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Chair

The Honourable Maxime Bernier

Standing Committee on National Defence

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● (0905)

[*Translation*]

The Chair (Hon. Maxime Bernier (Beauce, CPC)): Good morning, everyone.

Let us get the 35th meeting of the Standing Committee on National Defence underway. As we decided last week, the first part of our session will be in camera.

The session continued in camera.

● (0945)

The Chair: ● (Pause) ●

We are now in public session.

Pursuant to Standing Order 108(2) and the motion adopted by the committee on Monday, February 23, 2009, we continue our study on Arctic sovereignty.

[*English*]

From the Marine Institute of Memorial University of Newfoundland we have the pleasure of having with us Captain Christopher Hearn, director of the Centre for Marine Simulation, School of Maritime Studies.

Captain Hearn, thank you for being with us, and I'm sorry for the delay. I think you are going to receive your note as soon as possible.

You have the floor.

Captain Christopher Hearn (Director, Centre for Marine Simulation, School of Maritime Studies, Marine Institute of Memorial University of Newfoundland): They say if you can't tie knots, tie lots.

I'll start by saying that I would like to take this opportunity to thank this committee for giving me the chance to come in and provide a kind of industry-based opinion on matters of Arctic sovereignty, and indeed operations in Canada's Arctic, with an insight into operations in other jurisdictions and other operations in other areas.

My career at sea has led me all over the world. It has also led me to transit and operate in many of the waters within Canada's Arctic. I suppose from that point of view I can certainly offer some opinions as someone who has stood on the bridge of a ship, responsible for the operation of a ship in ice-covered waters in the remote and distant parts of Canada's Arctic and the issues that surround that.

I'd like to start by possibly giving you a tale of two cities, or a tale of two passages. This past summer, as you are probably all well aware, two German container ships transited Russia's northern sea route. This is particularly interesting because it was the first time outside commercial interests have been allowed through this route that the Russians had developed over probably the past 40 years. They have significant resources in that sea route. There are several large ports and much infrastructure along that route.

As a point of interest, if a ship were to sail from Japan to Europe by travelling the northern sea route, it would sail approximately 8,500 miles, as opposed to 13,000 through the Suez Canal. So there is a significant commercial interest to operating through that kind of route.

The ships themselves were ice-strengthened, and they were escorted the entire time by two Russian icebreakers. They sailed from Japan and ended up in Rotterdam. This is interesting. The company that owned the two ships was very impressed by the service. They were extremely pleased with the trip overall. It was a very good money-maker for them, and they are actively now soliciting further business through this route again. So that is the northern sea route through the top of Russia.

In the Northwest Passage—or as I read in the paper this morning, the Canadian Northwest Passage—approximately 200 vessels are operating in the Arctic at any one time. The number of vessels that actually transit through the Northwest Passage I don't have off the top of my head, but it's not a lot. In my opinion, I don't think we'll see dedicated, continuous traffic through the passage. I'm not going to dispute that the ice cap is receding or that some of the passages are open. There is more than one passage in the Northwest Passage. There are several.

If you look at sailing from the Far East to Europe through the Northwest Passage you are approximately looking at 8,000 miles, versus 15,000 through the Panama Canal, but you won't see vessels transiting that route like you will possibly in the northern sea route in Russia. The trade pattern is just not there. Most traffic that sails from the Far East and ends up in Europe is through the Panama Canal. The canal was built for that reason. They are currently expanding their capability. They're adding in a second set of locks to handle larger vessels, and unless there is a direct commercial or economic advantage in attempting to move into the Northwest Passage, I don't think you'll see many operators looking that way—again, unless it's economically viable. If companies look at sailing their vessels through that route and can prove it's a cost saver and they can increase on their freight rates, then they'll do it.

● (0950)

Then they have to look at the capital costs of building vessels to do that, or whether they can even get up there and pass through, with the ice conditions as they are.

The problem with the receding ice cap is that it's flooding the channels with multi-year ice, and it's unpredictable. The ice coverage changes from year to year. If you pass through a route one year that is relatively ice-free, there is no guarantee that the next year it will be relatively free of ice. In the past you could almost count on continuous ice coverage there. You knew it was there; it was a given. It was something you had to deal with.

If you don't see large commercial interests there, like container ships or cargo ships using it as a passage from one place to another, you'll see an increase in minerals coming out of the Arctic, and oil and gas exploration moving into the Arctic. The one that concerns me is the cruise industry increasing its visitation to the Arctic now, especially with the receding ice levels. This is worrying because of the unpredictability of the ice and ice coverage. There are also some other factors that I will try to explain.

In my experiences in the Arctic, sailing as a master of vessels operating in ice, what always concerned me, apart from the ice itself, was the lack of infrastructure and the remoteness in terms of being able to be rescued should there be an issue. There's also a lack of dedicated, good charting, soundings, and imagery. The Arctic has roughly 20% coverage in terms of charts, and only 10% of those charts are up to standard levels. I had the pleasure of using a chart, when I travelled the Labrador coast and into the Arctic, from what was originally surveyed by Captain Cook. There has been no change to that chart since then, apart from some additional information. The original baseline data is that old.

Lack of charting data and infrastructure really places a lot of emphasis on the ability of the crew, the master, or the senior officers on the ship. If you look at the cruise ships or vessels of opportunity that might be moving into these waters, that's a concern. They sail into particular waters that weren't ice-covered before, and they might sail in there again. If they don't know the area and don't have an ice pilot engaged, if they are using charts that do not have adequate soundings, and if they have no ice navigation experience.... I can conceive of no greater tragedy, apart from an oil spill in the Arctic, than a cruise ship sinking in the Arctic. If even a small cruise ship of 500 to 1,000 passengers were to founder or sink in some remote area, you would have to look at the evacuation and escape of the people and the time it would take to muster an adequate response and get to them. And you'd be dealing with people of various ages.

The centre I work for and represent is heavily engaged in operating in ice because of the offshore oil and gas industry. Our main clients are the offshore oil and gas industry. These are the people who are continuously looking farther north. There are plans to explore in the Davis Strait, the Beaufort, and maybe even the Greenland straits and off the coast of Greenland. There's an economic driver for this, so as long as the price of a barrel of oil stays high they will look that way. You will see them start to move into those areas. On what they have going for them, they have significant dollars to put toward research to enable them to do that.

● (0955)

That's what facilities like ours and the ocean technology cluster that exists in St. John's are addressing. We're looking at how we make the ships safer and how we make people safer. How do we train them? How do we make them aware of the operational issues? As I say, ships fit for the purpose and people fit for the purpose—this is something we are heavily involved in.

We haven't seen a lot of interest from cruise line industries, or the vessels of opportunity, as such. But the oil and gas industry is considering these issues very heavily, primarily because they are involved with oil, which is a nasty thing when released, and nobody wants to see that. They definitely don't, so it's very much in their favour to engage with groups like ours.

If you look at the Russian context and the Norwegian and the Finnish, there is currently in operation in the Russian Arctic one oil field that is completely ice-covered. The Varendey field is a successful operation using specifically built vessels with a specifically designed platform. That's completely ice-covered. This technology could possibly make its way over here.

St. John's, earlier this month, was the host of a major international Arctic shipping conference that saw groups from primarily shipping companies, classification societies, the shipping industry as a whole, that deal with the issues of how to operate safely in the Arctic, and indeed how to exploit opportunities that arise. While they were there to examine and look closely at Newfoundland's challenges in pushing an oil industry into an ice-operating environment, they were also very interested to know what Canada is doing, what Canada is preparing for. Does it have the ability to respond? What kinds of situations will you get involved in? So it was a very good discourse by lots of groups to present and to discuss these matters.

I will get back to the point of infrastructure. I remember one time when we were supplying a particular place in the Arctic, we actually had to use a bulldozer as one of our mooring bollards for the vessel. There was no facility there whatsoever to do anything with. This is pretty much the same throughout the entire Arctic for the towns, the communities that are there. This is what I mean by lack of infrastructure. For the vessels that are operating in those areas, that are providing the sea lift, the cargo, the staples of life that those communities need, what have you, there's nothing there for ships to be able to tie up to or to be able to operate from or to be able to do anything safely.

Friends of mine who are involved in transporting oil—heating oil and fuel oil—around the Arctic are continuously having to deal with the fact of the tides and the fact that they have no good area to tie up. They typically anchor and then try to run their hoses to the beach, to the facilities. They have really made a success out of it, but it's continuous vigilance. At any time they will have to stop and retrieve the hose. If something happens, then we have a problem. We have a spill or something going on that's not very good.

So you're looking at this all across the Arctic in many of the communities and in many of the places that are being developed. In the mining interests that are operating there, if you look at what's planned for Baffin Island—

● (1000)

The Chair: Captain Hearn, you still have one minute.

Capt Christopher Hearn: Well, I guess I can certainly wrap that up. I can get going.

What we have to look at is what does Canada want to do in the Arctic? How do we want to make our presence felt? I would say mandatory requirements under NORDREG—or the northern reporting system for ships—inspections of vessels of opportunity or cruise ships that are going to move into the Arctic. Canada, under its transportation agency, Transport Canada, is doing great work involving the International Maritime Organization's guidelines for ships operating in polar waters. This should be strengthened, and it should be really pushed that in order for vessels to operate in what we're considering to be our Arctic, then we should ensure that the people are fit for the purpose, as well as the ships. We should certainly engage with the people who are in the Arctic because they know it best and they know what they need best. They are probably more valid than me to talk about what should be done.

The Chair: Thank you very much.

Now I will give the floor to Mr. Wilfert.

Hon. Bryon Wilfert (Richmond Hill, Lib.): Thank you very much, Mr. Chairman.

Thank you for coming.

You could respond to a couple of things, the first being the need for the federal government to consider a strategy that is coherent, rather than something on a sectoral or fragmented basis in dealing with the Arctic. It would seem to me it's something we should be very much focused on. There's also the fact that we need, particularly for Canada's internal waters in the Arctic, to pay close attention to having a marine authority in the Arctic to deal with these issues.

If my memory serves me correctly, there was a cruise ship—I think it was the *Frontier*, but I'm afraid I may have the wrong ship—that went north and sank. It was designed for the north, and it actually sank. There were 150 on board. Fortunately, there were other ships in the area, so no one perished. But there's the fact that just as we have vessels that tour the Caribbean or tour the Mediterranean, we have vessels that go north. And when there is a response.... I've been told that regardless of whether it's Canada or whoever, it would have taken up to 24 hours to respond. You're not likely to last more than three minutes in the water.

How would you respond to those kinds of issues in terms of a maritime authority, a coherent approach to dealing with this issue?

Capt Christopher Hearn: It's a very good question, one that I would say many departments within the government are trying to wrestle out. I guess you have to look at the groups that are interested in what happens in the Arctic. I'm talking about Transport Canada, Environment Canada, the Department of National Defence, and probably several more that escape me. It's a matter of one taking primacy and using the others as deputy organizations.

It's a very good question. I think the answer would be to have one group that is appointed to form a special committee of these varying groups, which would sit together and decide on what is required to be done in the Arctic for vessels entering there.

On your point about the cruise ship, I'm not really familiar with that one. I know the one that sank in the Antarctic, which is outside the scope of this question. They were lucky; they were rescued because there was another vessel there. If you look at our Arctic, a small cruise ship or a vessel of opportunity that's moving into this area to either take something out or back to the cruise ship story, it is distance and presence that are going to be required, whether it be the facility in Nanisivik, whether it be another facility that's primarily dedicated to only search and rescue in some other part of the Arctic, so that it can at least get to where the issue is.

I think whatever body would be created, this organization, whether it be Transport Canada, a naval Transport Canada that deals primarily with Arctic issues, I think it would be tasked with having to identify this problem: where do we place our resources?

● (1005)

Hon. Bryon Wilfert: Could you comment on how we could strengthen the mandate of the Arctic Council in terms of providing tools—you were mentioning some of the issues before us today—that might help us in responding to these issues?

Capt Christopher Hearn: I think the Arctic Council are doing quite a good job. They're dealing with an onerous task because of the issues that are being faced in the Arctic now as to who owns what and who has responsibility over what. In my humble opinion, more teeth need to be put into this kind of committee so that this group has the ability to enforce what it sees as best practices.

The International Maritime Organization has been hammering at trying to come up with a widely accepted standard and guideline for ships operating in polar waters, known as the polar code. It's been quite a long process and a long task, and I think this group—and there is a group from Canada that is on that working committee at the IMO—should probably sit at the same table and bring over some of the results of the things the polar committee has been dealing with. I think the recommendations coming out of that committee should be requirements—for example, for ice navigation, for ships operating in ice, for search and rescue ability, for equipment on board, for date and time of entry, even to the establishment of some sort of permanent presence in the Arctic for search and rescue security.

Hon. Bryon Wilfert: It would seem to me that legislative tools are absolutely essential at the territorial, provincial, and certainly at the national level in dealing with a certain set of principles with regard to the Arctic, with certain objectives, and that we need to be working in concert with our neighbours, particularly the Danes and the Russians.

Again, I think there is some concern that events are moving much faster than we can respond to—particularly the notion that the Northwest Passage may be open within ten years, ice-free. And the fact is that winds are changing. Over Greenland, you don't see any dirt on the top, but when the ice breaks off, you see very dirty ice. But this is now changing, and the concern now is that in Greenland, in fact, it's receding so quickly.

Are there any specific tools you might want to suggest, either now or in writing to us in the future, that could be helpful in terms of a legislative approach for maritimers that would strengthen the issue of passage? Again, you talked about that company, which was very pleased about the implications, obviously, for that kind of travel in the north.

Capt Christopher Hearn: It's a good point, a good question.

Again, going back to the company that sent its vessels through the northern sea route, they have been able to take advantage of a willing and capable Russian ice ability. They're, as I said, actively engaged in trying to bring in more interest in this route so that they can start an actual freight route through this run.

If you put this in the Canadian context, there are several large companies—Fednav being the largest—that are operating in the Arctic in terms of taking out resources, mineral ore. They've done quite a lot of good work in preparing and ensuring their vessels are good. But I think what needs to happen is that any kind of a committee that's assigned or tasked with—I'll put it roughly—sheriffing or policing the Arctic would need to sit down with the companies that are operating there, because they have the wealth of experience. They're there; it is their monetary reason to be there; they will want to be sitting at the table. If I am making money in the Arctic now, if my ships are operating, if I'm coming out of the Arctic carrying ore, then I want to be at that table with any group that is going to decide anything about the Arctic in terms of operating procedures, facilities, or infrastructure, or indeed who can go in, who can't go in, what kind of people have to be aboard the ships, and what the ships are going to be made of.

That's what I would suggest. There is a wealth of expertise and a wealth of experience that can certainly be tapped into. I'm not talking about on the defence side of things; I'm talking on the purely commercial side. These are the groups that will say that in order for vessels like cruise ships or vessels of opportunity that have no experience operating in ice to come into this environment, they're going to have to reach this level.

● (1010)

Hon. Bryon Wilfert: Thank you, Captain.

For the record, Mr. Chairman, my memory isn't as good as I thought. It was in the Antarctic, and it was the *Frontier* I was thinking of. But the same principle applies. They were in waters where there was no ability to respond effectively. There was a response, but in normal cases that could have been quite tragic.

The Chair: Thank you.

Now I'll give the floor to Mr. Bachand.

[*Translation*]

Mr. Claude Bachand (Saint-Jean, BQ): Mr. Hearn, you said that you have sailed the seven seas. Do you have a lot of navigation experience in the far north? How many times have you been to the far north? Are you able to tell the committee that?

[*English*]

Capt Christopher Hearn: I have crossed the Arctic Circle 16 times.

[*Translation*]

Mr. Claude Bachand: You have been there 16 times. In your presentation, you seem to be saying that vessels will not be able to use the passage year-round any time soon. If I understood your presentation, it is far from certain that vessels will be able to undertake that passage at any time of the year with no navigation problems. You say that there are navigation problems and those problems will continue into the future. Is that what you are saying?

[*English*]

Capt Christopher Hearn: Well, you're looking at an area that's completely under-developed in terms of enabling shipping activity. Probably I should clarify that there won't be any dramatic increase in shipping activity in the Arctic overnight. It just won't happen.

I guess the main issue that causes a lot of concern, when I compare it to the northern sea route in Russia, is that with a transit through an area—I'm sailing from this place and I'm going to this place, and I'm going to sail a particular route that gets me there quicker—I'm only going to do it because it's economically feasible. If ice is going to prevent me from doing that, then I'm not going to do it.

What I'm concerned about, or what I was trying to mention, was that despite that fact, there will always be some operators who think that maybe we can establish a route through here. Also, there are groups who are moving into the Arctic. They won't move there overnight. The oil and gas industry is moving ever closer toward operating in the Arctic; the cruise line industry is now moving into the Arctic, but they're not—

[*Translation*]

Mr. Claude Bachand: You seem to be saying that cruise ships are taking a risk. Your fear is that a cruise ship could find itself in a very bad situation.

I have a problem with that. It seems to me that companies that insure cruise ships, should, without necessarily prohibiting anything, warn cruise lines that their vessels may not be insurable if they sail in an area that they may or may not be familiar with. I also know that, at the moment, the whole government search and rescue operation is not yet up to speed. I share your reservations. If a vessel were ever in distress in the far north, it would take an enormous amount of time before search and rescue operations could get underway. If I owned a cruise ship line, I would not be inclined to send my ships into the far north at the first opportunity.

● (1015)

[*English*]

Capt Christopher Hearn: Of course they will. In the very Byzantine world of marine insurance, you are defined by what's called your warranty limits, where your vessel is insurable to sail. There are specific regimes, we'll call them, within the insurance industry for vessels that are moving into the Arctic. But that only limits you in terms of latitude, how far north you can go.

The cruise ship industry—apart from the occasional one that will make the Northwest Passage or one of the passages—is primarily interested in going places where there isn't anybody else, where there are no ships. They are going to be heading into areas where they can disembark their passengers, where they can put them ashore in a remote, stark, but amazing landscape. So they're moving into areas where there isn't anybody else, and that's the issue I'm concerned about: given the lack of really good charting and navigational information, some of these vessels, with probably crews that have not been in these areas before, could find themselves in trouble very quickly because of a lack of experience and also a lack of a prompt rescue capability.

[*Translation*]

Mr. Claude Bachand: Could I ask you for a favour? A few years ago, I was talking in the House about the Northern Passage, and the House people called me to ask if I meant the Northwest Passage or the Northeast Passage. On our maps, unfortunately, this fabled passage is not shown. You generally hear about the Northwest Passage.

Could you help us by showing us the passage on a map? If I come in from the Atlantic and sail into Davis Strait, am I in the Northeast Passage or the Northwest Passage?

No? I am not in either?

[*English*]

Capt Christopher Hearn: The Northwest Passage, as I say, is not just one single passage. There is a main Northwest Passage. If you were going up the Davis Strait, and you're going to head west, then you're in the Northwest Passage.

Mr. Claude Bachand: Can we go to Baffin Bay?

Capt Christopher Hearn: No.

Mr. Claude Bachand: I think I might see you afterwards, then, because I think it's going to be a complicated business.

Capt Christopher Hearn: The Northwest Passage is typically across the top of North America, either direction.

Mr. Claude Bachand: Okay.

Capt Christopher Hearn: East or west, it's always the Northwest Passage. It's termed the Northwest Passage. It's an historical reference. It was from the British Admiralty and other groups trying to find their way to India and Asia. It's the fabled Northwest Passage. There was never much thought of coming east through this passage. They were simply trying to find a way round to go to India.

The northern sea route is across the top of Russia.

Mr. Claude Bachand: Okay. Is there is an eastern northern passage?

Capt Christopher Hearn: No, no.

The Chair: Thank you very much, Monsieur Bachand.

I will give the floor to Mr. Harris.

Mr. Jack Harris (St. John's East, NDP): Thank you, Mr. Chairman.

Thank you for your presentations.

There are all kinds of questions that come to mind. You're talking about charts from Captain Cook's era, which I gather, if my memory serves, is 1770s or thereabouts. You were talking about vessels of opportunity. Perhaps you could tell us what they are. I gather they not Arctic-strengthened vessels that are there regularly. Maybe you could elaborate on that a little bit.

If we have cruise ships and other vessels going into the Arctic, what would you think about that if they don't have the training or experience themselves? You referred to the Russians having icebreakers. Is there a possibility of putting pilots on board, or ice navigators or something like that? What kinds of expectations would you have there, or is there some sort of training you would expect these captains or masters to have, and who could provide that training?

Capt Christopher Hearn: Your first question, about the vessels of opportunity, that's primarily an industry term for vessels that are available for charter. If I'm a mining operator and I need my ore to get out, I'll either have engaged a company who owns ships to do that—that's a liner service—or I'll engage a vessel that's outside of that to come in for one or two loads. That's a vessel of opportunity, a vessel that's available to be chartered and available immediately to come in and do the work.

To answer your second question, I think the training should be mandatory for ice operations. It's a very specific niche and requires specialist training.

If you look at what should be done for vessels such as cruise ships or things like that, in the Russian context they have 75 icebreakers, 16 polar class, four of which are nuclear-powered, and six icebreakers dedicated to the northern sea route itself. That's a remarkable capability, but they've made it their practice and they've made it something they're primarily interested in, so they have a lot of capacity there.

If you look at the immediate Canadian context, obviously we'd like to see dedicated icebreakers assigned to parts of the Arctic. The coast guard is obviously tasked with search and rescue, as well as providing ice-breaking services. So if companies can provide and can prove they can bring in icebreakers that are capable, that meet Canadian standards, that operate with a Canadian crew, then maybe they can use an icebreaker-for-hire to assist. But I think that for any vessels that will be transiting or operating in the Canadian Arctic, Canada should endeavour through either Transport Canada or a similar agency to ensure that there is ice navigation expertise on board, whether it's provided by a third party like an ice pilot, which right now is only voluntary—a company doesn't have to take an ice pilot if they don't want to.... It should be mandatory that this expertise comes on the vessel and assists the master with making decisions to enable the vessel to navigate safely.

In terms of training, we feel very strongly at our facility that training is a key element. The human factor is almost always the underlying element in any marine accident. We are heavily involved in developing, promoting, and expanding our current scope of ice navigation training. A facility like ours, which is currently the only one in Canada that provides ice navigation training, deals primarily with the oil and gas industry. We also deal with some liner services that are operating into the Arctic.

So around the world, primarily you're looking at the northern countries. There is training available in Russia, in Sweden, in Norway, in Finland, and ourselves. We're basically it for training properly in ice environments.

● (1020)

Mr. Jack Harris: Thank you, Captain Hearn.

This is the defence committee, and we're interested in matters of that nature. This summer many of the manoeuvres and operations in the Arctic had to be cancelled because of ice conditions. Should we have ice-capable patrol vessels, some purpose-built vessels for operating in the Arctic as defence vessels? Is that the best way for us to have a permanent presence in the Arctic? Or is there another way? What do you feel about being able to operate naval vessels in the Arctic, given the Canadian government's capabilities as they exist right now?

Capt Christopher Hearn: I've been watching the story of the Arctic offshore patrol vessels with a great degree of interest, because in my own opinion I'm a little bit skeptical as to the design of the vessels. An icebreaking vessel is purpose-built and specially designed for just that, for operating in ice. They do not make effective offshore vessels or vessels for operating in no-ice conditions because of the nature of their hull and how they're designed. The thought that a vessel can be built to operate both in ice and in an offshore environment has been tried. There was some success, but generally the vessels from a cost perspective are not overly successful.

If we're looking at an expanded naval presence or operating presence in the Arctic, then another icebreaker or more dedicated icebreakers are what is required. That's what you need up there. Those are the vessels that are designed to be up there. If you're looking at maybe something that's more cost-effective, maybe a coast guard vessel with a naval presence, or a naval presence with a coast guard special operating group on board, however that works. But that's at a larger scale.

Immediately, I think that enabling Transport Canada to carry out dedicated inspections of vessels moving into the Arctic is important—that we say whether an operator has the ability, whether their crew is sufficiently trained, whether the ships are officially able to operate in an Arctic environment, and also ensure that we have a Canadian ice pilot on board.

● (1025)

Mr. Jack Harris: Since you've come here from my constituency, I have just one question. You could do a little advertising. You were talking about an ocean technology cluster in St. John's. You're the head of the Centre for Marine Simulation. What else is available in that area?

Capt Christopher Hearn: The cluster is made up of approximately 50 companies and growing, all dedicated to harsh-environment technology and the development of marine technology. Apart from our centre, there's also the entire Marine Institute, and the National Research Council's Institute for Ocean Technology, which has the largest ice and wave tanks in the world, where a tremendous amount of research is going on in terms of really looking at evacuation and survival in the Arctic. There are companies that are designing specialist radars that are high fidelity and designed for primarily operating in ice, which are very good products. You're looking at companies that are also interested in monitoring systems for ships in the Arctic for continuous tracking of where they are. I think that's also something that's vital for ensuring Canada's primacy in the Arctic, that we know who's there, we know where they are all the time.

Mr. Jack Harris: Thank you.

The Chair: Thank you very much, Captain Hearn.

Now I will give the floor to Mrs. Gallant.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): Thank you.

If Canada chooses to open up the Canadian Northwest Passage for commercial traffic, what length of time do we have before our country's opportunity becomes obsolete, or another country seizes the opportunity from us?

Capt Christopher Hearn: Do you mean in governing who goes through or enabling who goes through?

Mrs. Cheryl Gallant: In governing and enabling, from a commercial standpoint.

Capt Christopher Hearn: Well, the oil companies that were undertaking exploration in the Beaufort Sea came to the government and said they weren't going to wait, that they had the ability, and that they were going to advance the science. If government would meet them halfway, they said, they would provide their own icebreaking services and advance the technology. This happened, and it happened in partnership with the government. Overall it was very successful. Beaufort Sea was a success. It was an economic factor that eventually closed out operations there.

In my visits to other jurisdictions, I have been looking primarily at what's happening in Finland and at Finland's cooperation with Russia. The Finns and the Russians together provide a pretty formidable pairing. You're looking at Russian industrial capacity combined with Finnish technology. The Finns are pointed completely at making themselves the best at producing Arctic or Arctic marine technology. They're very good at it. They're excellent.

If we continue to wring our hands over what we want to do and how we're going to do it, eventually these other countries will completely pass us by. We'll be left behind with an aging fleet of icebreakers, no pursuit of technology, and limited capability to police our own Arctic waters. The companies might take action themselves.

Mrs. Cheryl Gallant: We've heard testimony that Canada has ample time to procure its own icebreakers, manufactured in Canada. But it could take decades, as we've seen with the Sea King replacement, before they're ready. Realistically, how long does Canada have before the lack of icebreakers puts us at a disadvantage commercially?

Capt Christopher Hearn: Our largest and most capable icebreaker is something like 30 years old—the *Louis S. St-Laurent*.

Mrs. Cheryl Gallant: Should our Arctic coast be capable of dealing with nuclear-powered vessels in the Northwest Passage?

● (1030)

Capt Christopher Hearn: That's a good question. The primary reason that the Russians became so involved in nuclear energy for their icebreaking vessels was that, like us, they were dealing with a remote area, a limited infrastructure, and difficult supply routes. This is why they went with the nuclear approach. These vessels could operate year-round, continuously, without ever needing to resupply, apart from food, victuals, and crew.

Whether there will be nuclear vessels operating in our Arctic, I don't know. American submarines that nobody knows about might be transiting there. It's a question of whether there are nuclear-powered vessels. Right now there aren't any commercial vessels powered in that way, but vessels operating in our Arctic would be coming over from Russia. Those are the only ones right now.

Mrs. Cheryl Gallant: Are any of the Russian icebreakers, or any icebreakers, nuclear-powered?

Capt Christopher Hearn: Yes, the Russians have four, and they had plans for four more.

Mrs. Cheryl Gallant: So based on the ability of the oil sector to supply its own icebreakers, it is conceivable that we would have nuclear icebreakers leased out, perhaps, from Russia and in our waters.

It's my understanding that international commercial ships are required to have an identifying transponder. Is that correct?

Capt Christopher Hearn: Yes. Under present IMO regulations, there are several layers of identifying technology on board. There is long-range tracking and a technology called AIS, automatic identification systems. With AIS, when a vessel is interrogated by another ship's radar, a brief snapshot of the vessel—what it is, where it's going, what it's carrying—appears to the other ship. It's a vessel-to-vessel technology. So when one is operating near another, rather than call on the radio, “Blue vessel with the white superstructure”, they can now call each another by name. This technology is being activated. Coastal states now have the ability to identify vessels at long range using this same procedure. So yes, there are several layers of identification on board a ship.

Mrs. Cheryl Gallant: Is it possible to transfer this identifying transponder from one vessel to another without detection?

Capt Christopher Hearn: That's a really good question.

For search and rescue purposes, which was the main driver behind this.... This was obviously to identify a vessel through its transponders for search and rescue purposes. So there was no reason to transfer them.

If you're talking about a security point of view, it's possible. It is possible. Whether it can happen or not, I can't comment. There are multiple layers built into the system to prevent that from happening, but it is conceivable, in this day and age, that somebody could possibly do it.

Mrs. Cheryl Gallant: Has your organization run simulations on ice conditions and how projected changes could affect maritime traffic?

Capt Christopher Hearn: We've done them for some analysis for planned or possible facilities.

We have two types of simulations that we engage in. One is primarily for operational purposes, the immediate purposes of learning how to navigate in ice, using technology, and things of that nature. The other one is more of a large-scale industrial response. We'll actually create an entire facility, and create vessels, and then run them in under varying conditions to study the effects. Can they actually get in there? Can they not get in there? How many tugs are going to be needed? They're things of that nature.

We haven't undertaken anything of the scale that you're talking about there. It's possible to be able to create ice conditions and see what vessels can get through or not, but we haven't done it so far.

The Chair: Thank you very much.

Mr. Braid.

Mr. Peter Braid (Kitchener—Waterloo, CPC): Thank you, Mr. Chair.

Thank you very much, Captain, for your very informative presentation before us this morning.

Just out of curiosity, is there an institute similar to yours in Russia, and do you collaborate with them?

● (1035)

Capt Christopher Hearn: The Russians have several, but the largest one that would be similar to ours in terms of operating in ice is the Admiral Makarov academy.

We don't so much view each other as competitors; we are now starting to actually look at working together. I've met with several of their officials, and I intend on going over there this spring.

The Russians are part of this working group that I mentioned, that is at the IMO level now trying to come out with a dedicated series of guidelines. In typical Russian fashion, I suppose, they have their own idea for what should be done. The rest of the working group—Norway, Canada, Denmark, and a host of other nations—have all kind of said, “Okay, that's fine, but you need to incorporate these with the overall goals.”

Our plans for the future are to create a little bit more of a partnership. We're all silos of knowledge—if I can use that term—and we're all looking to achieve the same goal, which is to ensure the safety of the environment, the safety of the people, and the safety of the operation in ice-covered waters or of any operation. We're all doing the same thing.

At this recent meeting we sat down and decided that we will be working together. We intend to; we intend to try to find ways. Their operational considerations are a little bit different from ours. Our main focus right now is dealing with our offshore oil and gas clients, and they're dealing with, in a way, glacial ice, which the groups in Russia are not dealing with. What I mean by glacial ice is the icebergs, the growlers, the ice that comes off the Greenland cap and makes its way down onto the offshore fields. That causes considerable trouble for operations in the east coast oil operations.

We're dealing primarily with those factors now, and as the Russians move into areas where they will come in contact with this kind of situation, they're very interested to gain knowledge from us. And they're doing some things that I'm very interested in. So we both have things that we can trade.

Mr. Peter Braid: So you can leverage each other's areas of expertise?

Capt Christopher Hearn: That's right.

Mr. Peter Braid: And there are some unique areas?

Capt Christopher Hearn: That's right.

Mr. Peter Braid: Okay.

Can you describe the differences in terms of technology training simulation?

Capt Christopher Hearn: What I mean by marine technology is the design of the vessel and how it's able to do things.

I'll give you an example. The Finns have come up with a very clever design whereby the vessel actually turns around and goes backwards, or sternways, through the ice. It's excellent technology for vessels that have to make transits through continuous-coverage ice. This is called a double-acting hull. It enables a ship to break the ice through weight, but in addition, the propeller system is designed to actually crush the ice while the vessel is going sternways. This has some manoeuvring advantages in terms of being able to manoeuvre the vessel. Rather than pushing my way through the ice, I'm pulling my way through. That's why they go stern-through. That's a Finnish technology. That's what I mean by marine technology.

The simulation side is purely to assist in the evaluation of an operation before it happens or to train the people. It's a tool to assist with the training of people by placing them in situations that are immersive, that are realistic, and that are repetitive. We can re-create the same situation over and over again, which is not possible in the real world. You can't undertake that. We can do that in our facility.

Mr. Peter Braid: Thank you.

I'm changing gears now.

As Arctic waters are opened up and as transportation increases, what are your primary environmental concerns, and how do we mitigate against those?

Capt Christopher Hearn: There are very good legislative tools that have been put in place to govern operations in the Arctic. Canada's fantastic Arctic Waters Pollution Prevention Act, and the legislation that goes around that defining legislation, is very good. Right now, vessels operating there are required to carry some standard form for controlling a spill and must at least start the cleanup of a spill if a spill happens.

I think the release of pollutants through an incident, a collision, or a sinking is probably the largest problem to deal with in the Arctic in terms of the dispersal of oils, chemicals, or pollutants. If we're going to build a presence in the Arctic in terms of infrastructure, whether it be bases or enhanced dedicated facilities that deal with either search and rescue or spill cleanup, that's what has to happen. We have to enable certain vessels or certain boats to respond very quickly to an event like this. Either develop the technology to do it or do the research into how we can contain the spill. Significant work has gone on. I think it's a worthwhile pursuit.

● (1040)

Mr. Peter Braid: Thank you.

The Chair: Thank you, Captain Hearn.

[*Translation*]

You are the last speaker, Mr. Paillé. You have five minutes.

Mr. Pascal-Pierre Paillé (Louis-Hébert, BQ): Thank you for being here. You can see that when you are the last to speak, many of the questions have already been asked. I have a question on immigration.

Do you believe that it would be realistic, at the warmest time of the year in the Arctic, for there to be illegal immigration from the north, that our present stations there could not detect?

[*English*]

Capt Christopher Hearn: That's a complicated question.

International shipping is governed by what's termed the ISPS—international ship and port facility security—code or regulations, which is governed by the IMO. Of course, Canada is a participant, so we have the same security protocols in place. This is to protect the ship but also to protect the port from people or harmful substances or things of this nature.

The issue with the Arctic in terms of an unwanted presence is that there is very limited capability or facilities in the Arctic. Let's take an example of a vessel that wants to enter Canada's Arctic. There are very few places, if any, where it can actually stop and be vetted before it enters. Under the procedures and protocols of this ISPS, vessels have to maintain a state of security and then pass along crew information and information on who they are and where they are coming from. I don't know where they would be going or what they would be doing, but there is no presence, no dedicated area or facilities or places, apart from an agreed-upon place, such as Churchill, Manitoba. If I had a ship coming over, between me and Transport Canada, or the agencies that govern that, we would say that when the vessel stops in this particular place, we'll dedicate the local member of the RCMP to come on board, as part of our security procedure, to look over the documentation, such as who's on board and things of that nature. That's really it. Where they decide to do this, if at all, is usually between the ship operator and the government.

[*Translation*]

Mr. Pascal-Pierre Paillé: Thank you.

You mentioned Russia, Finland and Canada a lot. In your experience, do you see an increasing interest in the northern passage from the United States, given that Russia is very interested? I have already asked the question to another witness who came to see us. Without speculating too much, does that put us in a delicate position?

What can you tell us about the United States?

[*English*]

Capt Christopher Hearn: The U.S. is now starting to realize the same things we're grappling with now. There is significant activity in their sector in terms of oil exploration. Also, the world's largest nickel mines and I think North America's largest coal mines are in Alaska. The U.S. is dealing with the export and the transit of those kinds of resources out of ice-covered waters. Currently, there is no dedicated arm of the coast guard that deals with icebreaking services. They have two icebreakers, which are very capable but they're quite old. They've built a third one that does mostly research. They are actually behind Canada in terms of icebreaking capability and a presence.

Without getting into the whole issue of the United States' view on the Northwest Passage, which they view obviously as an international strait, you will see increasing interest on their part, especially if you look at the whole scope of activity surrounding the UNCLOS II surveys that are going on in the Arctic now and where each country's continental shelf actually ends and who owns what.

I think the U.S. is very interested in ensuring that their slice of that pie is what they want it to be. If Russia hires vessels or builds vessels to do that, then the U.S. will.

● (1045)

The Chair: Thank you very much.

I'll give the floor to Mr. Payne for five minutes.

Mr. LaVar Payne (Medicine Hat, CPC): Thank you, Mr. Chairman.

Thank you for coming today, Captain Hearn.

I would like to ask a follow-up question to Ms. Gallant's, in terms of the automated tracking devices on the ships. You gave some explanation in terms of the ability to potentially transfer those. There is also another aspect to that. I'm wondering if in fact these devices could be counterfeited and somebody could make something that would potentially take the place of or substitute on a ship.

Capt Christopher Hearn: Again, it's possibly feasible. But this technology and these systems are governed by various international bodies. In order for the manufacturers of this technology to even use it on board, they have to pass very rigorous testing. The classification societies that govern the construction of vessels and the equipment that's on board are well aware of this risk. They have enabled very strenuous testing to be sure that what you have on board your vessel cannot be duplicated.

Having said that, if some group or somebody were to dedicate some amount of time and money to trying to create a duplicate system whereby they could trick or possibly pass false information, it's possible.

Mr. LaVar Payne: Thank you.

I was also interested in your comments regarding the charting, that 20% of the waters are charted and only 10% of those are actually good charts. Is anything being done to update the charting, to get better information for future passenger ships?

● (1050)

Capt Christopher Hearn: It's not a comment, sir, on the Canadian Hydrographic Service, and I don't want to draw any bad light on them. They've got quite a mighty coastline to take care of and limited resources to do it. The charts are good, but they're very old. The real issue is that you sail, as we say, over a lot of white paper. What I mean by that is there are not enough soundings. You will actually follow along one line of soundings for as long as you can. It's a little-known fact that parts of the archipelago in the Arctic itself are quite shallow and you literally sail with the tides. When the tide lifts up, the ice separates a little bit and then you wiggle through as much as you can, but you're very aware that around you on the chart there are no soundings whatsoever and you don't know the subsea structures, what's there, the reefs, the rocks, the shoals. And that's only because when they were doing the original surveys they couldn't do soundings along there. You can't run a ship continuously and do an entire area. The ice coverage prevented that in the past.

I'm sure the Canadian Hydrographic Service has heard from multiple people that this is a continuous issue. You also have to look at the aids to navigation, the buoys, the markers, those kinds of factors. The coast guard endeavours to do a good job of placing these out and maintaining them, but it's a full-time job, along with also trying to do search and rescue, along with also trying to do icebreaking services. They're tasked to do many things. I think it might be an opportunity to develop technology to provide these services—I mean navigational markers and buoyage, things of that nature—electronically, through an e-navigation strategy whereby beacons are used on land masses or underwater to provide this information to the ships. That's a whole other comment or a whole other question, but I'm sure the Canadian Hydrographic Service is attempting to do the best it can. As I say, I don't want to put bad light on them. They're overworked as it is. It's just the expanse of the area and the fact that there are areas of the Arctic that were not open before that are open now, and there aren't sufficient soundings or sufficient charting to be able to navigate safely.

Mr. LaVar Payne: In terms of that navigation, can any of this charting be done through satellite?

Capt Christopher Hearn: I can't comment as to that. I know that there is limited capability. They use it for ice forecasting and things of that nature. It's a combination of aerial ship reports and satellite imagery along with aerial reconnaissance, as I said, but in order to provide accurate soundings and imagery in hydrographic data it requires ships to be there to deploy equipment and to gather that kind of information. I don't know if there is satellite ability to do that right now. There possibly could be. I don't know.

The Chair: Thank you.

Thank you, Captain, very much for your presentation today.

[*Translation*]

Thank you for making the trip to meet us.

[*English*]

That will be the end of our session number 35

[*Translation*]

of the Standing Committee on National Defence.

The meeting is adjourned.

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