the Shadow, is eroded.

The Arctic inhibits the employment of the BCT's Shadow, and the BCT commander should prepare for a lack of UAS capability, relying on external assets and maneuver forces for ground intelligence. Identifying the location to establish UAS assets is paramount. The Shadow UAS is rail-launched but requires a runway to land. The UAS does not have organic plowing capabilities, so the brigade and brigade engineer battalion commander must prioritize assets to plow the landing area. The brigade is constrained by ECW environments when temperatures below a certain point ground the Shadow UAS. The risk of icing may also ground all UAS systems organic to the BCT. Units should also consider the impact of snowfall, which necessitate additional considerations for proper employment of the UAS platoon.

Some brigade organic intelligence collection platforms possess touchscreens and batteries. Techniques to preserve battery life range from using thermal rucksacks, wrapping equipment in spare elements of the ECWCS, placing

Paratroopers assigned to 2nd Battalion, 377th Parachute Field Artillery Regiment fire an M119A3 howitzer during live-fire training at Joint Base Elmendorf-Richardson, AK, on 16 March 2022. (Photo by Alejandro Peña)

inside one's jacket to use body heat, or employing chemical hand warmers. By understanding the risks of the operational environment, intelligence leaders can develop creative solutions to ensure continuity of support to commanders and maneuver elements in ECW Arctic environments.

Fires

During JFEOs, maneuver commanders often employ a "team fires" concept during the initial phases of the airborne assault to mass indirect fire weapon systems providing overmatch, counter fire, and longer-range influence. Utilizing this concept, commanders typically consolidate control of all battalion-level mortar and field artillery assets under a single subordinate battalion commander (direct supporting field artillery battalion commander). JFEOs in Arctic conditions provide unique challenges and planning considerations for these weapon systems to provide responsive, accurate, and lethal fires.

The planning factor for 2/11 is to airdrop M119A3 105mm Light Towed Howitzers and their associated prime movers, 120mm mortars, and 81mm mortar systems. The M119A3 provides the brigade commander with an immediate medium-range capability and greater mobility within the airhead that is critical for survivability. In doing so, there are challenges that the commander and fire support coordinator (FSCOORD) must consider when determining the appropriate artillery package.

The M119A3's operating temperature is -25 degrees F, and the Digital Fire Control System's (DFCS) is -45 degrees F. Howitzer crews must closely monitor the regularity at which they idle their prime movers and balance the need for power while minimizing their heat signature. Doing so requires an abundance of fuel, a critical resource in the Arctic.

M777A2 155mm Medium Towed Howitzers provide maneuver commanders increased range and firepower; however, their prime movers cannot be airdropped together which decreases the speed at which the artillery can provide indirect fires. Similar to the M119A3, extreme cold weather increases reliance on the prime mover to power the howitzer and Fire Control Computer (FCC). Airdropping these systems requires the gun crews to rapidly de-rig and link the prime mover, something that is extremely difficult in Arctic conditions when there are often multiple feet of snow. Additionally, without the prime mover, the howitzer is increasingly susceptible to counter

fire after employment. M777A2 crews must also work to mitigate the howitzer's susceptibility to freezing temperatures on the weapon's breech and hydro struts, which rely on nitrogen and hydraulic fluid levels that fluctuate drastically with changes in temperature. In the Arctic, long-range systems and acquisition assets are air-landed to help reduce the risks associated with dropping these items of equipment.

Ammunition consumption will require careful management throughout the JFEO, since clearing an airstrip and expanding the lodgment will inevitably take longer in the Arctic. Due to limited on-hand ammunition quantities for these critical weapon systems following an airborne assault, it is imperative that fire missions are centrally managed, tracking the expenditure of each round. This requirement becomes increasingly important in an ECW Arctic environment where expanding the lodgment can take longer and necessitate supporting indirect fires for greater periods. Until resupply becomes available, commanders must prioritize indirect fires toward high-payoff targets and high-value targets to reduce consumption rates.

Team fires plays an integral role in enabling maneuver commanders to dominate during JFEOs. JFEOs have inherent challenges, and ECW Arctic conditions present unique challenges and limitations for each element of the fires enterprise. Synchronization and prioritizing assets minimize the impacts of challenges and enable team fires to provide decimating fires in support of maneuver forces and ensure mission success.

Protection

The U.S. Army designs engineer equipment for use in various environments and conditions, but operating in the harsh and extreme conditions of the Arctic can pose many challenges. Extreme cold weather temperatures cause vehicle parts to become brittle and break more easily, lubricants to thicken and become less effective, and demolitions to harden and become less pliable. When this occurs, clearance of obstacles and proofing of the airfield becomes problematic.

The terrain in Arctic, sub-Arctic, and alpine zones can also prove unforgiving to equipment. Permafrost in and around Fort Wainwright is up to 45 meters deep, and deeper within the Arctic Circle.[7] Excavating permafrost can prove difficult and often impossible with the brigade's organic engineer equipment, such as the D6 and DEUCE bulldozers and the High Mobility Engineer Excavator (HMEE). If not careful, the equipment will likely be damaged, which leads to delays in the brigade's preparation for defensive operations and disruptions in tempo during offensive operations.

Despite these challenges, U.S. Army engineer equipment is vital to many operations in the Arctic. Engineers utilize their equipment to emplace obstacles and conduct route clearance, airfield damage repair, and breaching operations. Leaders must understand how to adjust their tactics, techniques, and procedures (TTPs) to work in their present conditions. Expedient methods for conducting airfield damage repair might consider the use of snowcrete and icecrete. During JPMRC-AK 22, 2/11 IBCT (ABN) engineers demonstrated effective ways to fix, turn, block, or disrupt an opposing force and create effective engagement areas by using available snow to create snow berms and serpentines instead of emplacing anti-vehicle ditches. Sapper squads successfully utilized cloth hand warmers to keep C4 pliable before charge construction.

Engineer operations in the Arctic present a host of challenges including cold temperatures, limited daylight, harsh weather, and remote locations. However, utilizing available materials in non-standard ways continues to prove the most effective means of meeting these challenges. Leaders carefully plan, prepare, and adjust mission essential tasks and TTPs to ensure execution of protection tasks in Arctic conditions. They provide maneuver commanders options to shape the battlefield, prepare airfields, and protect the force.

Sustainment

More than any other operating environment, the Arctic punishes leaders who fail to prepare to win the sustainment fight. The key to successfully sustaining a JFEO in an ECW Arctic environment is to embrace the most significant challenges it presents to leaders across all echelons — the imperative of maintenance, the cornerstone of fuel, and a full understanding of distribution operations. In a temperate operating environment, the maintenance of equipment is important; however, it will rarely be life threatening if it ceases to function. In the Arctic, that equipment may be the only thing standing between a paratrooper, -50 degree temperatures, and the heat needed for survival.

The Arctic environment itself can prove detrimental to the maintenance of equipment. The extreme fluctuation of

A small unit support vehicle moves across the drop zone after paratroopers conducted an airborne infiltration near Fort Greely, AK, on 9 March 2022. (Photo by MAJ Jason Welch)

temperature and incredibly low temperatures wreak havoc on machinery and electronics. The effects of ECW are compounded by extended equipment thawing times, limited number of man-hours to conduct repairs, and limited routes for maintenance and recovery assets. In order to limit the negative impacts of temperatures and weather on operations, disciplined maintenance programs prior to a JFEO require leader prioritization.

A second critical consideration is that fuel (JP-8) constitutes the cornerstone of commodities in the Arctic. Fuel is fundamental to operations and each warfighting function across all echelons. Without it, vehicles cannot run, generators do not produce power, heaters do not warm shelters, and squads do not melt snow and purify water to consume sustenance such as their operational rations (Meals, Cold Weather [MCWs]). During a JFEO, the consideration for secondary loads of fuel on all aerially delivered vehicles and execution of CDS bundles with sufficient fuel to support operations is imperative. These methods allow time for either ground assault convoys or airland operations to establish continuous flows of fuel to the warfighter.

A final consideration involves a gained understanding of distribution operations across the battlefield, from the brigade support area (BSA) to the company position by leaders at all echelons. Arctic terrain creates limitations on mobility that force leaders to understand the limits of their equipment in this environment. These limitations are often due to wheeled vehicles being unable to conduct over-the-snow movements. The use of snow chains on tires becomes paramount but does not always work depending on snow depths and road networks. Vehicles at all levels are reduced to operating on roads only, or they face the reality of getting stuck in swamp-like conditions called muskeg if the ice is not thick enough to sustain the vehicle's weight. Primarily, commanders need to consider where they must transition unit resupply operations from wheeled vehicle operations (primarily from the BSA and combat trains command posts) to over-the-snow platforms such as small unit support vehicles (SUSVs), Cold Weather All-Terrain Vehicles (CATVs), or Ahkio sleds. The deliberate planning to move from bulk-wheeled assets to smaller but more capable over-the-snow assets is one of the major planning factors for a successful JFEO.

Conclusion

The U.S. Army's ability to project power into the sub-Arctic, Arctic, and alpine environments is crucial for our nation's security in the future. Two decades of fighting the GWOT and forward operating base-centric operations have eroded the organizational knowledge of these techniques, control measures, and coordination techniques across BCT formations. Through continuous exposure to this unique environment, 2/11 IBCT (ABN) has incorporated the above mitigations and planning considerations by WfF and reconnaissance to achieve tactical success within this strategically relevant subject. Continuous training in extreme cold weather, understanding Soldier load and sustainment, and detailed planning ultimately reduce the risk associated with operating in the Arctic. Leadership in the Arctic is difficult, but leaders are critical to ensuring paratroopers understand the effects that Arctic conditions will have on their bodies. The Arctic will always present a harsh and demanding environment for our Army to operate in, and it is the greatest adversary we face during JFEOs. However, through tough training,

planning, and continued experimentation, 2/11 is leading the way toward demonstrating how units can quickly transition from jump and survive to jump, fight, and win!

Notes

[1] Headquarters, Department of the Army, "Regaining Arctic Dominance: The U.S. Army in the Arctic," 19 January 2021, 4-5; available at https://www.army.mil/e2/downloads/rv7/about/2021_army_arctic_strategy.pdf.
[2] Markus Kottek, Jurgen Grieser, Christoph Beck, Bruno Rudolf, Franz Rubel, World Map of the Kloppen-Geiger climate classification updated. (Meteorologist Zeitschrift, Vol. 15, No 3, June 2006).
[3] "Regaining Arctic Dominance," 15.
[4] Ibid.
[5] BG M.L. Lapointe, Arctic Advisory #1, 21 October 2022.
[6] Ibid.
[7] Beth Astley, Colby Snyder, Seth Campbell, Steven Arcone, and Bruce Smith, "An Integrated Geophysical Program to Map Permafrost Extent, Fort Wainwright, Alaska," Symposium on the Application of Geophysics to Engineering and Environmental Problems 2011, available at https://doi.org/10.4133/1.3614107.

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