

The Arctic ice pack is melting rapidly, raising the possibility that the region may soon be open to oil and gas exploration, mineral extraction, and new shipping routes. **Arctic countries are racing to exploit this development, but the U.S. is lagging** behind.

Glacial Pace

■ By Art Pine

Global climate change is threatening to set off a heated race between the United States, Russia, and other countries to stake out new shipping routes and oil-exploration rights in the Arctic.

The rush stems from faster-than-predicted melting of the polar ice pack, which is enhancing the likelihood that sea-lanes will open and seabeds will be more accessible for drilling. This summer, the ice-blocked Northwest Passage—long envisioned as an Arctic shortcut between the Atlantic and Pacific oceans—and the companion Northern Sea Route along Russia's northern coast both opened briefly for shipping for the first time in recorded history.

The development has important implications on a broad range of fronts—from energy, shipping, and global trade to geopolitics, national security, and the environment. The United States has 1,000 miles of Arctic coastline, and seven other countries either border the Arctic region or hope to use its new sea routes for shipping, tourism, and development of natural resources.

Rockford Weitz, an Arctic expert at the Tufts University Fletcher School of Law and Diplomacy and a fellow at the Institute for Global Maritime Studies in Gloucester, Mass., calls the Arctic “America’s next frontier for oil and natural-gas exploration and maritime transportation.” He predicts that the opening up of navigable waterways in the region will eventually bring about “the largest shift in global sea routes in modern history.”

Evidence that the ice pack is shrinking now seems to be solid. The Oslo-based Arctic Council, an eight-nation intergovern-

mental forum, says that temperatures around the North and South poles are rising twice as rapidly as those on the rest of the globe. The Arctic ice is melting more quickly than had been thought only a few years ago: Between 2004 and 2005, some 14 percent of the hard, longer-lasting ice pack vanished. Over the past 23 years, the loss has totaled about 41 percent.

The area covered by sea ice is now the second-smallest in size since record-keeping began some 30 years ago. The pack shrinks earlier in the year and refreezes more slowly than in recent decades, and the ice is thinner. Arctic experts have moved up the dates by which they believe the region’s waters will be navigable to somewhere between 2013 and 2030, rather than 2050.

“It’s no longer a matter of *if* but *when* the Arctic Ocean will be open to regular marine transportation and exploration,” says Scott Borgerson, an Arctic expert at the New York City-based Council on Foreign Relations.

Resource Competition

Although the precise extent of the region’s undiscovered oil and natural-gas reserves and various minerals has not been determined, indications are that it is massive. And the rapid melting is drawing more ship traffic and business ventures. The number of





naval vessels and merchant ships plying Arctic waters has increased significantly over the past two years, mainly to support mining and cruise-ship operations. Some analysts believe that whether the region's two big shipping routes become fully navigable in 10 years or 30, the political jockeying makes it imperative that the U.S. step up its own pace now.

"The politics is not keeping up with what's going on on the ground," Weitz says.

The competition is growing hotter almost daily. In August 2007, Russia sent a nuclear-powered icebreaker and two deep-water submersibles to plant its flag in the seabed beneath the North Pole—a largely symbolic gesture designed to bolster its claim to a large undersea extension of the Siberian land mass. Shortly after, Canada announced it would build several Arctic patrol vessels, a deep-water port, and a cold-weather training center in the Northwest Passage.

Meanwhile, Russia, Canada, and five other countries—Denmark, Finland, Iceland, Norway, and Sweden—are seeking approval of their claims to oil, natural-gas, mineral, and fishing rights in portions of the Arctic seabed and to resources outside

■ **NORTHERN EXPOSURE:** Summer 2007 brought an ice-free opening through the Northwest Passage (on right, above) that lasted several weeks. Sea ice was 38 percent below average.

their own continental shelves under the United Nations Convention on the Law of the Sea, a 1982 pact intended to help resolve maritime-sovereignty issues. Oil companies worldwide are starting to bid more aggressively for Arctic drilling leases.

"Countries are beginning to understand that there's a future in the Arctic, and each side is jockeying for position," says Mead Treadwell, an Alaska businessman who chairs the government-sponsored U.S. Arctic Research Commission. He says that the scramble is likely to intensify as the sea ice continues to melt and new technology makes exploiting the Arctic more affordable.

The potential for oil and natural-gas drilling and mineral extraction alone is enormous. The U.S. Geological Survey estimates that some 400 oil and natural-gas fields north of the Arctic Circle hold as much as 90 billion barrels worth of oil and 1,670 trillion cubic feet of gas—as much as a quarter of the world's remaining undiscovered oil and natural-gas deposits.

On November 12, the agency released a study estimating that shoreline areas and state-managed seabeds off Alaska's North Slope hold some 85.4 trillion cubic feet of natural gas in the

form of gas hydrates, gas-and-water solids that can potentially be recovered with technology now being developed. Scientists say that the cache could heat more than 100 million average homes for more than a decade.

Besides the oil and gas, the offshore seabed is thought to hold sizable amounts of copper, iron ore, cobalt, nickel, diamonds, gold, and high-grade manganese. Analysts say that if rising temperatures attract marine species from more-southern waters, the Arctic may spawn a major international fishing ground as well. Newly appearing land masses could provide freshwater reserves.

The shipping lanes opening up between the Atlantic and Pacific oceans are also likely to be a boon. Cargo vessels taking the Northern Sea Route from, say, China, Japan, and South Korea to Europe would cut their transit time—and costs—dramatically because today's routes force them to take the Panama or Suez canal. And Arctic waters would be free of the pirates and terrorists who ply the southern oceans.

Shorter shipping routes could eventually have a major impact on global trade patterns, Borgerson notes. "As soon as marine insurers recalculate the risks involved in these voyages, trans-Arctic shipping will become commercially viable and begin on a large scale," he wrote in *Foreign Affairs*. "In an age of just-in-time delivery, and with increasing fuel costs eating into the profits of shipping companies," he says, the opening up of Arctic sea-lanes "could usher in a new phase of globalization."

Such increased shipping, mining, and drilling would almost certainly pose new environmental risks. The warming has already degraded the Arctic permafrost, the layer of frozen soil that covers much of the region's land mass; changed the region's ecosystems; and adversely affected wildlife, such as polar bears. Increased shipping and shoreline activity would inevitably heighten the chance of major oil spills and other pollution. And all of this is having a stunning effect on the region's indigenous people.

Finally, there are national security implications. The U.S. mil-

itary, apart from providing a maritime presence to ensure international access to and rights of passage through the new waters and over emerging land areas, eventually may need to bolster its northern missile defense system and take steps to prevent adversaries from imposing a blockade at key choke points in the two major maritime routes.

Hazardous Environment

Yet the prospects of operating in the Arctic regularly are daunting—and expensive—for all of the players. The region's vast distances and harsh, often unpredictable weather make policing the area difficult. Keeping the sea-lanes clear would require a fleet of heavy icebreakers. Cargo vessels and cruise ships must have reinforced hulls to withstand the ice. Search-and-rescue operations and pollution control are especially difficult because the area is so remote, with no access to major ports. Coast Guard helicopters must fly in pairs in case one goes down. Compared with the rest of the globe, the region remains essentially uncharted.

So far, the most frenetic competition has involved Russia and Canada. Apart from Moscow's symbolic flag-planting in the North Pole seabed, Russia already all but controls the Northern Sea Route and charges hefty tolls for ice-breaking. It is conducting extensive commercial operations in the Arctic; has begun a \$7 billion program to expand the port at Murmansk on the Barents Sea; and is aggressively laying claim to the Lomonosov Ridge, an underwater extension of the Siberian land mass that cuts across the Arctic Ocean.

In Canada, where Arctic exploration is a hot political issue, the government has stepped up law enforcement patrols and development in the region. Ottawa is building more icebreakers, opening a deep-water port near the eastern entrance to the Northwest Passage, and increasing its naval presence. Other Arctic countries are intensifying their activity there as well; even China has deployed an icebreaker to Arctic waters.

■ Breaking Up Is Hard to Do

The Coast Guard icebreaker *Healy*, based in Seattle, can carry up to 50 scientists and operate in temperatures down to 50 degrees below zero.



■ As much as a quarter of the world's remaining undiscovered oil and natural-gas deposits are probably in the Arctic.

■ Russia and Canada are the big Arctic players, but the United States has 1,000 miles of Arctic coastline in Alaska.

■ Search-and-rescue operations and pollution control are especially difficult because the area is so remote, with no access to major ports.



By contrast, the United States has mainly been sitting on the sidelines. Although U.S. military planners have been keeping an eye on the region, and U.S. submarines routinely patrol the area, the Defense Department has yet to develop a serious strategy for dealing with potential threats. Indications are that the Navy and Air Force are just beginning to think about the region strategically. Some U.S. military planners argue that the opening of Arctic waterways is still too far off to pose immediate risks. But Navy Secretary Donald Winter said last month that his service had begun a staff study to review the role of its surface fleet in the Arctic. “That’s an area that concerns me,” he told *Inside the Navy*, a defense-oriented newsletter.

Joseph Nye, a former assistant Defense secretary for international security affairs and now a professor at Harvard University’s John F. Kennedy School of Government, says that Washington has been correct in taking a go-slow approach to the developing situation in the Arctic. “The Russians’ sinking a flag was more related to Russian nationalism than a contest over sea resources,” he says. “The Arctic opening may be significant, but it would be a mistake to get into a conflict about it now. This is a cloud on the distant horizon that could turn into a storm, but it’s far enough away that we have time to prepare for it. The main thing is to lay down markers.”

For now, Coast Guard Commandant Thad Allen has made the Arctic one of his top priorities, and the service is taking the

An iceberg melts off Ammassalik Island in eastern Greenland in this July 2007 photo. Ice across the Arctic retreated to its lowest level in 2007 since such images were first taken in 1978.

lead on providing a U.S. presence. The Coast Guard has been ferrying scientists to conduct research in Arctic waters and patrolling the area with helicopters and C-130 aircraft.

Backed by the National Academy of Sciences, Allen

has been pressing Congress for money to build more icebreakers. He is laying the groundwork for monitoring ship traffic in the region, installing navigational aids, and setting up facilities for pollution control and search-and-rescue operations. The Coast Guard plans to establish an operations base at Alaska’s Point Barrow as early as next spring.

“They are looking at this far more than any other agency in the government,” Arctic expert Weitz says.

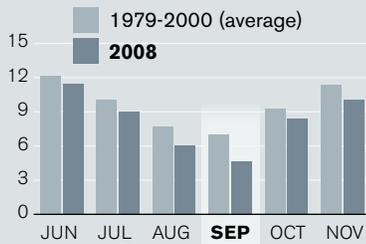
Incredibly to some analysts, the Coast Guard has just three polar icebreakers in its fleet—the only such vessels in the entire U.S. military. Two of the three are 30 years old, and one of them is sitting in Seattle in a caretaker status awaiting extensive repairs. By contrast, the Russians have 18 heavy icebreakers and the Canadians have six, according to a National Research Council tally. “All I know is, there is water where it didn’t used to be, and I’m re-

■ Arctic Ambitions

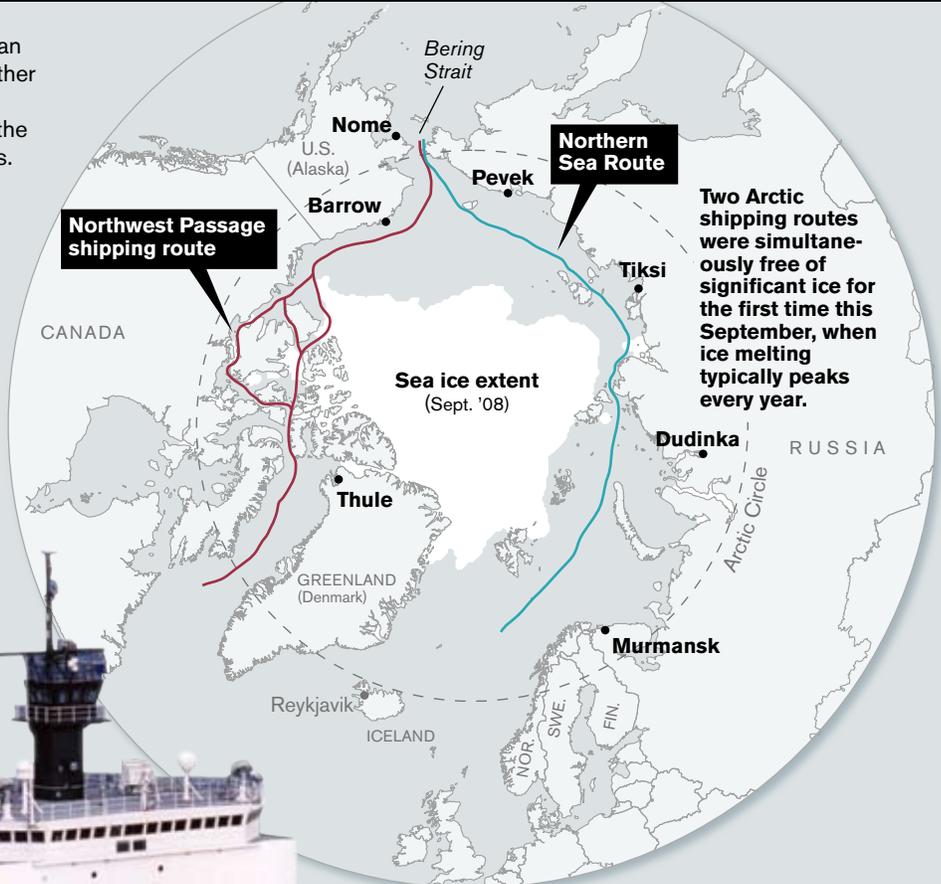
A rapidly warming environment has set off an international competition for oil, gas, and other natural resources above the Arctic Circle. Melting sea ice, meanwhile, is opening up the possibility for new strategic shipping routes.

Arctic sea ice extent

In millions of square kilometers



The Coast Guard's icebreaker/research vessel *Healy* can break up to 4.5 feet of ice at 3 knots.



Two Arctic shipping routes were simultaneously free of significant ice for the first time this September, when ice melting typically peaks every year.

Undiscovered Arctic oil

According to recent estimates by the U.S. Geological Survey ...

Estimated amount:

90 billion barrels

U.S. proven reserves

21.3

U.S. annual production

1.8

Undiscovered natural gas

USGS found even more potential for natural gas north of the Arctic Circle (about three times as much as oil).

Estimated amount:

1,670 trillion cubic feet



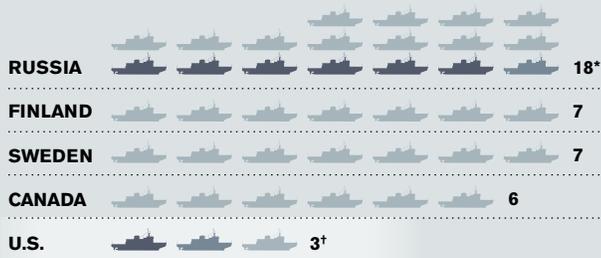
39% in Russia's West Siberian Basin

SOURCES: Homeland Security Department; National Snow and Ice Data Center; NOAA; National Research Council; USGS; U.S. Coast Guard

Graphic by RYAN MORRIS

Icebreaker fleets

A tally of heavy icebreakers by the National Research Council found the U.S. with fewer ships than some other countries.



*Does not include two icebreakers leased from the Netherlands.

†Does not include vessel *Nathaniel B. Palmer*, which is operated by the National Science Foundation.

Heavy icebreaker
>45,000 propulsion horsepower

Heavy icebreaker in caretaker status

Icebreaker
<45,000 horsepower

sponsible for dealing with that,” Allen said in an interview.

Icebreaker Gap

U.S. nuclear submarines have been taking measurements and core samples in the Arctic region for years, but estimates of oil and natural-gas deposits are no more than that, and they vary widely. Some analysts believe that it will be several years before the Northwest Passage and the Northern Sea Route become fully navigable. Although portions of both are technically “ice-free” during the Arctic summer, they still contain huge chunks of ice that would pose a danger to most ships, and those conditions are apt to continue. Younger, thinner ice is more likely to break up and threaten ship passage.

“It’s still a dangerous, hazardous place,” says Navy Cmdr. Raymond E. Chartier Jr., director of the National Ice Center, an interagency organization that helps provide operational support for government, military, and scientific missions in the polar regions.

Moreover, turning the Arctic into a shipping and oil-exploration bonanza will require some new technology. Ships will have to be ice-hardened—built with reinforced bows and sterns; drilling for oil will require new kinds of rigs; and companies (or governments) will have to build sprawling ports and support stations in remote areas. Ice-breaking technology has improved in the past few years. New double-acting hull designs make it possible for modern icebreakers to back into ice floes to break them up, then turn around and use their reinforced bows to finish the job. Other improvements won’t be far behind.

The Coast Guard’s Allen warns that given the eight-year lead time involved in building oceangoing icebreakers, Congress needs to act soon. “I think we’re at a crisis point in making a decision,” he says.

Besides its paucity of Arctic-capable icebreakers, the U.S. faces another big obstacle: Although it is collaborating with other countries on such issues as research and search-and-rescue operations, the United States has no formal say in the negotiations over the new seabeds. Claims are being decided within the Law of the Sea Convention, but Washington hasn’t signed on to the 158-country treaty yet, and so it can’t even get a seat at the table. Conservatives have opposed the pact from the start as a step toward global socialism.

The Bush administration has called on the Senate to ratify the Law of the Sea Treaty and opposition to the controversial pact has diminished, but lawmakers seem unlikely to approve U.S. membership any time soon. Nor is either chamber of Congress apt to vote for substantial amounts of new financing for U.S. scientific and military efforts in the Arctic. The Senate recently approved spending \$30.3 million to overhaul one of the Coast Guard’s aging icebreakers, but it hasn’t funded construction of additional ships, which run about \$900 million apiece.

Arctic Free-for-All

Washington’s relative indifference may be changing, though clearly at a glacial pace. The Russian mission to plant a flag under the ice at the North Pole was viewed as grandstanding by



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many onlookers, but “it got Washington’s attention,” says Rear Adm. Gene Brooks, commander of the Juneau-based 17th Coast Guard District, which oversees the service’s Arctic operations. “This was like Sputnik II—it was a political statement that Russia is very interested in the region.”

The White House is expected to soon make public a revised interagency review of Arctic policy—the current policy was issued in 1994, before the ice pack began shrinking rapidly—that presses the military to intensify its efforts to deal with the potential threats posed by the coming development in the region. However, the review is expected to add little to what is on the books. With the financial crisis to contend with, Congress probably will not be appropriating more money for Arctic operations. The incoming Obama administration already has a plateful of more-urgent problems.

Meanwhile, the jockeying over the Arctic continues. Although U.S. officials insist that Moscow hasn’t yet resorted to Cold War-era tricks, the Russians have repeatedly barred U.S. research vessels from entering the Northern Sea Route, and they’re playing the diplomatic card whenever they can. As the global financial crisis escalated in October, Moscow offered Iceland a \$5.4 billion loan—a gesture that some saw as tied indirectly to Arctic issues. Reykjavik later turned to the International Monetary Fund for help instead. By contrast, the U.S. is relatively cash-strapped.

What makes the situation so unsettling, Borgerson says, is the lack of a broad legal structure for developing the region. It’s a free-for-all in a vast water-and-land mass that is changing almost daily. Although the Law of the Sea Convention can tackle many of these issues, it is powerless to deal with others, from military activities to environmental problems. Nor can it decide what will happen to the estimated 1 million indigenous people in the area.

“We could have a new ocean to control, and there’s a question of who is going to do it,” says Sharon Burke, an Arctic expert with the Center for a New American Security in Washington.

Borgerson is even more troubled by the prospect. If the United States and other Arctic countries don’t forge a diplomatic solution to the current chaos, he asserts, the situation eventually “could descend into armed conflict”—or at least a sort of Arctic Cold War.

Borgerson argues that Washington should beef up its naval and commercial presence in the area, ratify the Law of the Sea Treaty, and strike a deal with the Canadians for joint management of much of the Arctic. The United States must take on the primary leadership role in the Arctic, he says, if only to ward off efforts by Russia to become the majority stakeholder in the area.

“Washington cannot afford to stand idly by,” he writes in *Foreign Affairs*. “Decisions made by Arctic powers in the coming years will ... profoundly shape the future of the region for decades. Without U.S. leadership to help develop diplomatic solutions to competing claims and potential conflicts, the region could erupt in an armed mad dash for its resources.” ■

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