

**Testimony by Mead Treadwell
Chair, U.S. Arctic Research Commission and
Senior Fellow, Institute of the North**

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**[Climate Change and the Arctic:
New Frontiers of National Security](#)**

Mr. Chairman, members of the Committee, thank you for the opportunity to testify today.

I am Mead Treadwell, Chair of the U.S. Arctic Research Commission, a seven member body appointed by the President to advise the President and the Congress on goals for the U.S. Arctic Research Program and to set policy for that program.¹ U.S. Arctic research, conducted by at least 15 federal agencies, focuses on a variety of issues and questions, in league with University, private and international partners, the State of Alaska, and indigenous groups in the Arctic. My comments today do not necessarily reflect U.S. government policy.

In private life, I am Senior Fellow of the Institute of the North, a research institute based in Anchorage Alaska, founded by former Alaska Governor and U.S. Secretary of the Interior Walter J. Hickel. I lead the Institute's Defense and Security Program, which has focused on issues related to missile defense and

¹ Mead Treadwell has served on the U.S. Arctic Research Commission (www.arctic.gov) since his appointment by the President in 2001, and as chair since 2006. The seven-member Commission was created by the Arctic Research and Policy Act of 1984. Treadwell is a Senior Fellow at the Institute of the North, a research institute founded by former Alaska Governor and U.S. Interior Secretary Walter J. Hickel, and his work focuses on strategic issues in the Arctic, natural resource policy and national security. In private life, he is chair of Venture Ad Astra, LLC, a technology development firm. As a private citizen in 1988, Treadwell helped open the U.S.-Russia border; and as Deputy Commissioner of Alaska's Department of Environmental Conservation, 1990-1994, he helped the State of Alaska and the United States establish instruments of Arctic cooperation, including the Northern Forum –an organization of regional governments in the North, the eight-nation Arctic Environmental Protection Strategy, and its successor, the Arctic Council. He is a graduate of Yale (BA, History, 1978) and Harvard (MBA, 1982), and can be reached at meadwell@alaska.net.

As required by Clause 2(g)(4) of House Rules XI, to ensure disclosures of conflicts of interest, Treadwell does not earn compensation from U.S. government supported programs at the Institute of the North. Work on energy, transportation, and fisheries issues is conducted there under grants or contracts from several U.S. agencies, with funds appropriated over several fiscal years.

critical infrastructure. We also study ways to improve international cooperation in the Arctic and North Pacific region.

Since the late 1800's, when the Naval Arctic Research Laboratory was built in Barrow, to this very week, when a camp on the Beaufort Sea ice north of Alaska is helping improve U.S. submarines' capabilities in the Arctic Ocean, national security has been a major driver for Arctic research. Defense programs dating back to the Cold War have been major collectors of ocean and atmospheric data. Our strategic communications needs have driven close to a century's work on understanding space weather, and the magnetosphere.

Today, the Arctic region plays a major role in air defense, training, and global logistics for our armed services. Assets in polar orbit and ground stations in the North support our nation's intelligence capability and secure military telecommunications. Our nation's ground based missile defense, accompanying radars and test beds are stationed in this region in order to get the "best shot" at attacking missiles. As an alternative to the Panama Canal, the Arctic Ocean offers the Navy a money-saving way, under cover of water and ice, to quietly move submarine assets between the Atlantic and Pacific Oceans. The Arctic may also, in time, serve as a venue for surface military sealift.

Energy security, Mr. Chairman, is also tied closely to the Arctic region. Most Arctic nations have made it their interest to provide safe energy to the world. America's northern-most oil fields, Prudhoe Bay and environs, have led the nation in production since 1977. Our nation's largest reserves of natural gas, also on Alaska's North Slope, await transportation infrastructure to reach a market. Since the fall of the Soviet Union, Russian Arctic oil and gas has found a larger market in the West. Canadian oil, from the Arctic or subarctic, has also grown in U.S. market share. North Sea oil produced off Norway is a major contributor to that nation's economy and to European supply. If current plans of our nation, Canada, Russia, Greenland, and Norway continue, Arctic oil and gas will supply world markets in even larger proportion. Just as the US Geological Survey reported last summer on the tremendous potential reserves of conventional oil and gas inside the Arctic Circle, our unconventional/alternative tar sands, gas hydrates, wind, tidal, geothermal, wave, and hydro resources are also vast. In the summer, even our solar resource outshines the rest of the world!

The Committee called this hearing today because the Arctic is changing. Climate change, joined with technological change and global demand for resources would be enough, alone, to require our nation to consider new implications for the United States security in this region. The end of the Cold War made the Arctic a friendlier neighborhood, but it is still a place where NATO forces and Russia test each other's capabilities even as they cooperate on environmental matters, counter-terrorism, and search and rescue. But there is political change afoot, too, as five nations are moving to acquire new territory

beneath this suddenly accessible Arctic Ocean, as the United Nations Convention on the Law of the Sea has come into force.²

These factors led the U.S. Arctic Research Commission to formally recommend the White House initiate a review of Arctic policy in 2007. That effort resulted in the Presidential Directive (NSPD/HSPD) released January 9 of this year. I compliment those who spent so much time hammering out this policy. Whatever differences may have existed between former Administrations and the current one on Arctic, climate or security issues, there are broad, common policy objectives in the North, included in this policy we can agree upon. Since the early 1990's, through several administrations, the U.S. has established a tradition of conducting its foreign policy in the Arctic with active consultation between the federal government, the State of Alaska, Arctic residents including indigenous groups. We trust that will continue.

Mr. Chairman, the new Arctic policy reminds us all that the United States, since 1867, is an Arctic nation. Moreover, the policy reflects an increasingly apparent reality -- on global economic, energy, transport, environmental, and security issues -- the Arctic region matters. Arctic assets feed the nation, fuel the nation, supply the nation, and defend the nation.

Features in the Arctic, from reflective sea-ice to carbon-storing forests and permafrost, moderate our climate. The North and South magnetic poles establish a shield from cosmic rays and allow life on earth itself to exist. We are just beginning to understand this region's unique ecosystems that produce half of the fish consumed by the US. The Arctic's unique, hardy and resilient human cultures enrich our life on earth. In the face of Arctic change, these people and critters need our help.

The United States has an opportunity to exercise great leadership now in the Arctic region, and a mandate to do so with this new policy. Let me highlight a few of the issues discussed in the policy, and the tasks it set out for our nation's diplomats and scientists:

--In the global dialogue on climate change, the Arctic region comes to the table with two roles. First off, Arctic residents are an aggrieved party -- disruptive change is happening in our region now, and quickly. Yet Arctic research is warning us now that Arctic "feedbacks," already observed from the loss of sea ice, the release of stored carbon, and the acidification of the ocean are

² Article 76 of UNCLOS allows nations to claim Extended Continental Shelf, outside the 200-mile limit, where appropriate bathymetric and geological conditions apply. While the United States has not yet ratified UNCLOS, it is preparing a claim which could equal twice the area of the State of California, in the Arctic Ocean and elsewhere.

dramatically “raising the bar” for the global climate mitigation strategy the world seeks to agree upon in Copenhagen later this year.³

These two factors alone require us to commit to long-term Arctic research and monitoring. Mankind cannot build an effective regime to limit its own emissions without understanding emissions coming natural sources in the Arctic. The U.S. is committed, with other Arctic nations, to build a sustainable Arctic Observing Network, known as SAON. Further, because the Arctic region is one of the largest terrestrial storage zones of carbon on earth, research could help us find ways that the Arctic can be part of the global mitigation solution. Forest and fire management, carbon sequestration, development of new energy sources in the Arctic, and other products of research, including so called methods of “geoengineering,” may ultimately add to an effective global mitigation strategy.

--On sovereignty, the United States has vast undersea lands and resources at stake in the extended continental shelf claim available to us in the Arctic region. We can gain these subsea resources if we do the research necessary to make a claim, and ratify the United Nations Convention on Law of the Sea. We have a disputed border with Canada, unfinished business setting our maritime border with Russia, and differing views with both nations on whether the Northern Sea Route and the Northwest Passage are open to freedom of navigation. It is time to resolve the dispute over Law of the Sea in the U.S. Congress, and time to resolve these sovereignty disputes with our neighbors in the North. An

³ Dr. Katey Walter, a University of Alaska Fairbanks researcher reports, in personal correspondence to Mead Treadwell dated July 16, 2008, “Today there are 5-10 Tg CH₄ (1 Tg = 1 MMT) per year emitted from ecosystems in the Arctic where permafrost is thawing. In CO₂ equivalents, this is 125-250 MMTCO₂E.”

To put this number in perspective, 235 MMTCO₂E was the level of emissions made by all transportation in the State of California in 2005, according to the Energy Information Administration. http://www.eia.doe.gov/oiaf/1605/state/excel/CA_05_details.xls

“During the last 30-40 years,” Walter added, “CH₄ emissions from Siberian thermokarst lakes has roughly doubled. These lakes currently emit ~4 Tg CH₄ per year.

“The icy, organic-rich permafrost, called “yedoma”, contains ~500 Gt C, or half of the arctic permafrost carbon pool. Yedoma occurs largely in North Siberia, though it occurs in patches in Alaska and Canada as well.

“Last summer was very hot in Siberia. During the past couple of weeks I have been visiting my long-term study lakes and am surprised by the huge expansions of permafrost degradation along the lake shoreline. This rapid increase in thaw results in large increases in atmospheric methane emissions.

“Within a decade of a rapid temperature increase of 5 deg C, yedoma permafrost thaw in Siberia would result in the release of hundreds of Tg of methane per year. This methane would come from decomposition of organic matter currently sequestered in permafrost.”

accessible Arctic demands this happen, and before the world shows up at our doorstep to exploit our differences.

--On biodiversity, the United States shares responsibility for Arctic fish stocks, marine mammals, and migratory birds with several other nations, notably Canada and Russia. I can report that management of these species is hampered because essential scientific exchange is weak, underfunded, and too often ignored or shouldered aside by larger diplomatic issues, especially between us and Russia.

The new Arctic policy recognizes the necessity of building stronger scientific cooperation with Russia. I cannot stress how important this is, for without better cooperation between us and Russia, the science community cannot deliver the data and knowledge the world needs.⁴ The United States is pressing Russia for greater, and more predictable, access to their Arctic waters for research. The prospect that Russia may soon be able to put more of the Arctic Ocean floor off limits to our scientific research vessels—because of Law of the Sea—gives the scientific community great pause. Further, the goal of a regional fisheries agreement is broached by the policy as a necessity because fish stocks are now moving north in our part of the Arctic.

--On shipping, the status of the Arctic Ocean today is that it is open to ships of any nation, whether or not those ships are properly prepared for Arctic ice conditions, properly defended against oil spills, or properly served by navigation and search and rescue infrastructure. Rules to prevent harmful interactions with marine mammals, or subsistence hunting, are not in place. Arctic shipping technology is improving quickly, with self-contained, ice breaking cargo ships and tankers coming from shipyards in Europe and Asia. Research underway aims at using cleaner fuels and methods to avoid emissions of soot, black carbon which

⁴ Arctic research cooperation with Russia has often been aided by larger geopolitical drivers in the U.S.- Russia relationship. A 1972 agreement negotiated by Henry Kissinger with the Soviet Union on environmental issues, during “détente,” helped establish research exchanges with results that continue to be significant today. In the early 1990’s, the Nunn-Lugar process to stem nuclear proliferation helped employ scientists to track radiation contamination in the Arctic left over from the Cold War period. USAID’s efforts and those of the Eurasia Foundation to assist Russia in establishing a market economy and a pluralistic society brought social researchers from our countries together, with benefits to Arctic residents on both sides of the border, notably subsistence hunters. From the early 1990’s until recently, the U.S., under Administrations of both parties, sought greater Russian energy development in the Arctic and Russian Far East.

Today, our joint efforts lack a driver. Even before Russia’s 2008 military action in Georgia further chilled our relationship, and led to the postponement by the U.S. of a joint military exercise against terrorism in the Arctic region last fall, three NOAA sponsored joint cruises scheduled for 2008 in the Bering and Chukchi Sea regions were cancelled, due to high fuel costs or budgeting/contracting problems. The Commission recommends the United States engage Russia on a bilateral basis in the Arctic with the same high level/working level interagency coordination and attention that exists with the multilateral Arctic Council

promotes Arctic warming. Next month, the Arctic Marine Shipping Assessment (AMSA), a report our Commission helped the United States lead, with Finland and Canada, will be delivered to Arctic ministers. It is the most significant review of Arctic shipping in over a decade. It will show that “destinational” shipping – the carriage of goods in and out of the Arctic – is growing, but it predicts trans-Arctic shipping may be a ways off.

The new U.S. Arctic policy lays out a goal for “safe, secure and reliable” Arctic shipping. To get there, we will need the help of the International Maritime Organization. We should consider arrangements, like those we have with Canada on the St. Lawrence Seaway, that jointly deliver a reliable route to the world’s shippers. And we should build icebreakers, ice monitoring, and other aids to navigation, security and search and rescue. The cost of these improvements, in real terms, is minimal compared to what was spent building or maintaining the Panama and Suez Canals. For 500 years, nations have sent explorers North to find shortcuts between the continents, and as this ocean becomes accessible, we must be ready for the ships that would follow.

--On energy, the Arctic is increasingly a player in the global picture. Oil, gas, gas hydrates, geothermal, wind, hydro, tidal, and biomass resources in the Arctic are vast. Exports of conventional energy resources, or minerals refined with geothermal and hydro derived electricity, are fundamental to the economies of Alaska, northern Russia, Norway, Iceland, and Canada. Greenland is moving toward political independence from Denmark. A self-sufficient economy there may rely on energy exploration and development. While global climate change has produced additional ambivalence on the part of many related to Arctic energy development, the fact that energy is central to the economies of these regions cannot be overlooked -- nor can the effect on security that Arctic energy development plays by diversifying our energy sources.

Mr. Chairman, when you add together a newly accessible ocean, conflicting views of sovereignty, the prospect of major short-cuts for global shipping, growing and moving fish stocks, and new estimates of vast energy resources in one region, that brings us right back to security issues. Security issues are at the top of the new U.S. Arctic policy.

--On security, the policy recognizes that defending an accessible Arctic requires new commitments. U.S. military planners, NATO planners, the U.S. Coast Guard, and the intelligence community are responding.⁵ Congress could help

⁵ On the security front, already this year, NATO has held a workshop on Arctic security issues in Iceland. The National Geospatial Intelligence Agency hosted a St Louis conference this month, partly classified, on Arctic Domain Awareness. The U.S. Navy, with international partners, is conducting a biannual ice research camp north of Alaska, in the Beaufort Sea with submarine trials. In June, the U.S. Naval Academy will serve as the venue for a third conference on Arctic Ice Operations, organized by the National Ice Center with support from our Commission. The U.S. Coast Guard will resume Arctic Domain Awareness flights, and perhaps this year will be allowed to conduct an icebreaker training mission north of the Bering Strait. Land based

with new assets – such as polar class icebreakers – to ensure U.S. security needs in the Arctic. Furthermore, because the American Arctic is the confluence of boundaries of the European Command, the Pacific Command, Northern Command, and NORAD, more coordination in planning and outreach by U.S. forces responsible for the region may be necessary.

There you have it: dramatic change in the Arctic, with effects on six major issues in international diplomacy. Doing the work that comes with each of these issues will require research first and throughout. Further, the work itself –and the necessary cooperation on science behind the work – is likely to further strengthen the institutions of Arctic cooperation. The U.S. Arctic Research Commission will work hard to ensure that our research is focused, robust, and effective.

International cooperation is key to success on every goal we have set for the U.S. Arctic Research Program:

- Researchers have added much to the understanding of climate change and ecosystems in the Arctic Ocean and Bering Sea – and we’re moving forward with a legacy of the International Polar Year in establishing an Arctic Observing Network to have much better, real time, data on Arctic change.
- The academic and clinical communities are coming together to address serious problems in Arctic Health, including a suicide epidemic among groups of young Alaskans and neighboring nations. Throughout the North, there is continuing concern about heightened levels of contaminants in Arctic foods, coming mostly from outside the Arctic.
- We have agreement in the government to better map and assess Arctic Resources – from the new undersea territory we might claim in the Arctic under Law of the Sea, to the significant and extensive mineral and biological resources on public lands onshore. Ocean drilling in the Arctic, and other activities conducted from space, ships at sea, and research on land, has helped us understand much more about the geophysical processes on our planet that provide for life itself on earth.
- A new initiative throughout the government, working closely with the State of Alaska, will be focused on Arctic infrastructure – including the challenges of dealing with eroding shorelines and changing permafrost.

activities of the Coast Guard, in support of search and rescue, homeland security, law enforcement and fisheries and environmental protection, will continue to move north in Alaska. Our own work in this area is being matched by activities of many other nations, all aware of the fact that this is a newly, increasingly accessible ocean.

Arctic energy development, both for export and for use by Arctic residents, presents a host of research problems, and we depend on Arctic cooperation to raise standards throughout the North. Oil spill research in the Arctic, for example, is very much an international enterprise.

- Preservation of indigenous languages, identities and culture – among the intangible assets of the North – also requires international cooperation. Our efforts in the United States—conducted with the help of government bodies including the National Science Foundation, the Smithsonian, the National Endowment for the Humanities and others – tie closely, and learn from, efforts in other nations of the world.

With all this work to do the idea of some more formal, global Arctic agreement continues to gain legs. I am involved with an NGO studying this idea, the Aspen Institute. The World Wildlife Fund has commissioned two notable papers on this subject. Arctic Parliamentarians visited the issue in Fairbanks last summer, and recently, the European Union has fostered an academic inquiry, aimed at protection measures for the high seas of the Arctic. When Antarctic Treaty nations convene near here in Baltimore next month, some people may ask again, “Is it time for an Arctic treaty?”

It is appropriate that we manage the Arctic commons, as former Alaska Governor Wally Hickel has said, “for the benefit of the total: people, people’s needs, and nature.” Like the Illusiat Declaration of five Arctic Ocean nations last May, the Arctic Policy document rejects the Arctic Treaty idea, but it does not reject a comprehensive approach to strengthening Arctic cooperation. Indeed, it commits us to go to work for a number of formal regional or global agreements on issues I’ve discussed today – climate science, scientific access, shipping, regional fisheries, search and rescue

Mr. Chairman, people who live in the North seek self-determination still, in many different ways. The U.S. policy in place now is based in part on the idea that governance should be formed by the people who live in the North, from the Arctic regions and nations themselves, not imposed from Outside. Foremost in this time of great change, the Arctic needs partners –partner nations willing to invest in, understand and respect the Arctic. With that help, I believe we will mitigate the change we can, adapt to the change we can’t and maintain peace at the top of the world.

Thank you for the opportunity to be here today.