



5.2 CLIMATE AND ENERGY AVAILABILITY IMPACTS ON OPERATIONS IN USNORTHCOM

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In my presentation, I will examine how changes in climate and energy availability may affect the evolution of naval force operations

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(Navy, Marines, or Coast Guard) in the U.S. Northern Command (USNORTHCOM) area of responsibility (AOR), to include changes in tasking, organization, or equipment. I will frame my discussion by beginning with some opening remarks, and then attempt to address the two main issues contained in this question, and conclude with some recommendations.

Let me briefly scope the limits of my comments if I may. First, I have chosen to limit my remarks to one specific piece of the North American Aerospace Defense Command (NORAD) area of operations and the USNORTHCOM AOR, specifically, the Arctic region. The reason I have chosen to do this is because this is a region where we anticipate the most evolutionary change in naval force operations in the near and long term. Second, some may be dismayed but I will not speak to the science of climate change. The reason I will not do so is because (1) I am not qualified and (2) at NORAD and USNORTHCOM we concern ourselves with the fact that access to the Arctic is increasing and we leave the science to the scientists. Better yet, I know when I am out of my depth. Third, I will not try to speak for the U.S. Navy or U.S. Coast Guard (USCG); rather I will limit my remarks to the perspective of our Commander, General Renuart, and those resultant conditions in the Arctic that affect USNORTHCOM's two distinct mission sets: homeland defense and civil support. With these limitations in mind, let me now make a few stage-setting remarks.

There is little doubt that interest in the Arctic is growing. Over the past 10 years a steady stream of sometimes provocative and alarming headlines has appeared in different news sources (forgive my overuse of the BBC) telling us that a great game is about to be played out in the Arctic. I would suggest to you that this is not what we should be focusing our attention on; rather I would suggest that, like the iceberg in the background of Figure 1, what we know about the Arctic is only the tip of the iceberg and below the surface is a vast amount of knowledge and understanding we have yet to comprehend.

Regions that undergo significant change and possess a high level of global attention demand a well-developed national strategy. Today's Arctic region requires diplomatic, military, economic,

and informational sources of national power synchronized within a unified effort to realize U.S. interests in the region. The United States needs to further its own policy efforts directed toward positively influencing the formative Arctic region.

Regardless of the true causes and future ramifications of global climate change, it is conceivable that a relatively ice-diminished or ice-infested summer in the Arctic Ocean may become a reality ahead of current 2030–2040 estimates. A routinely accessible Arctic Ocean portends significant change for the global economy as trade routes change and new resource reserves become accessible. Nations bordering this area will attempt to harvest new resources, and increased interest in the Arctic region is already evident from many countries.

These changes imply challenges for the United States that involve national boundaries, sovereignty, national security, environmental regulation, resource exploitation, and altered lives of indigenous peoples. A comprehensive national strategy is critical, and yet the most recent policy guidance is yet to be implemented.



Figure 1. Recent Headlines Related to the Arctic

A strategy is necessary to guide the Department of Defense's (DoD) Arctic readiness. Specific defense challenges include a divided U.S. military command structure in the Arctic and the need for force structure improvements to operate routinely in the region's harsh environment.

Increased Arctic access has the potential to mold this region into a crossroads of global economic activity. An example of this is the navigation of the Northern Sea Route by the *Beluga Fraternity* and the *Beluga Foresight* this past summer. Today the United States sits ill positioned to leverage its Arctic interests. As other nations accelerate their activities in the region, proactive U.S. movement toward a coherent and credible Arctic posture for tomorrow appears prudent.

In terms of climate change, USNORTHCOM can offer general climate change predictions and their impacts to DoD facilities based on general scientific consensus:

- Coastal facilities may be vulnerable to effects from more intense hurricanes and ocean-born storms.
- Coastal facilities may be vulnerable to effects from sea-level rise due to melting of land-based ice masses (glaciers, Greenland ice sheet, and Antarctica).
- Southern and Southwest U.S. facilities may be vulnerable to effects of severe periods of drought and likely water restrictions.
- Facilities in Alaska may be vulnerable to permafrost thawing and coastal erosion due to increasing temperatures in the Arctic region and the receding icepack.
- Alaskan North Slope facilities are most vulnerable due to near-pervasive permafrost and coastal erosion.
- Alaskan Interior facilities are potentially vulnerable depending on the location of "discontinuous" permafrost.

As far as energy availability is concerned, the Arctic region is widely considered to be rich in natural resources to include oil, natural gas, minerals, lumber, and many species of sea life.

Untapped oil reserves in the Arctic region may be abundant and a tremendous supplement to the world's reserves. However, the true extent of Arctic oil remains unknown, and predictions vary widely. Some contend as much as 25% of the world's oil reserves may lie beneath the Arctic. The promise of new oil resources drives national interests toward the Arctic region to include nations beyond those that border the region. This future global interest in the assumed Arctic oil reserves assumes continued world reliance on hydrocarbon fuel sources over the next several decades coupled with a continued rise in oil prices. This scenario enables the harvest of hidden oil caches that today remain enormously uneconomical to pursue. The emergence of legitimate alternative fuel sources may also limit the compelling nature of the Arctic's resource implications.

The bottom line is that energy and its availability greatly impact our national security. Energy is a center of gravity for both homeland defense as well as support to and by civil authorities. Energy is required to provide basic services expected by our citizenry from the local, state, and federal governments. It is one of the basic requirements to help re-establish communities after disasters. For the DoD, a lack of a reliable and secure energy source directly impacts the ability of our forces to perform mission-critical tasks and to ensure our national security.

In terms of the role DoD should play in our nation's energy strategy, DoD is both the single greatest federal end user of energy as well as the largest federal implementer of renewable energy. DoD can provide secure federal facilities to support the implementation and testing of innovations at both installation and regional scopes. Some of these innovations such as smart grid technology and implementation can be used to help forward national efforts in both energy production and conservation. These kinds of efforts increase DoD mission assurance through increased energy availability as DoD continues to improve efficiency of facilities and advanced vehicles to support conservation efforts. The DoD, as an active partner in the development process, can provide the voice for the importance of security as other agencies may focus more on resiliency or efficiency of the advancing technologies.

Returning to the Arctic region, the emergence of significant oil reserves in the Arctic threatens to shift some of the focus of oil production supremacy away from the Middle East. The potential reduction in global influence and wealth may inspire elevated aggression from the Middle Eastern centers of power. Furthermore, increased traffic through the Arctic region opens new avenues of approach to the homeland that illegal immigrants or extremists may exploit, and sea lines of communication (SLOC) choke points in the Arctic represent new vulnerabilities to the free flow of commerce. Although an extremist scenario may seem outrageous, I would remind you what the 911 Report said: “The one thing we lack that our enemies do not is imagination.” [1]

In short, the Arctic region clearly has the interest of the global community stemming from a wide range of concerns that includes economic resources, sovereignty, freedom of navigation, and the impacts of elevated access upon world markets. As Arctic accessibility and activity increase, the potential for international dispute rises. An opportunity exists today for the United States to mitigate international tensions by adopting a course of strategic engagement that includes resolution of the contentious legal issues surrounding the Arctic region.

In terms of defense implications and force structure, today, the U.S. military is poorly postured for increased engagement in the Arctic. The principal factors underlying that assessment include the following:

- Access = new approach avenues, SLOC choke points
- Arctic domain awareness
- Communications—limited satellite communications above 65°N latitude
- Search and rescue—increased commercial activity
- Infrastructure and equipment
- Need for increased governance—soft security
- Command authorities

Our command boundaries, infrastructure, and capabilities are ill equipped to contend with the operational environment of the Arctic on the larger scale. Currently, the USCG possesses only three icebreakers, all at the end of their service lives, and the U.S. Navy has none. Increased access to the region will inspire greater commercial activity, and leisure cruise lines have already transited the entirety of the Northwest Passage with no adverse affects. In the short term, this necessitates increased protection and search-and-rescue missions for the U.S. Navy and Coast Guard. The USCG recognizes this growing requirement and now prepares to assess the state of navigation in waterways previously buried under ice.

In the long term, the perennial U.S. desire to maintain unhindered freedom of navigation will require military capabilities in the region and corresponding force development. The USCG realizes the need for aircraft equipped with skis and heated fuel tanks to increase regional agility. Reduced threat-response times stemming from increased adversary ability to encroach upon U.S. borders may require the configuration of regional early warning sites or the modification of response processes. Unity of effort in infrastructure development would minimize duplication of effort.

Regarding command authorities, the current Unified Command Plan (UCP) divides the northern reaches of the globe among three geographic combatant commanders. In addition, NORAD conducts air-defense and sovereignty operations within the region. A single military commander for the region, or a clear articulation of responsibilities within a supported/supporting construct, should be considered to apply unified effort. The impending increase in Arctic activity suggests command authorities for the region warrant reassessment, as our Maritime Division established in its Limited Objective Experiment (LOE) entitled “Alaska and Arctic Regions Command and Control” in May 2009. Insights from that experiment are as follows:

- The first key insight from that LOE was if [the DoD was] faced with increased activity, almost all characteristics of the command and control (C2) structure [in Alaska] will need attention.

- The second key insight was that C2 structure changes are needed, especially if the region is characterized by increased activity, but acceptability will be an issue for any changes.
- Third, if the region is characterized by increased activity, it will not be for many years, so a phased approach to any changes is both possible and warranted.
- Fourth, there is a need for clearer guidance from senior levels that outlines DoD's equities and mission requirements, regardless of activity level.
- Fifth, UCP boundaries should be redrawn and assignment of roles and responsibilities should be clarified.
- Sixth, there is a need for a single responsible commander for the Arctic region.
- Seventh, capability considerations are at least as important as C2 structure, and the two are linked.
- Finally, DoD equities in the Arctic are closely linked to those of the interagency and international community.

In terms of force structure, U.S. awareness and understanding of the Arctic activity remains limited. As some have suggested, "America does not realize it is an Arctic nation." To address this deficiency, the USCG now conducts routine surveillance flights into the northern areas to build "Arctic Domain Awareness." Although this represents a laudable first step, the tyranny of distance and sparse civilian and military infrastructure limit these flights and other Arctic operations. Consequently, sufficient Arctic domain awareness requires infrastructure improvements that include a supporting base or series of bases.

Once the United States achieves awareness and understanding, its military must prepare for a wider range of military operations. The ability to command and control forces rests on the capability to communicate. Lack of infrastructure and satellite coverage in extreme latitudes impedes this capability. Furthermore, increased commercial demands for existing space-based communications bandwidth will only exacerbate DoD difficulties in accessing these

private resources when its need for enhanced communications in the Arctic becomes more pronounced. Laying a foundation on which future communications networks can be built will be critical to establishing a credible, routine presence in the region.

With the above cornerstones in place, U.S. forces should be capable of conducting the full range of assigned missions within the region, to include those associated with Civil Support, e.g., assistance to civil authorities in response to a natural or man-made disaster. Extreme cold weather, icing conditions, extreme latitudes for navigation, and other untested nuisances will challenge the functioning of some weapon systems and affect adversely all military operations. These negative effects will increase with the continued effect of climate change.

In terms of the effects on naval forces in the USNORTHCOM AOR, USNORTHCOM anticipates that maritime operations in the Arctic will require capabilities beyond what is currently available. Icebreaking is one such capability. Currently USCG District 17 has three polar-class icebreakers in the inventory that operate in the Arctic. The fleet of polar icebreakers is coming to the end of their 30-year service life and needs to be replaced. It is for this reason that the Commander of USNORTHCOM signed a 12-star memorandum, along with the Commander of U.S. Transportation Command (USTRANSCOM) and the Commander of U.S. Pacific Command (USPACOM), addressed to the Chairman of the Joint Chiefs of Staff in May 2008, supporting modernization funding of the USCG fleet. [2]

In general terms, other capabilities (without getting into classification issues) include: the ability to conduct surveillance and interrogation of objects above, on, and below the surface of the ocean; the ability to forecast the movement of ice relative to shipping lanes and international straits; the ability to communicate above the Arctic Circle; charting sufficient to allow surface ships to navigate Arctic waters; the requisite infrastructure to support passage of ships in coastal waters; the ability to conduct search and rescue; and, if conditions warrant, the ability to conduct surface operations in ice-infested waters.

In conclusion, Arctic climate change portends increased activity in the region. Although the timeframe for this change remains subject to significant debate, now is the time for the United States to operationalize its national interests, as defined in the Presidential Directive, and the strategies required to secure them. [3] Without such guidance to subordinate military processes and capabilities, the nation stands susceptible to the forced acceptance of undesirable economic and political outcomes. Most importantly, the United States must ensure territorial diplomatic annoyances, even among its perennial partners, do not descend into military or political brinksmanship.

In the near term, the United States should:

- Ratify the United Nations Convention on the Law of the Sea [4]
- Recognize the growing importance of the Arctic region to national security
- Organize, train, and equip the Coast Guard to accomplish its expected missions in the Arctic environment

In the long term, the United States should:

- Leverage mutual defense interests to resolve existing Arctic disputes with Canada
- Expand a regime of agreements or a comprehensive Arctic governance agreement with Arctic nations to promote governance in the region
- Engage Arctic border nations within the parameters of the Arctic regime to pursue mutual, responsible resource harvesting
- Consider the ramification of shortened trade routes to affected economic partners

In the absence of an Arctic strategy, DoD should nonetheless ready itself for increased engagement throughout the region.

In the near term, DoD should:

- Re-evaluate Arctic command authorities (currently under review)
 - Consider placing the region under a single combatant commander
 - Construct definitive supported–supporting relationships among the relevant Combatant Commands
- Continue and increase our understanding of the Arctic
- Systematically assess operational and equipment gaps related to the Arctic

In the long term, the DoD should:

- Extend and modernize NORAD and USNORTHCOM’s surveillance network, with the communications framework and infrastructure to support it
- Organize, train, and equip its forces to operate routinely in the Arctic environment, particularly in the air and maritime domains
- Expect increased search and rescue, surveillance, and freedom of navigation requirements

Finally, as other nations pursue their interests in an increasingly accessible region, proactive movement by the United States and its military establishment toward a coherent and credible Arctic posture appears prudent. As we at USNORTHCOM frequently say, “The defense community must anticipate today the Arctic operations that will be expected of it tomorrow.”

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