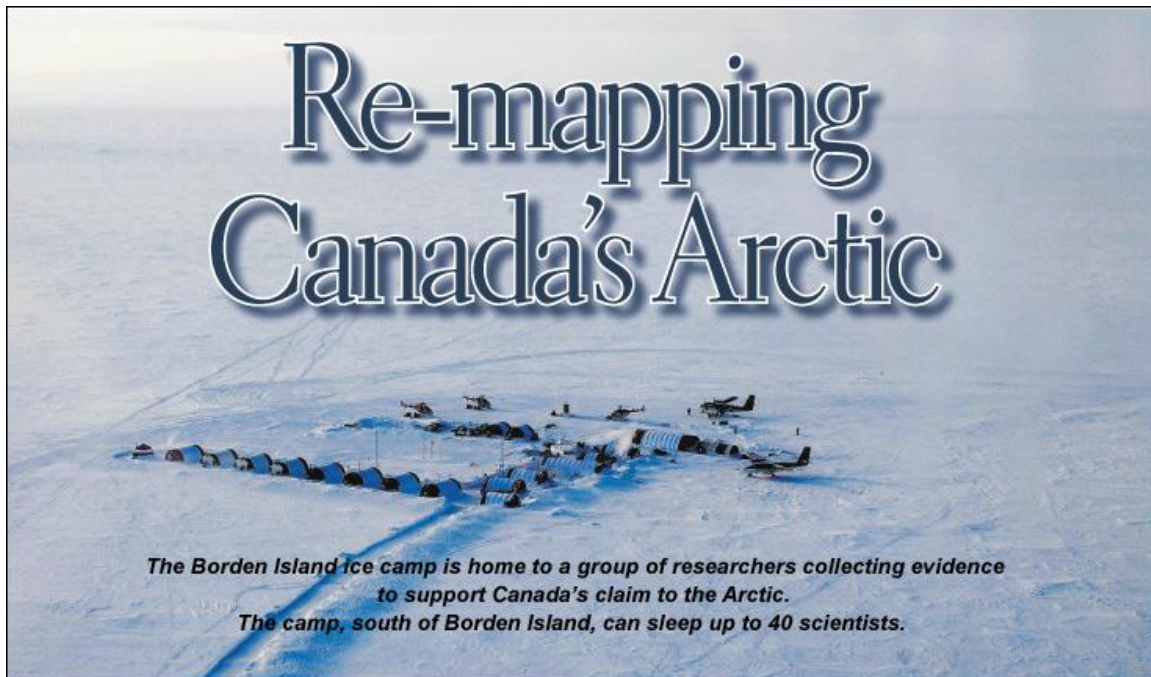


Arctic Sovereignty



Scientists are battling the hostile northern climate as they gather evidence to build a case that could expand the Canadian North by 1.7 million square kilometres. 5 Arctic countries prepare bids to claim new territory.

Ed Struzik on the rush to claim the Arctic (Published: Sunday, May 23 2010)

Shortly before noon on a frigid, foggy morning, a small group of Canadian scientists was standing around a big swimming-pool-size hole that had been dug through more than two metres of ice in the High Arctic.

Peering into the dark waters, they bade farewell to a 7.4-metre, torpedo-shaped submersible that had been flown in pieces from Port Coquitlam, B.C., before being put together on the sea ice south of Borden Island in the remotest part of the Arctic.

Qaujisati, "One Who Searches," is the unofficial name for the 2,200-kilogram "autonomous unmanned vehicle." It has an acoustic modem on-board that sends data showing where it is, how fast it's going and what the seafloor looks like. On this day, it was supposed to make a 100-kilometre round trip to map the ocean floor near the edge of Canada's northern boundaries before embarking on a longer trip north.

"See you later, little buddy," said Erin Mac-Neil, the engineer with Defence Research and Development Canada, who was overseeing this project. "Come back soon."

While nothing quite like this had ever been done before, MacNeil was confident the vehicle would make its return on schedule by 9:30 p.m. the next night.

Much to her dismay, it didn't.

Some time around 10:20 that evening, the same group of men and women were standing around that same hole listening in vain for the distinctive electronic chirp of the submersible.

Realizing it was overdue and possibly in trouble, MacNeil and her colleagues discussed the prospects of sending one or more of the four helicopters on-site to find it beneath a sea of ice that was slowly breaking up in some places and swirling in unpredictable directions in others.

In the twilight hours of the polar night, that was the last thing they wanted to do. Flying out and drilling through three to five metres of ice every five kilometres in hopes of homing in on the unmanned vehicle was one thing; pulling a 2,200-kilogram vessel out of the water at such a distance was quite another.

This was evidently not what Lawrence Cannon, Canadian foreign affairs minister, had in mind when he flew to the Arctic the day before to see how Canada was investing \$109 million in the five-year mapping project.

Cannon was still smarting from the public scolding he had got from Hillary Clinton, U.S. secretary of state, who felt Canada was wrong in not inviting Inuit leaders and three other Arctic countries to participate in a meeting on the future of the Arctic.

The minister was also sensitive about intelligence reports that suggested the Russians might upstage Canada and other countries vying for a piece of the Arctic by dropping paratroopers at the North Pole in the days or weeks ahead.

Putting on a brave face when he eventually landed at the ice camp near Borden Island, Cannon downplayed Clinton's remarks and dismissed the Russian drop at the North Pole as a publicity stunt.

"We know Canadian Rangers will be up here," he joked. "So if the Russians have any difficulties, obviously Canada will come to their rescue. We'll be available to help them."

The minister, however, wasn't joking after Jacob Verhoef, director of Canada's United Nations Convention on the Law of the Sea program, briefed him on the unmanned vehicle mission and how much it was costing.

"Whatever you do," Cannon told him, "don't lose it."

Senior bureaucrats are by nature risk-averse. Being the blood sport that it can sometimes be, politics doesn't treat civil servants who gamble kindly.

Now, in the fourth year of a complicated project that has had its share of setbacks due to unpredictable weather and nightmarish logistics, Verhoef wasn't about to let the minister assume that this experiment was going to be a slam-dunk.

"That's a risk," he said, making no apologies. "There are no guarantees when you're conducting this kind of research in this part of the world."

The Borden Island mission was Canada's latest effort to expand its geographic boundaries in the Arctic under the United Nations Convention on the Law of the Sea.

The convention was designed to divide the oceans into areas of national and international jurisdiction.

While it recognizes a country's sovereignty over natural resources up to 200 nautical miles from its coastline, nation states can claim territory beyond this limit up to 350 nautical miles from shore. All they have to do is demonstrate that their continental shelf extends beyond that 200-nautical-mile limit.

That, however, is not as easy here as it is in the Atlantic, where a similar ocean-floor survey project has been underway. With six months of darkness and so much ice covering the area around the North Pole, few icebreakers are capable of going into the region for an extended period.

That's why Canada is investing a lot of money on helicopters, Twin Otters, DC3s, icebreakers and unmanned vehicles to make its case. The stakes in this case are very high. If all goes according to plan, the boundaries of the country will expand by 1.7 million square kilometres. That's equivalent to the size of the three Prairie provinces.

Erin MacNeil probably summed it up best when she noted the team was collecting data for future parts of Canada that no one has ever seen. "What we're doing is redrawing the map of the Arctic," she told me earlier that day.

What that map will look like in 10 or 20 years is any-one's guess. There are five coastal Arctic countries - the United States, Russia, Canada, Norway and

Denmark -- that are making bids to claim new territory beyond the 200 nautical miles. There are already clear signs that some of those claims, including those of Canada, Denmark and Russia, will overlap.

The Lomonosov Ridge, for example, is an undersea mountain range that stretches 2,000 kilometres from the Danish-Canadian boundary waters north of Greenland and Ellesmere Island, directly past the North Pole and across the Arctic Ocean toward the Russian coast. Russia claims that it is an extension of its territory. Both Canada and Denmark suggest they have evidence to prove that a part of it belongs to them.

In the absence of any agreed-upon Arctic border, the process has been moving along reasonably well, at least at the scientific level. Canada, for example, has worked with both the United States and Denmark to collect data north of Greenland and in the Canada Basin of the Beaufort Sea. The Russians are also co-operating in some areas of mutual interest.

This spirit of scientific co-operation, however, has been tested at the political level several times in recent years. First, it was the Danes planting a flag on Hans Island off the coast of Ellesmere Island. Then, it was the Russians sending a deepsea submersible to the floor of the North Pole and planting their own flag in 2007. Now, with Hillary Clinton going to bat for Sweden, Finland and Iceland while China and the European Union are knocking on the door to get in on the action, no one is placing bets on how it will all turn out.

"The Arctic belongs to all the people around the world as no nation has sovereignty over it," Chinese Rear Admiral Yin Zhuo stated recently in comments relayed by the official China News Service.

It's unclear what the Chinese meant by that. But there is nothing in the Convention on the Law of the Sea that compels any of the Arctic countries to accept the recommendations of the UN commission that will rule on the competing claims. No one is certain what will happen if the commission leaves it up to individual countries to decide on disputed boundaries that happen to be in potentially energy-rich areas.

Realizing that the boundary issue may not be resolved by the time he retires in eight or 10 years, Verhoef isn't allowing the uncertainty to sidetrack him.

"The politics of all this is not my concern," he told me when we met in the High Arctic community of Resolute, waiting for an opportunity to fly 650 kilometres north to the ice camp near Borden Island.

"My priority is that we provide the Canadian government with the scientific data that it needs to make its submission by the deadline in 2013. In spite of setbacks that we have had, I can say that we are, at least at this point, on schedule."

Verhoef is a stout man with blue eyes, a grey-white beard and narrow, steel-rimmed glasses. Born, raised and educated in the Netherlands, he came to Canada to join the Geological Survey of Canada's Atlantic Division in Dartmouth, N.S., to investigate the structure and evolution of the North Atlantic and Arctic oceans.

He did that until 1996, when he became director of the geological survey's Atlantic Division.

After the start of Canada's law-of-the-sea program in 2005, Verhoef was assigned to oversee the project. He tried to hang on to his old position, but it soon became apparent that the new job would take every minute of his waking hours. So when the government made him director of the program in 2007, he stepped down.

The start of the Arctic project did not go well. The weather was so bad in the spring of 2006 - when the Canadians were working with the Danes out of the military base at Alert - that they could not fly out onto the ice for 70 per cent of the time.

With so much data still to get, they had to go back the following year. The weather, however, didn't improve. It took six weeks to get the helicopter to Alert. Once it finally got there, the team ended up using it only for a day.

Things did not go much better in the western Arctic that first year, when the program team was conducting seismic survey tests off the Louis St. Laurent icebreaker. The test results were so poor that the team had to go back to the drawing board.

Things were looking so bad at one point that Verhoef was publicly acknowledging the program could be in trouble if it lost another one or two field seasons.

"It was not a good start," Verhoef conceded.

"The media were very critical. But they failed to point out that we had a Plan B. Hey, I can live with that. Difficult a start as it was, we were not the only ones having problems."

In 2007, the Danes were on the research vessel Oden following the icebreaker 50 Let Podbedy. Ice conditions in the area were so severe that both vessels got stuck several times. The Danes ended up with half of their gear lost or damaged after getting caught in the crushing force of the ice. The noise and air produced by both vessels also interfered with the tracking equipment.

Lost in these early bad moments is the fact that the Canadian program quickly got back on track, especially in the eastern Arctic. Overlooked as well, but not completely unnoticed, was the discovery of a 1,100-metre-high mountain that was 30 kilometres wide and 20 km long, 1,300 km north of the Alaska-Yukon border.

"It still strikes me as extraordinary that in the 21st century, there is still something as remarkable as this to discover," said Verhoef.

With just two years left of fieldwork, and therefore little margin for more delays, Verhoef was hoping things would go well this spring with the launching of the autonomous unmanned vehicle, which can go where icebreakers would have trouble breaking ice.

Following the 100-kilometre trial run, the vehicle was supposed to travel 350 kilometres under the ice from Borden Island to a smaller remote camp to the northwest before fanning off in various directions.

But those plans began to unravel in mid-January when persistent southeast winds fractured the ice between Borden Island and Ellef Ringnes Island, where the team had hoped to set up the main camp. Worse still was the fact that the fast ice -- stable ice that is attached to shore -- never formed. With the sea ice in the area so erratic and unpredictable, the team was forced to settle on a more stable spot farther south.

The problems didn't end there. Just as the team was setting up the tents at the remote camp, the ice floe that it was perched on started moving rapidly to the northeast. Realizing that the camp would eventually stray beyond the range of the unmanned vehicle, the team had to knock down and find another spot.

That, however, wasn't the end of it. With so much open water in the region, moist air rising from the surface resulted in fog and a number of severe snowstorms. Even with two BobCats on-site at the main camp working around the clock, the team had a difficult time keeping the 1,000-metre-long air strip on the sea ice clear for landings.

At one point, it seemed that the team would never get a break. When the fog and bad weather cleared at Borden Island, the weather would be bad in Resolute, where all personnel and equipment had to go before being flown north. Similarly, the remote camp would often be clear when Borden Island was shrouded in fog.

By the fourth week of March, it was apparent that only one of the two unmanned vehicles could be deployed.

"We had people here in Resolute sitting for two weeks waiting to get out to camp," said Verhoef.

"David Hopkins, the team leader for (Defence Research and Development Canada), ran out of time waiting in Resolute and ended up with only a 45-minute tour of the ice camp. To make matters worse, he missed his flight home because the airline failed to notify him of a flight change."

As Arctic field stations go, Borden Island was a big camp. At any given time, it could accommodate as many as 40 people. Space in the kitchen tent, however, was so tight that scientists and pilots on-site had to take shifts eating breakfast, lunch and dinner. With warm storage space at a premium, juice and milk boxes were often frozen when they were put on the tables. The only compensation was that the food at "Messy Jessie's and Sloppy Jo's," named in honour of the cooks, was hearty and delicious.

The daily routines in camp could also be humbling. One day, for example, hydrographer Mike Black was out with a helicopter sending pulses through the ice to get a snapshot of the ocean floor.

The next day he was on latrine duty removing garbage bags full of human waste from the two small tents that served as washrooms.

Sleep didn't come easy sharing a tent with three other people who were constantly coming and going while snowmobiles, BobCats, airplanes and helicopters were also on the move. It didn't help that the stoves in some of the tents were often running too hot or stone cold.

With little to see but snow and ice on a flat surface, a few people dubbed the ice camp "Boredom Island."

Gianni DiFranco, however, didn't see it that way. The hydrographer from Fisheries and Oceans Canada told me he had dreamed of doing something like this since he saw a documentary on the "Race for the Arctic" a few years ago.

"Honestly, that's what got me into this," he said. "I thought it would take me 10 years to get to this point in my career. But here I am near the top of the world."

DiFranco looked remarkably fresh for someone who had been on-site from almost the beginning. Others, however, had had more trouble adjusting to the cold, the lack of sleep, the crowded conditions and the long hours that their own work demanded.

Mark Rowesome, for example, looked like a dead man walking when I first saw him. The defence research technician was one of a handful of people who had to move 30 tonnes of ice to carve a hole for the unmanned vehicle. He was also the guy who was at the controls of a remote observation vehicle that brings in the submersible once it comes in range of the camp.

The job is not easy. The observation vehicle has a camera and light to help Rowesome guide it through the dark water, but both are short-range.

"Sometimes, it's like trying to find a needle in a haystack," he told me after failing several times to hook up following one of the early, shorter test runs.

Being so far north, no one expected to see any wildlife other than the odd seal visit the unmanned-vehicle hole nightly. But just to make sure that polar bears weren't on the prowl, two Inuit brothers from Grise Fiord were brought in to patrol the perimeters at night.

Both Jobee and Tommy Kiguktak found it ironic that they were again part of a sovereignty mission in the Far North. Most Inuit from Grise Fiord were sent there by the Canadian government in the late 1950s to assert Canada's sovereignty. The relocation has been a sore point ever since for some of the residents.

Tommy, however, is used to the fact that life takes some strange twists.

"Do you know Robert Flaherty, the man who made the film *Nanook of the North*?" he asked me one day. "He was our grandfather. The young Inuit woman who played *Nanook's* wife in that film gave birth to a child, Josephie. The woman was my grandmother and the child was one of the people who was relocated to Grise Fiord."

Although Flaherty knew the fate of his son, he never did anything to help him through his difficulties.

Even Tommy found the weather, which often went from bright sun to fog and snow and ranged from -35 C to -3 C during the first six weeks of the operation, unpredictable and sometimes unnerving.

"It's hard to know when and how far to go on patrol," he said. "Here the weather comes in whenever it wants to. It doesn't give us any warning like it does in Grise Fiord."

Weather was the reason hydrographers like Mike Black, Knut Lyngberg and Gianni DiFranco weren't getting the time they needed to fly out and do their work.

They needed to go so far from camp that the Twin Otter pilots had to lay down fuel caches on the sea ice so the helicopters could make the return trip. In this case, there was a no-risk policy in place. Any sign of fog along the way meant they had to turn back.

None of the delays seemed to faze Garry Heard, the Canadian Defence Research scientist who was responsible for planting modems under the sea ice to guide the unmanned vehicle home.

Heard had been waiting patiently for the weather to clear so he could fly into the remote camp to set things up for the vehicle once it completed its trial run.

Part of his attitude had to do with his quirky sense of humour and easygoing nature. The rest could be chalked up to experience. Heard had been working in the Arctic for a good part of the 27 years he's been working with Defence Research. His PhD on geomagnetism was based on several months working out of a more primitive tent camp at Assistance Bay on Cornwallis Island. He was also part of a smaller group of scientists at Alert in 2009.

Erin MacNeil, on the other hand, is much younger and less experienced in the Arctic. Despite her age, she seemed unflappable. Not only was she confident that the vehicle would be found that night, she was also convinced it would make the trip 350 kilometres to the remote camp when it came back.

"Look at it this way," she joked. "The (vehicle) is chasing a small moving hole in the ocean and trying to come up through it. What could go wrong?"

The first time the vehicle went on its 100-km trial run, something did go wrong. About 12 kilometres out, it sensed that something wasn't right. If the submersible has enough battery power, its computers tell it to go home. If it doesn't, it stops, sends out distress calls and waits for someone to come get it.

In this case, it had plenty of power left to make it back.

Neither Alex Forest of the University of British Columbia nor Gina Millar and Chris Kaminski of International Submarine Enterprises, the B.C. company that built the vehicle, could figure out what the fault was.

But they were fairly certain they could override the computer and send it off a second time.

Once again, though, weather complicated the situation. Overnight, a fog rolled in, preventing Don Mosher and Sean Spears of Defence Research and Millar from flying out to see how it was doing.

That left everyone back at camp crossing their fingers. To ease the anxiety, Kaminski organized a pool to see who would come closest to predicting when the submersible would be in range to give its first electronic chirp.

Around 9 p.m., when the vehicle was expected to make its first chirp, Forest asked: "When do we start worrying?"

"When the movie ends," said Kaminski.

The official log tells why everyone was so silent after that.

9:06 p.m. "Nothing heard"

9:25 p.m. "Nothing heard"

9:52 p.m. "Nothing heard"

0:04 p.m. "Nothing heard"

By that time, ominous news was spreading through the camp. One by one, people started walking into the vehicle tent to see what was going on. Even Tim Janzen, the camp manager who was usually glued to his tent directing air traffic, writing reports and making sure that all was running smoothly, took the time to check in.

At 10:18 p.m., MacNeil gathered key members of the team to discuss the possibility of sending a helicopter. Someone pointed out it was probably too dark. Another suggested lowering another sensor into the hole in case the submersible was having difficulty communicating with what was already in the water.

And then just like that, Forest cupped his hand to his ear. "Was that a chirp?"

Dead silence followed. A few minutes later, there was another faint chirp, and then another and another. They got louder by the minute.

Finally, at 11:01 p.m., the computer tracking system got its first hit. The vehicle was 6.7 kilometres away and moving in the right direction.

It was Millar and Kaminski who finally figured out what went wrong that night. A computer program had underestimated the distance the vehicle was supposed to travel. It went 15 more kilometres than the 100 it was supposed to travel. That was the only reason it was so long overdue. In the early morning, a small, partly filled bottle of Bailey's was passed around to those who waited for the vehicle to finally come in. The small cheer celebrated the success of the experiment.

Five days later, when I was at home in Edmonton, I got a short note from Verhoef, who was still in Resolute.

"The (vehicle) made it to the remote camp (a first and likely a record)," he wrote. "It is now on a survey mission from the remote camp. Talk to you soon."

Note: A veteran journalist and northern adventurer, Ed Struzik is the award-winning author of several books on the Arctic, the latest of which is *The Big Thaw, Travels in the Melting North*.