COMMENTARY

Extreme Cold Weather CBRN Training at the Joint Pacific Multinational Readiness Center

CPT Christopher C. Piasecki, US Army

Abstract

The threat of near-peer adversaries possessing weapons of mass destruction necessitates a focus on comprehensive readiness for the US Army. This article highlights the significance of regaining Arctic dominance and conducting large-scale combat operations (LSCO) training in extreme cold weather and CBRN-contaminated environments to effectively counter near-peer competitors. It discusses the need for increased CBRN training, equipment, and confidence in combat operations, emphasizing the unique challenges posed by extreme cold weather. The Joint Pacific Multinational Readiness Center in the Indo-Pacific theater emerges as a groundbreaking training facility that allows for in-theater training, cost savings, and increased training value for soldiers. The article acknowledges the ongoing threat of adversaries' CBRN weapons of mass destruction, underlining the importance of maintaining readiness through dynamic and rigorous training. It concludes by emphasizing the significance of applied readiness, regional engagement, and a paradigm shift in prioritizing CBRN training and evaluation. Overall, this article advocates for a comprehensive approach to address the complexities of LSCO in extreme cold weather and CBRN-contaminated environments to emerge triumphant in future conflicts.

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The threat of near-peer adversaries in possession of weapons of mass destruction permeates today's complex national security landscape. Future conflict in the Indo-Pacific theater will undoubtedly involve the employment of chemical, biological, radiological, and nuclear (CBRN) weapons.[1] Near-peer competitors like Russia and the People's Republic of China (PRC) continue to invest significant resources in the development of CBRN military advancements, particularly for employment by their Arctic-capable land forces. However, while US adversaries are substantially increasing their weapons of mass destruction (WMD) development and posture, the US Army's readiness to conduct operations in both extreme cold weather conditions and in CBRN-

[1] Richard A. Bitzinger, "The Security Environment in the Asia-Pacific: The Context for Arming," *Defense & Security Analysis* 38, no. 3 (2022): 247–57, https://doi.org/.

contaminated environments has diminished.[2] By regaining Arctic dominance and conducting large-scale combat operations (LSCO) training in extreme cold weather and CBRN-contaminated environments, the US Army will be better postured to fight and emerge victorious in the nation's wars.

The US Indo-Pacific Command (USINDOPACOM) holds responsibility for the world's largest and most significant theater of operations, encompassing near-peer threats posed by the PRC, Democratic People's Republic of Korea (DPRK), and Russia. Each of these adversaries is well known to possess ever-growing arsenals of CBRN agents and WMDs.[3] Furthermore, of these nations retain territories with extreme cold weather climates. The combination of extreme cold weather environments and CBRN warfare agents increases the complexity and lethality of LSCO in such setting exponentially.[4] However, under the innovative leadership of GEN Charles A. Flynn, the US Army Pacific Command (USARPAC) has devoted substantial resources to the expansion and development of the Joint Pacific Multinational Readiness Center (JPMRC). The JPMRC stands as the US Army's first regional combat training center (CTC) located within the Indo-Pacific theater of operations and assumes significant responsibility in preparing brigade combat teams (BCT) for LSCO in CBRN-contaminated and extreme cold weather environments.

The JPMRC represents a groundbreaking CTC that enables the retentionof trained forces within the Indo-Pacific theater, ensuring their continuous availability for deployment under the combatant commander's purview. Instead of transporting a BCT and its associated equipment and personnel halfway across the world to a CTC in Louisiana or California, the JPMRC empowers commanders to conduct in-theater training, similar to the approach adopted by US European Command–stationed units. This not only yields significant cost savings of tens of millions of dollars annually in transportation expenses for the US Army but also enhances the training value for Soldiers.

One of the key strengths of the JPMRC lies in its ability to facilitate joint and combined operations with partners and allies at various locations throughout the USINDOPACOM theater. The center executes three training rotations annually, encompassing the challenging terrains of the Hawaiian archipelago's jungles, Alaska's extreme cold weather tundra, and an allied or partner nation in the

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[2] Manpreet Sethi, "Nuclear Overtones in the Russia-Ukraine War," *Arms Control Today* 52, no. 5 (June 2022), 12–15, https://www.armscontrol.org/.

[3] Bitzinger, "The Security Environment in the Asia-Pacific."

[4] John W. Castellani et al., *Sustaining Health & Performance in Cold Weather Operations* (Natick, MA: US Army Research Institute of Environmental Medicine, October 2001), https://apps.dtic.mil/.

region, such as Australia. This remarkable diversity of locales and operational versatility presents unparalleled opportunities for US military forces to train in terrain types that closely resemble those where they may be called upon to fight.

Figure 1. 11th Airborne Division Soldiers battle during JPMRC-AK 23-02. US Army infantrymen with Blackfoot Company, 1st Battalion, 501st Parachute Infantry Regiment, 2nd Infantry Brigade Combat Team (Airborne), 11th Airborne Division, hold security with their M240B machine gun while clearing opposition forces during Joint Pacific Multinational Readiness Center-Alaska 23-02 at Yukon Training Area, Fort Wainwright, Alaska, 1 April 2023. JPMRC-AK 23-02 is a display of the 11th Airborne Division's ability to survive and thrive in the Arctic, and its soldiers' ability to fight and win our nation's wars anywhere. (US Air Force photo by Alejandro Peña.) VIRIN: 230401-F-HY271-0333

Each exercise at the JPMRC is built upon a multifaceted doctrinal simulation. This simulation incorporates real-time feedback, employing virtual and constructive effects across multiple echelons, effectively immersing participants in a comprehensive training environment. Another notable innovation integrated into every JPMRC rotation is the inclusion of enhanced CBRN training scenarios and rigorous assessments conducted by CBRN subject matter experts. These additions significantly enhance the training and evaluation value of the CTC.

It is noteworthy that the US Army has not dedicated the necessary time and resources to adequately prepare ground forces for combat operations in complex

CBRN environments since the Cold War.[5] Consequently, the unique and demanding training provided at JPMRC equips army units with improved readiness to undertake LSCO in extreme cold weather and CBRN-contaminated environments. The incorporation of extreme cold weather CBRN training within the JPMRC is essential to ensure the joint force is well-prepared to confront the myriad challenges presented by near-peer adversaries.

However, further efforts are required to ensure that the joint force possesses the necessary training, equipment, and confidence to successfully execute combat operations in extreme cold weather and CBRN-contaminated environments.[6] The ongoing situation in Ukraine serves as a persistent reminder of the threat posed by adversaries' CBRN weapons of mass destruction.[7] Consequently, it is imperative for commanders at all echelons to understand and prioritize the importance of such training, enabling the joint force to maintain readiness and achieve victory. The inclusion of extreme cold weather CBRN training at JPMRC–Alaska is crucial to the US Army's preparedness for future conflicts, ensuring its ability to effectively fight and emerge triumphant.

The US Army must continuously generate force readiness through dynamic training conditions, as it is a transient state. Over time, readiness diminishes due to personnel turnover and deficiencies in maintaining institutional and organizational memory. In the context of conducting LSCOs in CBRN-contaminated and extreme cold weather environments, the Army's readiness is significantly inadequate. The application of readiness serves as the best means to verify the training and preparedness of Army units at various echelons for their specific mission sets in these demanding environments.[8] Implementing more dynamic and rigorous CBRN training, combined with agile combat employment in the theater, can enhance the force posture of the US Army against near-peer adversaries in the Indo-Pacific region. This approach can be referred to as *applied readiness*, reflecting the paradigm shift.

To achieve this, extreme cold weather CBRN training focused forward in the Indo-Pacific theater necessitates expeditionary advanced basing operations and facilitates the execution of maneuver operations in the forward environment. Forces that maintain recurrent forward presence in the theater continuously

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[5] Bitzinger, "The Security Environment in the Asia-Pacific."

[6] Andrew Kick et al., "Engineering and Mathematics (STEM) Foundation Gaps Place Countering Weapons of Mass Destruction (CWMD) Operations at Risk–Part 2," *Countering WMD Journal* iss. 24 (Spring/Summer 2022), 33, https://digitalcommons.usmalibrary.org/.

[7] Sethi, "Nuclear Overtones in the Russia-Ukraine War."

[8] Joint Publication 3-40: *Joint Countering Weapons of Mass Destruction*, 27 November 2019, https://www.jcs.mil/.

generate and renew force readiness, which is assessed and validated for the combatant commander.

The JPMRC–Alaska conducted the 23-02 training exercise from 27 March to 5 April 2023, with the objective of validating the capability of US Arctic warriors to rapidly deploy and operate in subzero temperatures. The US Army forces in Alaska serve the purpose of maintaining a capable formation that can be used in the coldest regions of the Indo-Pacific. The United States recognizes the Arctic as an increasingly competitive area with Russia and the PRC, a competition that will be further intensified by the effects of climate change and improved sea lane traversability. Operating effectively in the Arctic enables the USARPAC commander to maintain readiness and project forces, enhancing the capacity to respond to competition, crisis, and conflict. Through joint training and engagement with Arctic allies and partners such as Canada, India, Nepal, Mongolia, Japan, Korea, and Norway, the US Army can safeguard national interests and uphold regional stability. Continuous regional engagement in the Arctic is vital to ensure strategic competitiveness in the Arctic region remains a priority for the United States.[9]

In January 2021, Army leaders released a new Arctic strategy, which outlines how the service will support the Department of Defense's Arctic strategy published in 2019. This strategy addresses the need to shift the training focus of Soldiers and units, enabling them to reacquire cold weather capabilities after years of counterinsurgency operations in the US Central Command area of responsibility. The primary objective outlined in the strategy is to restore the Army's Arctic dominance by prioritizing the training of combat brigades to operate effectively in cold weather regions and extended operations in the Arctic.[10]

The JPMRC was specifically designed to provide comprehensive multi-echelon training across all war-fighting functions. The introduction of the first JPMRC–Alaska exercise in 2022 marked a new paradigm tailored for the extreme cold weather mission set in the region. In May 2022, the US Army Alaska was redesignated as the 11th Airborne Division, signifying its unique role in responding to threats across USINDOPACOM and the Arctic.

The US Army must assume that great-power competitors not only possess but are willing to employ CBRN weapons in an extreme cold weather environment to achieve tactical and strategic goals. It is crucial for US forces to receive comprehensive training and appropriate equipment to effectively operate in such

[9] Headquarters, Department of the Army, "Regaining Arctic Dominance—The U.S. Army in the Arctic" (Washington, DC: Department of Defense, 2021), https://www.army.mil/.

[10] Headquarters, Department of the Army, "Regaining Arctic Dominance."

a complex environment.[11] Extreme cold weather introduces additional complexity and challenges to most normal military operations, and its effects on the employment of CBRN agents and weapons of mass destruction are deeply concerning.

The freezing points of most chemical agents, including nerve agents like sarin and VX, and choking agents like phosgene, are extremely low, ranging between -60˚F and -198˚F. Even blister agents like nitrogen mustard maintain their liquid phase at temperatures of -76˚F, making them viable for use in extreme cold weather environments. These chemical agents exhibit significantly higher persistency in extreme cold compared to warmer environments. For instance, nonpersistent chemical agents like sarin can persist in extreme cold environments, posing a severe and lasting hazard to Soldiers for weeks or even months after initial deployment. Moreover, liquid droplets of chemical agents mixed in snow can transfer to clothing and equipment and vaporize once brought into a heated tent or vehicle.[12]

The destructive effects of nuclear weapons employed in an Arctic environment are also amplified. Snow- and ice-covered terrain increase certain blast effects, such as the radius of the nuclear blast and minimum safe distances, by as much as 50 percent. Soldiers operating on frozen terrain would face challenges in rapidly digging in to seek shelter from approaching blast waves, rendering them particularly vulnerable to lethal effects. Additionally, the cold and windy weather patterns in the Arctic complicate the prediction of fallout patterns, and heavy snowfall can concentrate radioactive fallout. During cycles of warming and thawing, melting snow and ice may cause the migration of radioactive fallout, further concentrate radioactivity in low lying areas.[13]

The functionality of various CBRN protective clothing and detection equipment is severely compromised at temperatures below 0˚F, adding to the lethality of CBRN agents in extreme cold weather environments. For instance, the M50 protective mask becomes stiff and brittle, leading to tears and cracking, impairing its ability to form an effective seal. Fogging of the eyepiece becomes a common issue, and the associated drinking tube for the M50 is nonfunctional in subzero environments.[14] The batteries powering CBRN-detection equipment like the AN/VDR-2 Radiation Monitor, Joint Chemical Agent Detector (JCAD), and Improved Chemical Agent Monitor (ICAM) also fail to operate without proper insulation from subzero temperatures. Furthermore, auto-injectors containing antidotes for nerve agents

[11] Headquarters, Department of the Army, "Regaining Arctic Dominance."

[12] Castellani et al., "Sustaining Health & Performance in Cold Weather Operations."

[13] Castellani et al., "Sustaining Health & Performance in Cold Weather Operations."

[14] A.J. Young et al., "Physiological Problems Associated with Wearing NBC Protective Clothing during Cold Weather," *Aviation, Space and Environmental Medicine* 71, no. 2 (February 2000): 184–89.

and anticonvulsant liquids are susceptible to freezing below 29°F. Even if kept warm, administering these auto-injectors to service members wearing multiple layers of cold weather clothing and protective gear becomes more challenging. Additionally, the symptoms of nerve agent exposure can resemble those of cold weather injuries like hypothermia, further complicating medical responses.[15]

The reprioritization of CBRN training and evaluation at CTCs like JPMRC represents a necessary course correction for the Army as a whole. However, further actions are imperative to ensure that our forces can fight and win during LSCOs in a CBRN-contaminated environment.[16] The ongoing situation in Ukraine underscores the persistent threat posed by adversaries' CBRN weapons of mass destruction.[17] Arctic Soldiers in the US Army must receive thorough training, suitable equipment, and be prepared to confront the unique CBRN challenges presented by extreme cold weather environments. Achieving future strategic and tactical successes hinges on commanders understanding and appreciating the significance of operating within extreme cold weather and CBRN-contaminated environments, generating applied readiness for combatant commanders to leverage. The enhanced CBRN training at JPMRC marks a crucial initial stride on the extensive path toward achieving the US Army's proficiency in conducting LSCOs in a subzero and CBRN-contaminated environments. ✪

CPT Christopher C. Piasecki, US Army

Captain Piasecki is a US Army chemical, biological, radiological, and nuclear (CBRN) officer and was the maneuver support observer, coach, trainers (OC/T) team chief at the Joint Pacific Multinational Readiness Center during Rotation 23-02. He is now a resident student at the Combined Arms Center Command and General Staff College at Fort Leavenworth, Kansas. He holds Bachelor of Science degrees in both physiology and psychology from Michigan State University and is pursuing a Master of Science in emergency disaster management from American Military University. Piasecki, has served in multiple CBRN and staff assignments throughout the US Army Pacific Command area of responsibility over the past decade.

[15] Castellani et al., "Sustaining Health & Performance in Cold Weather Operations."
[16] Kick et al., "Engineering and Mathematics (STEM) Foundation Gaps
[17] Sethi, "Nuclear Overtones in the Russia-Ukraine War."