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Chair

The Honourable Maxime Bernier

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● (1100)

[*English*]

The Chair (Hon. Maxime Bernier (Beauce, CPC)): Hello, everyone. Welcome to meeting 28 of the Standing Committee on National Defence. Pursuant to Standing Order 108(2) and the motion adopted by this committee on Monday, February 23, 2009, we will continue our study on Arctic sovereignty.

We have the pleasure of having with us, by video conference from Denmark, Rear Admiral Nils Wang of the Royal Danish Navy.

We are ready to hear from you, Mr. Wang. Thank you for being with us at this time in your country. You have seven to eight minutes. After that, the members of this committee will ask you questions.

Perhaps you can start.

Thank you for being with us.

Rear-Admiral Nils Wang (Royal Danish Navy): Thank you, Mr. Chairman.

It's a big privilege and a big honour for me to be called in as a witness before your committee. I have prepared a little lead-in of five to seven minutes, as asked for. And thereafter, I would be delighted to answer any questions you may have.

I suspect that you can hear me clearly and that there is a good connection between us.

As you are frightfully aware, the Arctic ice cap is melting fast these years. There are many opinions of how fast, but seen from my chair, which is predominantly an operational chair, I would like to add that at this early stage the consequences are already beginning to emerge.

In August last year, the first Danish merchant ship transited through the Northwest Passage on a commercial journey from Japan to St. John's, Newfoundland, Canada, using the mythical waterway and saved 15 days at sea, compared with the traditional southerly route through the Suez Canal.

One of the major Danish shipping lines announced publicly last year that it had started the construction of a series of ships with icebreaking capacity. In other words, the shipping line seriously believes that sea transport through the Arctic will be a lucrative option within the 10- to 15-year lifespan of a merchant ship.

I am sure that a 40% reduction in the distance between Europe and Asia and a 25% reduction of the distance between the United States and the Far East will be an extremely tempting cost saver for the shipping industry in general. When the investment required to do it is in balance with the economical outcome, I think it will just happen.

And as in every other aspect of life, changes will create new challenges. I am not able to overlook—and I don't think anyone is—the security implications of a complete rerouting of sea transportation, but I am convinced that it will have great and far-reaching implications.

If you look at all the commercial activities related to the big sea lines of communication, such as maritime infrastructure and man-made shortcuts like the Suez and the Panama canals, a significant change in the sea routes will also have significant global economical and security implications, if you ask me.

But changes normally also create new opportunities. Ironically, a 40% distance reduction would also mean a 40% fuel reduction and a 40% carbon emissions reduction from ships between Europe and Asia. Think about it—one of the more helpful factors in our common striving to reduce carbon emissions could be the meltdown of the polar ice cap.

Receding ice will also make way for serious exploitation of oil and gas resources. Some estimates indicate that the Arctic could hold the last great undiscovered hydrocarbon resources on earth, maybe as much as 25%. This will also create increased maritime activities in the Arctic, but it could also lead to a race for resources, with serious implications for security policy and, not least, for the environment. We might see territorial claims or conflicting interests, some of which have already surfaced.

Seen from my operational perspective, the only way to meet the challenges of this increased maritime activity in the Arctic is through cooperation. Consequently, it must be of common interest that territorial claims, disputes over access to resources, or other conflicts of interests are managed and settled in an orderly fashion within the international legal framework. We must avoid conflicts or disputes about resources or land or sea territory. We do not want conflicting interests to obstruct the close local cooperation needed to address the many challenges that none of us can face or handle alone.

● (1105)

In May 2008, the five nations bordering the Arctic Ocean—Canada, Denmark, Norway, Russia, and the United States of America—met in a small Greenlandic city called Ilulissat. I believe this meeting will turn out to be an important event in the new Arctic history. The five nations agreed on what is now known as the Ilulissat Declaration. In essence, the five countries agreed to take the good with the bad—to work together on both the challenges and the possibilities. The countries agreed to settle the territorial claims in accordance with the international legal framework. They agreed to live up to their common responsibilities for the protection of the Arctic and to cooperate in areas such as search and rescue and protection of the environment.

I believe the future might arrive a little earlier than expected. Quite apart from the more worldwide security implications of the melting ice cap, within a decade or so we are likely to see a massive increase in traffic volume in the Arctic. Human and economic activity in the area will increase, and if we do not get it right, we are likely to see a race for resources. Together with the rerouting of shipping lanes, that will present some serious safety, environmental, and security challenges for all of us.

The polar area in this new perspective holds the potential to change the geostrategic dynamics, and that will affect military planning, not only in the five states bordering the polar sea. Seen from my operational chair, we will need naval and coast guard presence in the area. We will need to survey the area to create reliable sea charts, just to mention one important aspect of maritime traffic. We will need to establish maritime traffic management to ensure safe navigation, create effective search and rescue capabilities, and control fishing and hydrocarbon resources. We will need to establish environmental response capability to ensure protection and preservation of the fragile marine environment in the Arctic Ocean. Most importantly, we will need to do all this in cooperation with each other.

On that note, I'll conclude my short address. Thank you.

The Chair: Thank you very much, Mr. Wang.

I will now give the floor to Mr. Wilfert.

Hon. Bryon Wilfert (Richmond Hill, Lib.): Thank you, Mr. Chairman. I'll be sharing my time with Mr. Bagnell.

Admiral, it's nice to see you again. You presented in Tokyo last June.

I promise I won't bring up Hans Island with you, but I want to follow up on your issue about cooperation. What do you see as the best vehicles to date to enhance international cooperation, particularly because Canada and Denmark have issues about the shelf versus the Russians?

How do you see international instruments, whether they're through military cooperation or diplomacy, able to enhance the benefits you've mentioned of the Arctic?

● (1110)

RAdm Nils Wang: Thank you very much.

I'm happy to see you again. I will try to answer your very good question. As I also mentioned when I talked in Tokyo, the last time we met, I think that as politicians and lawmakers you have an enormous responsibility to create the environment and the stability in which we professionals can actually work.

If I, for example, have to cooperate with Canadian, American, Russian, and Norwegian coast guards—just to mention some of the organizations that are needed on the operational side of the house—we have to have politicians from each and every one of our countries talking to each other in a decent language, if you catch my drift. I think the first prerequisite to establishing an operational collaboration between the five states up there is that the politicians act towards each other the way they agreed to in the Ilulissat Declaration, because then it's much easier for us to meet and greet and agree on how we then deal with the operational and practical challenges that we face.

What I'm saying here is that it is much more difficult for us to cooperate if the political rhetoric is about setting flags, whether on the seabed or on different islands. I will mention Hans Island at this time. I think Hans Island is a good example of how two countries can agree to disagree on a border dispute and then let the political tools and frameworks work on a scientific basis to find out what is right and what is wrong. In the meantime, Canada and Denmark can actually start to talk together about how to create a joint rescue organization or how to pool their resources in order to cooperate up there.

A couple of years ago a new organization was established, the North Atlantic Coast Guard Forum, which consists of 20 countries that are situated on the rim of the North Atlantic, as the name suggests. I think that is the only professional network—at least that I know of—that has all five polar nations as members. This gives us an opportunity to use that framework to start to discuss how we can deal with all the problems that we'll face in the future. At least we can start from there. My point here, to make it short, is that you need a decent political rhetoric in order to have civil servants such as me cooperate together.

I don't know if that answered your question.

Hon. Bryon Wilfert: I appreciate the answer. Again, I'm delighted that you're able to join us.

I'm going to split my time, Mr. Chair, with Mr. Bagnell.

Admiral Wang, I look forward to seeing you in the future.

Hon. Larry Bagnell (Yukon, Lib.): Thank you.

I probably have just one question. Around 2006, I think, our foreign minister and I met with your foreign minister and the Premier of Greenland at the United Nations. We agreed, in terms of Hans Island, that we would send the bureaucracies back to do in-depth study of the history and the science as a way of resolving that dispute. I'm wondering if you could give us an update now, four years or five years later, as to where we are in that study process.

● (1115)

RAdm Nils Wang: I don't think I'm actually fully updated on that. The last thing I heard about Hans Island is that we agree on disagreeing and that this is a question for the subgroups, or whatever, in the United Nations.

In the meantime, I know there is joint scientific research going on on Hans Island, with scientists from both Canada and Denmark. I think it is on track, basically according to the lines you just mentioned, that science will eventually come up with a suggestion on how this dispute should be settled. In the meantime, at least from the navy's perspective in Denmark, we have been told by our foreign ministry not to go up there and put flags on the island anymore. At least that may be a sign that this is on track, as you mentioned.

Hon. Larry Bagnell: Following up on Bryon Wilfert's question, one small section of it, could you give us any more details on how we're cooperating on the joint mapping of the seabed related to UNCLOS, just any more technical details on how that's going?

RAdm Nils Wang: I'm not able to go into much detail about it, but I know that a lot of scientific work goes on right now in order to map the continental shelf both in northern Greenland and, I suspect, also in the other polar nations. As far as I know, we are due to put in those scientific results at different times, because you have to deliver the results no later than 10 years after you have ratified the UNCLOS.

So for Denmark's part, that will be in 2014, I think, and I think Norway delivered its results in 2006. It remains to be seen if the United States will ratify, and then they will also have 10 years to collect their data. I can't remember when Canada is due. But I think the process is going on. At least I know that our soldiers in the northern part of Greenland are supporting various scientific expeditions or measurements in order to clarify the seabed data.

The Chair: Thank you very much.

Now I will give the floor to Monsieur Bachand.

[*Translation*]

Mr. Claude Bachand (Saint-Jean, BQ): Thank you, Rear-Admiral Wang, for being with us today. For your information, I believe Canada is supposed to be tabling its study by 2013.

My first question has to do with the North-West passage, which you mentioned in your presentation. What is Denmark's position in the North-West passage?

As you know, in Canada's opinion, these are domestic waters, over which it has full jurisdiction. Our American friends, on the other hand, think this is an international waterway. Does Denmark have a position on the North-West passage?

[*English*]

RAdm Nils Wang: I don't know if anyone in Denmark has an official view on that, but I definitely do not have one. I think it will be very wise to stay away from that dispute and let Canada and the United States settle that by themselves, because the Northwest Passage as such is, of course, not a strait that is close to Greenland in any territorial or seabed dispute kind of way.

I think the Danish merchant ship that travelled through the Northwest Passage, which I mentioned in my intro, was following the pilot's rules, because as I remember it, the ship was hired by a Canadian company to put down cables on the seabed when it came to St. John's. So I think it was due to Canadian rules for these waters that the merchant ship transited through the area.

I don't think Denmark has any official view on how this dispute is going to be settled, so I will not dare to even go there.

● (1120)

[*Translation*]

Mr. Claude Bachand: My next question is about your neighbour, Russia. I would like to know whether Denmark has any cooperation agreements with Russia. I would also like to know what you think about its behaviour at the moment. As you know, it is the only circumpolar country that is not a member of NATO. The other four countries are NATO members.

Can you tell us whether the Russians are behaving properly, or whether they are somewhat more aggressive? For example, do they respect your air space, and the 200-mile limit? How would you describe their behaviour at the moment?

[*English*]

RAdm Nils Wang: Being a military man, I will try to answer your question in a non-political way. It's not up to me to judge whether Russian behaviour towards the Kingdom of Denmark is acceptable or not.

I have noted, because I have a personal interest in what's going on in the Arctic, that the Russians are coming with different statements. Maybe the reason is that they know very well that they are the only one of the five bordering countries that is not part of NATO and that is why they feel squeezed. I don't know. I also noted, actually yesterday, that the Russian ambassador in Copenhagen wrote a letter in one of the national newspapers saying that Russia would follow international rules concerning the Arctic and that they would adhere to what was agreed on the Ilulissat Declaration. The essence of the ambassador's letter was basically that Russia would follow international rules concerning all the ongoing discussions about the Arctic.

Concerning airspace and the 200 nautical mile waters, I'm not aware that Russia has violated our airspace in Greenland, at least for many, many years. I also am quite sure that every time they enter Danish waters they follow the rules for announcing their presence. If they go into our national waters and if they are doing scientific investigations on the economical zone, they are also doing the proper procedure. We don't have, let's say, concrete examples, at least not to my knowledge, that Russia is violating our sovereignty in Greenland. Of course, we also have a long historical neighbourship with Russia back in the southern part of the kingdom, in the Baltic. We have a fairly good cooperation with Russia there right now.

I must answer your question by saying that there's nothing to report on that matter.

[*Translation*]

Mr. Claude Bachand: I come now to my last question. Do you think NATO will have a role to play in the Arctic in the future? We just mentioned that four countries belong to NATO, but not Russia. Discussions are getting underway at the moment at NATO regarding the opening up of the North-West passage and the importance of the Arctic.

As a member of the forces and an admiral, do you think NATO could some day play a role in the Arctic?

[*English*]

RAdm Nils Wang: I think that depends on the timeline of your question.

If the development goes as I predicted it in my intro, that in some years—whether that is 10 or 20 years—you would see more and more commercial traffic in the Arctic region, that means that you can either go there in parts of the year with ordinary commercial traffic or you can go there with ordinary warships. Therefore, if the Arctic is developing into a new high-tension security area due to resources or whatever, I think NATO, if it exists in 20 years, will have the same role as NATO has in other kinds of security tension areas or hot spots in the world. In that respect, I see NATO, if it continues to exist, as having a role globally in all hot spots and therefore also in the Arctic hot spot. So if commercial traffic is able to go up there, I think normal navy ships would also be able to go there, at least seasonally, or maybe in parts of the area.

I think NATO, the EU, and the UN, for that matter, will play a role in this hot spot, as they do in every other hot spot in the world. Maybe you could even foresee a situation where some of the present and actual hot spots will cool down, so that they will actually move to a new area.

● (1125)

The Chair: Thank you very much, Mr. Wang.

Now I will give the floor to Monsieur Harris.

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

Thank you, Admiral Wang, for joining us today.

I have a couple of questions. You mentioned twice in your introduction the fact that if we end up with new sea routes in the north, this would provide security challenges for all of us. I wonder if you could elaborate somewhat on what these challenges are and what your country, Denmark, is doing in terms of planning to seek to address them.

RAdm Nils Wang: First of all, my concern about security problems was first and foremost related to the resource question. I think the shipping issue is more of an economic issue, where you actually will have new commercial infrastructure related to the sea routes.

Of course, if you have important sea routes through narrow straits, as historically seen, that will often create some kind of tension, because the narrow straits will suddenly become strategic important choke points. In that respect, you could argue that a rerouting of the shipping lines, if you see it all the way through, will create new choke points and thereby will also create a new security dynamic. It does not necessarily have to be negative.

I don't know if it's too easy to say that the world has a constant security potential, and if you remove one hot spot a new one will emerge somewhere, but that is definitely a very simple way of looking at it. If the Suez Canal and the Panama Canal, for example, are losing their importance because the majority of the shipping will go another way, that potential may move to another area.

Mr. Jack Harris: Is this an issue for Denmark as well, or do you see this, because of the Northwest Passage, as probably more of an issue for Canada in terms of an increased military presence?

RAdm Nils Wang: Of course, the logic that follows from my statement will definitely indicate that a strait like the Northwest Passage will become a new choke point if that development actually is going as I have predicted.

Also, the traffic routes that lead up to that area will give other parts of the area and adjacent areas a new role, although not necessarily a security policy high-tension role. Imagine a country like Iceland, which could be a new mega-hub for traffic and which could reload containers from normal traffic to icebreaking ships and then go all the way up. It's the whole infrastructure that follows sea routes. I think if you started to study which infrastructure is related to the big sea lines of communication today, you would see that a huge amount of money is invested in that infrastructure. If that is going to be redirected to an area that has almost no infrastructure at all, it must, I think, create some kind of new situation that can also have security implications.

● (1130)

Mr. Jack Harris: I have one further question. In terms of Danish naval assets, do you have now or are you planning changes in the ice capability of your vessels?

RAdm Nils Wang: We have four Arctic patrol frigates that we now have had for the last 15 or 17 years. Then we have three very, very small cutters that are now being replaced by a modern ocean patrol vessel. Also, because the old ones were so old, they had to be replaced anyway. So that is basically what we are doing. We are renewing three old ships with three new ships that also have a helicopter capability, and that is basically our way of addressing this development on the sea side.

But of course you cannot invest in ships that can cover an area like we are talking about. We are talking about 200 nautical miles, and in a resources way, it is 300 miles around Greenland. It is such a huge area, so you cannot invest in ships in order to cover that. You need other surveillance means in order to overlook the area, in order to identify where to put your active measures as ships.

At present, the politicians in Denmark are struggling to agree on the next five-year defence agreement, and as it looks now, it might result in a third ocean patrol vessel in order to renew the three old ones.

Mr. Jack Harris: Thank you.

I have just one question, and it was a question that my colleague Mr. Bachand had asked about the Russian air traffic.

Canada, of course, participates with the United States in NORAD for an early warning and response system. What does Denmark do in terms of air space, particularly looking towards the Arctic and the north?

RAdm Nils Wang: Not much. We don't have very much in this area. We are, I think, relying on intelligence from partners and therefore we don't have big radar systems of our own on Greenland. We don't have that.

Mr. Jack Harris: Thank you.

The Chair: Thank you very much.

Now I will give the floor to Mr. Hawn.

Mr. Laurie Hawn (Edmonton Centre, CPC): Thank you, Mr. Chair.

Goddag, Admiral. *Mange tak* for joining us today.

Carrying on with the equipment questions from before, I understand the Royal Danish Navy has recently disbanded its submarine program and concentrated more on Arctic offshore patrol ships.

Can you comment on the rationale behind this change in equipment?

RAdm Nils Wang: The submarine question has nothing to do with the Arctic. It was a political decision that was taken because we had too much structure and too little money. In order to receive that balance, you had to cut away some structure, and the choice was made by the politicians to get rid of the submarines. There was no real operational analysis behind that. It was a political discussion item and it went away.

Mr. Laurie Hawn: I won't ask you your sailor's reaction to that.

You talked about some search and rescue capabilities in the Arctic. Could you describe for us some of the Danish search and rescue capabilities in the Arctic, either air- or sea-based, and how you might cooperate—or have you cooperated?—with the Canadian Forces in those activities?

RAdm Nils Wang: Our national response in the search and rescue area is basically that we normally have an Arctic patrol frigate and two to three Arctic patrol vessels stationed on Greenland 24/7. The Arctic patrol frigate has a helicopter. Of course, the commercial helicopters that are part of the Greenlandic commercial infrastructure also have a hoist capability so that they can also be used for search and rescue missions. Apart from that, we rely on indigenous vessels, merchant traffic, and whatever.

It is really not much, if you look at the area. That is also why I point out that cooperation is needed. I think it's the same situation in all the other polar countries in that there aren't enough search and rescue tools in order to cover that area, at least not if it becomes more and more accessible and the activity increases. Right now, for example, we've seen an almost explosive increase in tourism with regard to cruise liners. My nightmare is a cruise liner with 3,000 passengers capsizing in the inner leads of Greenland. You would almost not be able to do anything about it unless you have a similar cruise liner just beside it to take on the passengers.

In that respect, our operational command on Greenland has contact with the shipping industry and with the IMO. I also know that the Danish government is pushing to have some international rules of good behaviour in the cruise industry, to have them operate in pairs, because it's almost impossible to divest yourself from that dilemma. But if the five countries are able to agree to pool their resources and maybe exercise once in a while so there will be a common understanding on procedures.... Of course, it is easier for NATO members to do such things than it may be for non-NATO members, but it's basically indicating the need for exercises.

We have been exercising with Canada. The last time we had a search and rescue exercise it was outside Ilulissat, where the declaration was signed when we had the summit of the North Atlantic Coast Guard Forum while I was the chairman last September.

● (1135)

Mr. Laurie Hawn: You talked about the Ilulissat Declaration and so on. Are we abiding by the spirit of that declaration, in your view?

RAdm Nils Wang: Could you repeat that, sir? I didn't catch the question.

Mr. Laurie Hawn: Are we abiding by the spirit of the Ilulissat Declaration? Do you view positively what has transpired since then or not?

RAdm Nils Wang: It's my impression that everybody has adhered to what they have agreed upon in the Ilulissat Declaration. Even though it's a piece of paper that was signed by some countries, and everybody can run from it if they want to, I think when a paper like that is signed on a foreign minister level it has the effect that it is adhered to. It is my impression that the country is adhering to it.

I was encouraged when I saw the Russian ambassador in Copenhagen actually mention the declaration as something that Russia would positively pursue. I don't think the Russian ambassador in Copenhagen would write anything unless it was coordinated back home.

Mr. Laurie Hawn: Is the Northwest Passage of commercial value to Danish business or international trade interests directly?

RAdm Nils Wang: I think so, given the fact that 10% of all world trade is controlled by Danish industry. Danish-owned ships are 10% of the world's fleet. Statistically, every tenth ship that goes through that passage in the future will be a Danish-controlled ship.

Mr. Laurie Hawn: I wasn't aware of that.

We talked about the five-nation approach with Canada, Russia, Denmark, Norway, and the U.S. There's a possibility of other nations who have interests or want to pursue interests in that area. What's your view on how we might deal with them if somebody gets overly aggressive in pursuit of those interests and possibly aren't signatories to the agreements we may have? What are our limits?

● (1140)

RAdm Nils Wang: I can only have a personal opinion on your question.

The answer to your question is basically that the more interest we all have in getting the UN engaged in this as an issue of interest to mankind, so to speak...because it is a huge area. It is a huge question, and there are a lot of interests at stake that are not limited to the five polar nations. I think the fact that the UN is engaged in the process of dividing the area is the first step in the right direction. If countries get overly aggressive in that area, it must be handled the way such things are handled normally, and that will start with a protest in the Security Council, won't it?

The Chair: Thank you very much.

Mr. Wilfert, for five minutes.

Hon. Bryon Wilfert: Thank you, Mr. Chairman.

Admiral, you say that within 15 to 20 years the Arctic ice cap could be gone, that you could travel between Yokohama, Japan, and Rotterdam and the trip would be reduced by about 40%. Could you enlighten the committee as to what the impetus for Denmark was, as one of the leading proponents in dealing with climate change and strategic security interests? We see that both Great Britain and the United States are well advanced in that regard. Can you give us some of the impetus for Denmark and some of the key components of your strategy in dealing with climate change and the Arctic?

RAdm Nils Wang: If I start with the Arctic, I think I will start on my home turf, in the sense that I think we are very engaged in the Arctic question because of Greenland. Greenland is part of the Danish kingdom. Therefore I suspect the Danish government and foreign ministry have a natural role to play in that particular question.

My country's engagement in the climate question, I think, is predominantly driven by idealism in a way. Of course there's hard-core economic interest also, in the sense that we have some of the leading industries when it comes to wind energy, for example, windmills and things like that, and therefore there is the whole idea of using alternative energy. Right now I think 25% of Danish consumption is covered by either wind or solar energy, and we have a leading edge in this matter anyway in many respects. Therefore it probably is very tempting to also try to drive this through the rest of the world. The right person to ask that question to would be the Minister of Climate in Denmark.

Hon. Bryon Wilfert: In terms of infrastructure, we see the Russians developing these 12 submarines that they are able to use in the Arctic. We see an aggressive approach by Russia and others in terms of the drive for resources. Do you believe NATO is in a position to respond effectively to those challenges, and what type of infrastructure should we be looking at in terms of both surveillance and being able to signal sovereignty, whether it's Denmark or Canada, in terms of our claims in the north?

RAdm Nils Wang: Again, it's a highly political question. I could give you a list of equipment that you need to invest in, as politicians, if you want to have proper surveillance. I don't think you want to see that list.

● (1145)

Hon. Bryon Wilfert: I'd be interested.

RAdm Nils Wang: I think there are two ways of approaching this. There is the cooperation and the dialogue-seeking way, where you can try to convince others this is the only way to go if you want to do this cheaply and smart. Then there is the alternative, which is to start an arms race, with all that follows. I don't think you'd need to go further back than the Cold War to find out how many resources went into that game. Whether it's one way or the other to pursue, it's up to you political masters in the various countries.

The Chair: Thank you very much.

I will now give the floor to Mr. Payne.

Mr. LaVar Payne (Medicine Hat, CPC): Thank you, Mr. Chairman. I will be sharing my time with Monsieur Blaney.

It's nice to meet you, Admiral, even if it is not in person. I understand that you're a formidable expert on the north, and we're really delighted we could have you here.

I have a couple of questions for you.

You talked about peaceful cooperation in the north, and that's obviously the best way to go, particularly in the Arctic. However, of course, we've heard that Russia and to an extent Norway have released some aggressive Arctic policies, and I'm wondering, since they're both rearming, how would you and Denmark propose to deal with this?

RAdm Nils Wang: As I mentioned, my politicians are right now discussing the next five-year defence agreement, and there is nothing on the table right now that indicates that Denmark will start to arm itself for a significant greater presence in the Arctic. My country's position on that will be to try to go the dialogue way, basically.

I don't know what you mean about Norway, because as far as I know, Norway does not have anything in its military inventory, nor will it get anything in its military inventory, that puts it in a more aggressive posture in the Arctic than it had before. It has a navy with frigates, as you have and we have. Of course, if you start to use your frigates in the Arctic area—and that requires at least no ice as long as they are traditional frigates—you could argue that you have a more aggressive posture.

However, I am not aware that Norway is acquiring stuff that can justify believing it will have a more aggressive posture in the Arctic. I don't recall that I have seen any statements from Norway, except that it is always concerned about its neighbourship with Russia. I don't think it has mentioned anything about starting an increased armament regarding the Arctic.

That is basically all I can say.

Mr. LaVar Payne: Thank you.

We've heard from other witnesses that there are certainly some security challenges in the Arctic. What types of security challenges do you think we will be facing? Are they mostly state or non-state?

RAdm Nils Wang: I think I will point to the predominantly state issues, because when it comes to straits, and choke points, and also the strive for resources, if that is going to be a future scenario, it will probably be state driven. So I think I can put the security question into two categories.

One is the resource issue. If energy is a scarce resource and the strive to get these resources is sufficiently high, it will create security tensions.

The other security issue will be the one I mentioned, about the maritime infrastructure, and the strait, the new choke points, and so on. Then, of course, there is a certain category that is not maybe addressing the five polar nations, but if the meltdown of the north or the polar ice were to increase water levels all over the world, you would also see new hotspots in other parts of the globe that will also have an effect on the whole world. For an area like Bangladesh, for example, if you have water rise of less than a metre, it would create devastating damages to low areas and could mean millions of migrants and all the security issues that are related to that. It would also argue for the erosion of deserts and things like that.

But the direct security issues for the five polar nations are the ones I've just mentioned.

● (1150)

The Chair: *Merci beaucoup.* Thank you very much.

I will give the floor to *Monsieur Paillé, s'il vous plaît*.

[*Translation*]

Mr. Pascal-Pierre Paillé (Louis-Hébert, BQ): Thank you for being with us today.

I understand there is a lot of discussion going on at the moment. Even here, we will be meeting with a number of individuals to discuss the subject, and the same is true for you.

Beyond the discussions underway at the moment, do you not think that the actions are not concrete enough, and that we may be heading into a possible deadlock? Beyond all the discussions, do you not think there should be more done by each of the countries to ensure that the collateral damage—if I may use that expression—is as minimal as possible?

[*English*]

RAdm Nils Wang: I actually think the dialogue between the five polar nations is on track, as I mentioned. I think everybody adheres to the Ilulissat Declaration. I also think everybody adheres to the UNCLOS terms of reference in respect to when you have to deliver your scientific data in order to have your requirements taken into account.

I am more or less thinking aloud, but maybe what is required is to tell everybody else beyond the polar nations that we are actually on a good track with this and it will be settled in a UN framework that is basically making it as legitimate as it can almost be.

I also think you can talk the problems up and you can talk the problems down. It depends on how you are doing your rhetoric. So I think there is a huge responsibility around the daily communication amongst politicians about this issue.

[*Translation*]

Mr. Pascal-Pierre Paillé: I will now turn to a different subject. As you know, since the Arctic is a relatively remote region, there is more danger related to melting ice, and consequently there can be more icebergs.

Perhaps there is really no connection to the issue of sovereignty in the Arctic. Nevertheless, do you fear that more dangerous goods will be transported? Have you had any discussions or talks about standardizing the transportation of dangerous goods, such as oil? An oil spill could have catastrophic consequences. Have you thought about including legislation on the transportation of dangerous goods in future international agreements? We know that the consequences of such an incident are always catastrophic. However, I think they would be even worse if this type of disaster were to happen in the Arctic.

[*English*]

RAdm Nils Wang: Yes, I fully understand your question and I share your concern. That is also one of the things I mentioned in my intro, that just a detail like surveying the area so that you will have decent sea charts so that you can actually conduct safe navigation is a big challenge, because most of the waters under the ice cap are unmeasured. So in order to start any safe navigation, you will need also a decent hydrographical effort.

That is also, I think, something that legislators amongst the five nations could start to discuss. That is, how do we want to regulate the traffic up there? I mentioned the cruise industry and that you need to create positive behaviour from the industry in order to avoid catastrophes. You could also put a parallel to, for example, oil transports and other kinds of transports, so you make sure it is quality seafaring that is actually taking place up in that area. There could be common IMO rules that actually encompass all that industry in the whole world, so you have common standards on quality seafaring in the Arctic regions. They could also be on which time of year you are allowed to be up there, and in which areas according to the ice patterns, and things like that. So there's definitely legislator's work to do in that respect on the international frameworks.

● (1155)

The Chair: Thank you.

Mr. Blaney.

Mr. Steven Blaney (Lévis—Bellechasse, CPC): Thank you, Mr. Chair.

Mr. Wang, I want to commend your country and you for your cooperative approach on the circumpolar challenge. I think you can count on us for that type of approach.

You mentioned earlier that for political reasons you've decided not to go any further with submarines. I'd guess that's a cost-related decision. How will you ensure the sovereignty of your Arctic waters? How will you monitor them? Do you have any monitoring systems in place, or do you plan to have one within the next year?

RAdm Nils Wang: No, I think we will not know if anyone goes subsurface through our part of the Arctic waters. Basically, we were in the same situation during the Cold War, when we had submarines, because we used our submarines in the Baltic instead. At that time, we relied on somebody else to help us take care of that part of the problem.

But no, we don't have any monitoring systems submerged in that area.

Mr. Steven Blaney: On the surface, do you have any satellite systems? Do you use the international ones? How do you proceed when it's on the surface?

RAdm Nils Wang: We have patrol aircraft and our ships. We also rely on some satellite surveillance, which is more or less commercial-based. We are very engaged in LRIT—the long-range identification and tracking—that is now being introduced all over the world. We also get coverage in Greenlandic areas, because that is the prerequisite for identifying things that we want to do something about.

Mr. Steven Blaney: Can you tell me how many ships you're going to build in the next decade? Where will they be built, and how much do you plan to invest in those ships within your forecast?

RAdm Nils Wang: I'm lucky that I'm head of a navy that has just got a whole bunch of new ships. Our whole naval inventory is new: what was not renewed during the last five years will be renewed during the next five. All the investments on the navy side have been made. Therefore, I don't foresee any new acquisitions, except for those already planned within the next ten years. So the Danish navy will end up having three frigates, two command platforms, four Arctic patrol frigates, three Arctic patrol vessels, eight smaller combat units consisting of four minehunters and four small coastal corvettes, and approximately 12 ships to take care of the sovereignty surveillance in Danish areas. It is a fairly small but very modern navy.

● (1200)

Mr. Steven Blaney: How much did you invest in those vessels, and where were they built?

RAdm Nils Wang: When it comes to the Arctic patrol vessels, it would probably be $100,000 Canadian dollars apiece for the ocean patrol vessels we are introducing right now. I think the Canadian dollar is worth a little less than the American one. Is that right?

Mr. Steven Blaney: It would probably be $100 million.

RAdm Nils Wang: Yes, I'm sorry, $100 million Canadian apiece for the ocean patrol vessels. We have invested in frigates that will cost around 1.2 billion Danish kroner. In Canadian dollars—

Mr. Steven Blaney: Were those ships built in your country, sir?

RAdm Nils Wang: The ocean patrol vessel was built in a Polish shipyard and equipped in a Danish shipyard. Our frigates and our command platforms were built in the Maersk shipyard in Denmark.

[*Translation*]

Mr. Steven Blaney: Thank you very much.

[*English*]

The Chair: Thank you very much.

[*Translation*]

I would like to thank you, Mr. Wang, for testifying today by video conference. It was very much appreciated by all committee members, and will be of great assistance to us in our study of Canadian sovereignty in the Arctic. I wish you a good evening.

[*English*]

RAdm Nils Wang: Thank you. It was an honour, sir.

The Chair: Thank you.

[*Translation*]

We will now suspend our work for four minutes, while we get the room ready for our next witnesses. Thank you.

●

(Pause)

●

● (1205)

The Chair: Good afternoon, everyone. We are continuing our 28th meeting of the Standing Committee on National Defence.

We have two witnesses: Marc St-Onge, Senior Research Scientist, Regional Geology, Department of Natural Resources; and David Boerner, Director General, Central and Northern Canada Branch, Geological Survey of Canada. Thank you and welcome to both of you.

We will begin with you, Mr. St-Onge. You have nine minutes to make your presentation. I notice that it is quite detailed and will certainly be of great interest to committee members. The floor is yours.

Dr. Marc St-Onge (Senior Research Scientist, Regional Geology, Department of Natural Resources): Thank you, Mr. Chair.

To begin with, I would like to thank all the members of the committee for inviting me here this afternoon to present a summary of the lecture that was given at the "Bacon and Eggheads Breakfast" at the beginning of May. I am very pleased to be here.

[*English*]

Given the time constraints this afternoon, I won't have time to present the full bacon and eggheads presentation that I presented at the start of May in the West Block. Rather, we'll focus on just a few key points that I hope will illustrate the importance and value of the new geological map of the Arctic for Canada and Canadians.

To start with, then, the new geological map of the Arctic, of which we have copies in the back for anyone interested in obtaining one, was published by the Geological Survey of Canada, part of the earth sciences sector of Natural Resources Canada, with the map presently available either as a hard-copy paper product for purchase or as a free download from the Natural Resources Canada government website.

Development of the new geological map of the Arctic was led by a Canadian research team based in Ottawa and Calgary, with the active and enthusiastic participation of scientists and technical staff from the geological surveys of Russia, the U.S., Norway, Denmark, Sweden, and Finland. Work on this project began in February 2006. The map was released to the public in November 2008.

If I could ask you to turn to page 30 of the handout, you'll see that the reason the new geological map of the Arctic and the related underlying database is so noteworthy is that the two together provide, for the first time, a complete, seamless, internally consistent digital documentation and interpretation of the circumpolar geology, with the map documenting, along with the related database, the distribution, the age, the composition, the association, the environment of formation, and the state of preservation of no less than 1,222 major map or rock units in the circumpolar Arctic. In other words, by combining various colours, various patterns, and various alphanumeric codes for different rock units or map units, this map provides information on those units all the way around the Pole, for all onshore areas and all offshore areas, with no gap, no break. In addition to all of this, the map also documents the location of linear and point features such as active faults or ancient faults, active volcanoes or dormant volcanoes, and other features that are listed on page 30.

In addition to documenting what is where from a geological point of view in the circumpolar Arctic, what else do this map and database do for us? If we turn to page 31, we see that the map and database, importantly, provide a global context for known mineral resources. In other words, a map user can go to the map and can go to the database, query about the geological context for a known mineral resource outside of Canada, and bring that information back to Canada in order to evaluate whether or not a similar geological context for similar mineral deposits might not be found in Canada.

Let's just look at one example. On page 31, again, we see zinc-lead deposits in central northern Norway, well known, with their characteristics written out on page 31. The question would be, is there a chance that similar deposits might be found in northern Canada? If we turn to page 32, we see that the answer is yes, and the similar yet unexplored geological context for that type of deposit corresponds to Bathurst Island, an island in the centre of the Canadian Arctic Archipelago. So that's just one example, with one commodity, of how information about known deposits elsewhere can be brought back to Canada to guide exploration in Canada.

● (1210)

The deck provides a similar example on the energy side of things, specifically natural gas, given that the new geological map of the Arctic and related database also provide a global context for any energy resources in the circumpolar Arctic. But I'll leave that for you to read, and I'll just address one last point in my presentation, and that is how the new geological map of the Arctic and related database can help constrain the geological origin of any given onshore or offshore feature. I thought for the presentation this afternoon that I'd use the example of the Lomonosov Ridge, thinking that might be of interest to some of you.

If you turn to page 36 of the deck, then, what you have there is the current plate tectonic geometry or configuration for the polar regions. There are three large tectonic plates: the Eurasian Plate, which carries northern Europe, western Russia, and central Russia; the North American Plate, which carries northern Canada, Alaska, and easternmost Russia; and the Greenlandic Plate, which carries Greenland.

The feature of interest, the Lomonosov Ridge, is highlighted with the dark blue line, separated from the Eurasian continent to the northeast by the Eurasian Basin, in much the same way as Greenland is separated from Norway and northern Europe by the North Atlantic. The present plate tectonic motions are shown with the red arrows, with the North American Plate and the Greenlandic Plate moving away from the Eurasian Plate at a rate of 1.4 to 2 centimetres every year. And you wonder why transatlantic travel costs more every year.

The way to constrain the geological origin of the Lomonosov Ridge, then, is to simply reverse the motion of the plates digitally and go back far enough in time, in a number of bite-size time increments. Looking at page 37, it is one step back in time to 23 million years ago. You will note that the North Atlantic is much narrower, Iceland has disappeared, the Eurasian Basin is narrower, and because of that, the Lomonosov Ridge has moved incrementally towards the Eurasian continent.

Turning to page 38, stepping back in time to 34 million years ago, the North Atlantic is much narrower again, the Eurasian Basin is narrower, and the Lomonosov Ridge is that much closer to the Eurasian continent.

On page 39, stepping back to 56 million years ago, the North Atlantic and Eurasian Basin are both much narrower, and this time Davis Strait, the body of water separating Greenland from northeastern Canada, is also starting to close, with Greenland moving back towards Canada.

And in a final step back in time, on page 40, to 61 million years ago, the North Atlantic is fully closed, the Eurasian Basin is fully closed, Davis Strait is fully closed, and the three tectonic plates—the Eurasian Plate, the North American Plate, and the Greenlandic Plate—are forming one large composite polar plate, with the Lomonosov Ridge tucked back, parked against the western rim of the Barents Sea continental shelf or European continental shelf, from whence it came.

In other words, the geological origin of the Lomonosov Ridge is as the outermost edge rim piece of the European continental shelf, faulted off, ripped off 61 million years ago.

The take-home message is that this was 61 million years ago. Ever since then, for a period of time that's longer than the Himalayas have been forming in Southeast Asia, the Lomonosov Ridge has been part of the North American Plate, moving away from northern Europe, moving away from western Russian, in tandem with the Canadian land mass at a rate of 1.4 to 2 centimetres a year, tracking 900 kilometres west to where we now find it beneath the North Pole.

The implications for Canada of having produced and published the geological map of the Arctic and related database are listed on pages 41 and 42. I could go through that or let you read it. I think possibly I'm out of time. I will conclude my comments with that.

● (1215)

[*Translation*]

Thank you very much, Mr. Chair.

[*English*]

Thank you very much for your attention.

[*Translation*]

The Chair: Thank you very much, Mr. St-Onge.

I will now give the floor to Mr. Boerner.

[*English*]

Dr. David Boerner (Director General, Central and Northern Canada Branch, Geological Survey of Canada, Department of Natural Resources): I don't think at this point I have anything really to add, so we can probably just go to questions.

The Chair: Okay. So you can take maybe another five minutes if you wanted to explain other things to the members, and after that we'll go to the questions. I thought you were sharing your time.

Dr. Marc St-Onge: Excellent. Let me go through the implications, then. That will highlight the application of all of this.

Having produced this new geological map of the Arctic has done a number of things for Canada and the polar nations. The first thing is that this map now provides a seamless—no gaps, no breaks—geological coverage of the whole polar region, onshore and offshore, down to 60 degrees north. That's about 8% of the surface of the globe.

As I indicated, the new map provides a correlation tool for 1,222 map units from Greenland to Europe, from Russia to Alaska, and into northern Canada. In doing so, it provides the global context for mineral resources and energy resources that are known elsewhere. It allows us to bring that information back to bear in Canada to guide and help with new exploration work in Canada.

As I illustrated with the Lomonosov Ridge, the map can be used to resolve, document, sort out the geological origin of any feature onshore or offshore in the whole of the northern polar region. And finally, from a research and development management point of view, the new map also highlights where there might be gaps in knowledge or data or areas that need more work in Canada. The map and the underlying digital database are useful that way as well.

● (1220)

The Chair: Great. Thank you.

We'll go to the members now.

Mr. Bagnell, you have seven minutes.

Hon. Larry Bagnell: Thank you for coming. It was your West Block presentation that encouraged me to have you come here.

Not to oversimplify the question, but based on all this, who owns the Lomonosov Ridge?

Dr. Marc St-Onge: Well, that's a good question. I guess I'll have to make a distinction between the information that is shown on this map and what, ultimately, the Commission on the Limits of the Continental Shelf will want to see.

The map documents, as I said, the onshore and offshore geology for the whole region, including the Lomonosov Ridge, and it does it using data that were available to us starting in February 2006, because that's when we started the compilation project.

The new data being acquired by Canada and the other polar nations in support of their submissions under the terms of UNCLOS.... For Canada, I believe that started in 2006, which is when we were working our compilation map, so that new data wasn't available to us. The important distinction is that the new data is of a resolution, a level of detail, that far surpasses what we can show at this scale, but that's the level of detail that UNCLOS and the commission will be requiring in order to make their judgments.

So I hesitate to tell you who owns the Lomonosov Ridge, because we're talking about two different data sets.

Hon. Larry Bagnell: I was worried about that.

What does UNCLOS require, though—what specific type of information—to make a claim?

Dr. Marc St-Onge: UNCLOS requires principally two data types: detailed information on bathymetry, which is the depth to the ocean floor, and detailed seismic surveys. I illustrate both in the deck here, because we made use of what was available to us at the start of 2006 in compiling this map, including bathymetry and seismic data. The difference with UNCLOS is that what they require is much more detailed information. Specifically, the requirement by UNCLOS is transects for bathymetry and for seismic data that are spaced 60 nautical miles apart. I believe Canada is doing it every 50 nautical miles, to be on the safe side. That's good. It's detailed information that will eventually be made public, but wasn't available for the compilation of this map.

Hon. Larry Bagnell: If there were a spot on the ridge that was equidistant from Canada and Russia or Greenland and Russia, what information would decide who owned that part of the ridge?

Dr. Marc St-Onge: In any submission for an extension of the continental shelf, and the Lomonosov Ridge would be one example, the requirement is demonstrated with the detailed bathymetry and seismic data that there is an extension; that the ridge, in this case, is attached to one shelf or the other. If one country or the other can prove that, then I believe the limits to the extension work out to 350 nautical miles—so there is a limit to how far you can take things. But first you have to demonstrate that the ridge, in this example, is attached to either the Canadian-Greenlandic side or to the Russian side at the far end.

Hon. Larry Bagnell: Is it connection by depth or by geological feature?

Dr. Marc St-Onge: It's both. That's the nice thing about UNCLOS, that it's geology-based; there has to be a geological connection. In other words, the rocks that form the Lomonosov Ridge, in this case, have to have, from the Canadian perspective, we would hope, a link to mainland Canada's geology. Likewise, bathymetrically you'd like to see a bridge, an apron, between mainland Canada or the Canadian contiguous continental shelf and the Lomonosov Ridge itself.

● (1225)

Hon. Larry Bagnell: Do sediments have any part in this or in anything related to UNCLOS?

Dr. Marc St-Onge: Absolutely they do, because the thickness of sediments that rest on the bedrock, let's say—the core of the ridge—helps in establishing that bathymetric tie between the ridge and mainland Canada, for example.

Hon. Larry Bagnell: Can you make any comment on the volume and locations of methyl hydrates, of frozen methane in the Arctic?

Dr. Marc St-Onge: Yes. Canada is certainly well endowed in gas hydrates, which is basically methane frozen in ice crystals, both because the extensive permafrost that characterizes northern Canada —and the bulk of Canada's north is above 60 degrees north—is permafrost hosting gas hydrates inland, and also, if the water depth is sufficient, because pressures and temperatures will be such that gas hydrates will also exist at the bottom of a deep column of cold water. So again, on that front, Canada is well served by Mother Nature.

Hon. Larry Bagnell: There's a suggestion that there are more of those than of all the other hydrocarbons in the world. Is that...?

Dr. Marc St-Onge: I don't know the specifics of that.

David, do you?

Dr. David Boerner: Yes, that's one of the estimates. It is based on fairly limited data; it's hard to know the exact extent of these things. But if you take what we know and project it out, that has absolutely been one of the calculations people have made.

Hon. Larry Bagnell: In the meeting before this, we had witnesses from the north say that they wanted to continue the geoscience program for years to come, because a lot of Nunavut and the Northwest Territories in particular has not been mapped by the geoscience programming. I'm wondering how you can have a comprehensive map that has everything, if these people are saying there's a lot that hasn't been done.

Dr. Marc St-Onge: Both can co-exist. The reason our partners suggest that, and we agree with it, refers to the comment I made about the new compilation and underlying database being a useful tool for management to decide where to go next and what area needs more work. Although the map is all coloured, the level of detail in different parts or segments of the map isn't uniform, and certainly when one looks at the database, it's not populated as densely in some areas as in others.

We've used the information and the data available to arrive at an internally consistent picture and interpretation, but that's not to say that there aren't areas—there are many of them in northern Canada—that absolutely need more work to bring things up to a more international standard.

[*Translation*]

The Chair: Thank you, Mr. St-Onge.

I will now go to Mr. Bachand.

Mr. Claude Bachand: Thank you, Mr. Chair.

Welcome. I would like to start by congratulating you. You live up to your reputation in the area of clear, understandable and accurate maps. I am very impressed by your work. I did not think it was so advanced.

The material you presented seems extremely interesting, and I would like to know more about it. Here we are limited to five or six minutes for our questions, and I will not be able to get in-depth understanding. At some point, I would like you to call either my office or Mr. Paillé's office, or someone else's office to give us a more in-depth briefing.

I thought I had read recently that the Canadian claim to the continental shelf is quite large and extends beyond the archipelago. Somewhere it even said that we could pursue the studies beyond the North Pole.

Did I read that correctly, or is it because I have the impression that the Canadian continental shelf goes on and on indefinitely?

● (1230)

Dr. Marc St-Onge: The reports in the media were somewhat exaggerated. We should have put this map in the middle, but what can you do. The geological and bathymetric information on the map clearly shows the location of the contiguous Canadian continental shelf. Overall, the shelf is located within the 200 nautical miles of the exclusive use zone. What is being debated are the extensions of this shelf. The Lomonosov ocean ridge and the Alpha ridge are extensions, but the contiguous shelf is clearly defined and does not extend to the North Pole.

Mr. Claude Bachand: Are there any underwater areas that do not belong to anyone? For example, Canada, Russia and the United States can show where their continental shelf ends. However, is there a grey area where there are no extensions and where negotiations could be required to determine how they should be handled?

Dr. Marc St-Onge: That is another good question. You are right. All the zones with an ocean crust—and I am not speaking about the continental crust we live on—that are located on the seabed are international, for example the North Atlantic. The Eurasian basin to which I was referring is the real ocean crust. It is located beyond the continental shelf as it is perceived by any country. It would remain international.

In other regions where the crust is neither continental nor oceanic, but rather hybrid, from what I understand from the UNCLOS specifications, there is a limit to what a country may claim. If everyone were to claim as much territory as possible, even 350 nautical miles along the ridges and all the rest, there would still be large areas in the middle of the Arctic ocean that would not be claimed and that would remain international.

Mr. Claude Bachand: Does that open the door to possible international negotiations regarding the sharing of the natural resources in these areas?

Dr. Marc St-Onge: I imagine that is what should happen.

Mr. Claude Bachand: Our study must be ready by 2013. The Commission on the Limits of the Continental Shelf has just recognized an extra 230,000 kilometres for Norway. Do we have to wait until the commission sets the limits of the shelf before we look at the remaining grey area?

It is my impression that we will have to wait for the commission's decision. We cannot start negotiating about natural resources until it has ruled on the limits of the continental shelf of one country or the other. Is that correct?

Dr. Marc St-Onge: You are right. As you know, Canada is to submit its case in 2013. Denmark will do the same in 2014, I believe. We don't know how long the commission will take after that. I have seen estimates ranging from 5 to 10 years in order to rule on the different requests, so I have the impression that it will take some time.

However, the encouraging thing is that there is a great deal of advertising on the scope of natural resources, that is ore and energy, in the Arctic Ocean. The United States Geological Survey published a study last year identifying the energy resources in the Arctic Ocean. According to my interpretation of this study, their outlook is overly optimistic.

For example, to calculate their estimates of oil and natural gas reserves, they considered, among other things, the entire Davis Strait as being a continental margin type of geological feature, whereas that is not the case. A large part of the Davis Strait seabed is actually oceanic crust, and this type of geological feature does not contain oil or gas. So that's why I'm saying that the United States Geological Survey estimates are overly optimistic.

The other thing to keep in mind is that the majority of energy resources will be found near the coast, simply because that is where the thickest sedimentary rocks are found. These rocks are what make up the continental shelf. That is where oil and natural gas companies traditionally explore, because that is where the majority of these reserves are found. There might be a bit more in the slope, but the farther they get from the coast, the less likely they will be to find anything.

● (1235)

The Chair: Thank you, Mr. St-Onge.

I will now turn the floor over to Mr. Harris.

[*English*]

Mr. Jack Harris: Thank you for your presentation.

I have a couple of questions on the significance of the work you're doing.

This work is continuing, obviously. Will the data that you're collecting between now and 2013 be used as part of the claim?

Dr. Marc St-Onge: It's not me, personally—

Mr. Jack Harris: Not you, but the Geological Survey of Canada.

Dr. Marc St-Onge: Yes, and I'll ask my colleague Dave to elaborate on that.

Dr. David Boerner: We actually have two programs related to the north. One is specifically designed to provide data for the UNCLOS submission. We will collect the best data we possibly can to make the best submission for Canada. That's the aim of that entire program. And it will finish in 2013, for the claim.

We have another program called geo-mapping for energy and minerals, which is specifically designed to try to determine the potential in the north for energy and minerals. It's based partly on the correlations of Dr. St-Onge's work around the world.

The geology acts to concentrate minerals sometimes. The plate tectonic motions that we talk about, plates moving back and forth, form these places where you can get concentrations of minerals. We try to use analogs from different places around the world to find those places in the geological record in Canada.

So we have two different objectives and two separate programs. One is specifically aimed at UNCLOS.

Mr. Jack Harris: I have another question. I'm trying to get a simplified answer as to the role this information will play.

The geological information, for example, whether this bridge or feature is attached to Canada or attached to the other side—and I guess we're looking at Russia—when does that come in? Are we talking about an equal distance principle first, and this information as an exception to that? Or are we talking about establishing that these oceanic features are in fact an extension of or a part of our continental mass?

Can you simplify that for us?

Dr. David Boerner: Yes, and I appreciate that it's a complicated set of formulas that determine this. The first one is a definition of how deep the continental platform really is underwater. That's a part of it, because at some depth it's considered too deep to be part of the platform. The second part of the equation is how thick the sediments are. So it's the combination of how deep the water is and how thick the sediments are that tells us how much distance we can go out from the continental shelf's sharp drop-off to claim additional territory. That's the simple formula.

The complicated part that I think you're referring to is that there's a possibility that the land mass extends away from the continental shelf we would draw as a very steep drop-off. This is the question about things like the Lomonosov Ridge and whether it's physically connected to Canada's land mass. If it is, then you can use that formula of distance and depth and thickness of sediments. The geology here sets the context for that discussion, but it doesn't necessarily answer the question itself. We have to make other measurements to try to prove that it's connected to the land mass.

Mr. Jack Harris: Thank you.

I liked your map. I'm not a geologist, but the information is fascinating.

Maybe you can comment on the recent *National Geographic* maps they've shown of the Arctic. I've seen them, and they're a little easier to read for lay people. They have very good depth information. They show the claims, etc., and also show retreating ice. What do you think of them? They're fairly recent—maybe from March or February—*National Geographic* fold-out maps. They look very readable. Could you comment on those? Are they of value for us to look at?

● (1240)

Dr. David Boerner: I think they're absolutely of value to demonstrate the principles and ideas. They're again too coarse. They don't have enough detailed information to be the real definitive things that the UN commission will use for its determination, but they absolutely convey the general perception of what exists and how the claims are being proposed.

Mr. Jack Harris: I have one last question, if I can get it in.

In conducting this research up until now and into the future—I know the Canadian government has invested a fair amount of money on it, and you can comment on that—can you tell us whether or not there's agreement between what you're doing in terms of the data and the methodology? For example, you put a lot of work into this. Obviously you're covering 60° north all around the cap of the earth. Do you have agreement with scientists from other countries as to the methodology? In other words, is someone going to say, "Well, we don't agree with your methodology. We don't agree with your data sets. We don't agree with your seismic information. We don't agree with this, because we have our own way of doing it." And the fight is going to be about that as opposed to being about legitimate questions that are pre-agreed?

Dr. David Boerner: That's an excellent question, and the whole purpose behind this map is to have one solid, consistent scientific database on which to make policy decisions. We're trying absolutely to avoid the question of different people having different protocols and different ideas. This collaboration was specifically to try to get agreement from all the circumpolar nations that this is the way to compile one geological map, and we've done that.

Mr. Jack Harris: So we've had that throughout.

Dr. David Boerner: Yes, we've had that discussion. Some of the work we do under the UNCLOS work is jointly with the Danes, or with the Americans, or with whomever, to try to collect one set of data that is definitive according to both countries' standards.

Mr. Jack Harris: Do you get cooperation from the Russians in terms of this, as well?

Dr. David Boerner: I'm not sure we have had collaboration on collecting data, but we certainly have had collaboration on the standards that went into these maps.

Marc.

Dr. Marc St-Onge: I would just add, with respect to this map, that the geological surveys of all the polar nations contributed, and they're co-authors of the map. Each—the Russians, the Americans, the various countries—provided us with their national data sets for bathymetry, for geology, for seismic data. They were very open. Data was compiled by the Canadians but reviewed by everyone else. In that sense, yes, there was full agreement on how it was done, and what ended up being shown or not shown.

Where there was maybe a slight bit of friction was not on how the geology was compiled or shown, or on the data shown, but on how to orient the map. That was of greater concern for most people, because most people wanted their country, when you hold the map on a wall, to be facing the right way up. So, the Russians wanted Russia here, the Americans wanted Alaska here, etc. To get out of that pickle, we had to resort to showing Greenwich as the reference frame. But that was minor. Other than that, I think there's full agreement in terms of techniques and methodologies.

Mr. Jack Harris: Well, congratulations on the magnificent project. It obviously seems to be ongoing, so good luck in the future.

The Chair: Thank you very much.

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

Mr. Laurie Hawn: Thank you, Mr. Chair.

And thank you both for coming.

First of all, I have to say I'm incredibly impressed that you coloured inside the lines like that.

Some hon. members: Oh, oh!

Mr. Laurie Hawn: Looking at the map, and obviously from a layman's eyes—and for someone who is not very scientific—the position of the Lomonosov Ridge seems to have stayed the same with respect to Greenland. This is not a facetious question, but how many million years ago is the Russian interpretation of ownership relying on? The further back you go, the closer Russia is to that ridge. What is their frame of reference?

Dr. Marc St-Onge: Well, I used to like to say that the Russians' claims for the Lomonosov Ridge were 61 million, 599 million, etc., years too late. There's absolutely no doubt that the ridge originated from the European continental shelf, but as I was explaining, it has migrated 900 kilometres since then to where we find it now. So that's from western Russia and northern Europe. There's still the Russian end of the ridge abutting against the actual present Russian continental shelf, and that's obviously the way they would try to make the claim.

● (1245)

Mr. Laurie Hawn: Has that point not changed? Has that point stayed the same or has it moved 900 kilometres as well?

Dr. Marc St-Onge: At the scale of the plates, that point would have moved 900 kilometres as well. It's going to come down to, when all these plates were moving, whether the ridge on the Russian side or the ridge on the Canadian-Greenlandic side.... It's going to come down to whether there was a bit of play, you know, as things were trundling 900 kilometres.

Mr. Laurie Hawn: From my layman's interpretation of that again, the Lomonosov Ridge is in the same position relative to Canada as it was 61 million years ago.

Dr. Marc St-Onge: Absolutely.

Mr. Laurie Hawn: It's just that Russia has moved away from it. So it is fairly important as to where the data is for ownership.

Dr. Marc St-Onge: I completely agree with you. Remembering the issue of scale and what's admissible evidence for UNCLOS, looking at the map—and this is the one that was co-authored by all the participating nations—and at the Canadian side, there is no break between Lomonosov and mainland Canada. At the Russian end, there are a bunch of faults shown, which were provided to us by the Russians.

Mr. Laurie Hawn: Right. It sounds like the knowledge is not just ours, obviously, but is shared with everybody. How does our knowledge compare with that of other countries? Or is it truly a world body of knowledge that everybody is sharing freely?

Dr. Marc St-Onge: It's truly a world body of knowledge. The various participating nations provided their national database—and data sets, I should say. Where Canadians excel, I think, I guess because of the size of the country, is in interpreting things at a global scale. I think one of the reasons we were given the lead on the project was the opportunity to do exactly that.

Obviously the Russians have a big country as well, and they're good at it as well, although science in North America and science in Russia aren't identical. There are slightly different ways of thinking about geology in Russia compared to North America. Canada, I think, has the expertise to think at the broad scale. In that sense, the Europeans appreciate what we do.

You'd think the Americans would do the same, and they do—not to denigrate their work—but again, we have a much larger land mass to worry about, integrate, and think about in terms of geological evolution. I think we've just become really good at it.

Mr. Laurie Hawn: Obviously this would be a partisan Canadian question, but how do you assess our ability to (a) interpret, and (b) sell that interpretation, when it comes to selling a competing interpretation with the Russians? Are you confident that we have the horses to do that?

Dr. Marc St-Onge: I would say there's absolutely no doubt in most people's minds that the best geological survey in the world is the Canadian Geological Survey, simply because of our experience and past history. The Canadian Geological Survey was modelled after the British Geological Survey, so it's the second oldest, I guess, but people have suggested that it's time for reverse modelling. So yes, I would put the Canadian survey up top.

Mr. Laurie Hawn: When you say reverse modelling, what are you referring to?

Dr. Marc St-Onge: Some of my colleagues in Britain have suggested that the British Geological Survey needs to be rethought and modelled after the Canadian survey.

Mr. Laurie Hawn: Okay. That's what I thought.

Who else is using this data other than governments? Are there commercial ventures, resource companies, and so on that have access to all this? How many are using it that you're aware of?

Dr. Marc St-Onge: That's a very good question. The map was published in November 2008, so that's a few months ago. The first public presentation of the map was in November at open houses for industry in Yellowknife and Whitehorse. The map was up on a wall and presentations were made. There's absolutely no doubt that Canadian mineral, oil, and gas exploration companies caught on to it right away and understood this principle of the map providing a global context, based on information from around the Pole, to bear on questions in Canada.

I think the latest statistic is that since November.... Is it 1,200 or 1,300?

● (1250)

Dr. David Boerner: It's about 1,200.

Dr. Marc St-Onge: Since November, about 1,200 copies of this map have been downloaded from the NRCan website, which is a phenomenal number in such a short period of time. That's not by government, but....

Mr. Laurie Hawn: Have you been providing assistance to them in terms of interpretation, or have you been asked for assistance in interpretation of the data?

Dr. Marc St-Onge: Both. In presenting the map at these industry forums, we obviously explain the map, we highlight its usage. I should say there are four legend sheets that come with it, which are the real heart of it, I guess. We do that to help them understand the product and its uses, although they catch on rather quickly. Then we get a lot of requests on the specifics, what about this interpretation or that interpretation.

Mr. Laurie Hawn: As a department you are open to assisting the Canadian-specific commercial applications.

Dr. Marc St-Onge: Absolutely.

The Chair: Thank you, Mr. Hawn.

Now to Mr. Bagnell for five minutes.

Hon. Larry Bagnell: Thank you, Mr. Chair.

Quickly, why are the sediments a measurement? Are they assuming that the sediment came from the closest land and that's why the depth of sediment is important in the determination? Why are sediments one of the measurements they're looking for in UNCLOS?

Dr. David Boerner: Yes, the sediments are eroded material that's sliding off the land mass, and the thickness of the sediments decline as you move away from the land mass. There has been a definition, based on the scientific consensus of the thickness, that people take as the edge of the area that you can submit a claim for.

Hon. Larry Bagnell: When Mr. Bachand was asking about no man's land in the middle of the Arctic, that's like the land in the middle of the Pacific Ocean or the Atlantic Ocean. It simply falls under UNCLOS for anyone in the world to use.

The part of UNCLOS that talks about the 350 miles as the limit, that part is a bit confusing. Are there not different interpretations to which the 350 miles may not apply to some extent, and it could go on even farther than that?

Dr. David Boerner: Marc, do you want to talk to this?

Dr. Marc St-Onge: Sure. It's a very good question. It pertains to the Lomonosov Ridge, I suppose.

UNCLOS seems to differentiate between what you would call a ridge and what you would call an elevation. If it's a ridge, then the 350 limit applies as the maximum amount you can claim. If it's an elevation, then there is no limit. So yes, that's a point about which I would expect some confusion down the road. The Russians have suggested that the Lomonosov Ridge, in spite of its name, should be considered an elevation. Normally, the definition of elevation elsewhere is reserved for oceanic plateaus, non-linear features.

Hon. Larry Bagnell: Why did UNCLOS say the Russian data was not sufficient the first time they put in their claim?

Dr. David Boerner: I actually couldn't say. They were a group of scientific experts who examined it and I guess they didn't feel that the evidence was sufficient for demonstrating the UNCLOS formulas. You'd have to ask the people who were involved in the analysis of it.

Hon. Larry Bagnell: Could you explain a bit more what an elevation is? An elevation is another way of claiming your continental shelf, other than unlimited—

Dr. Marc St-Onge: That's right.

Hon. Larry Bagnell: What is an elevation?

Dr. Marc St-Onge: UNCLOS doesn't define it, but they refer to ridges and to elevations. Ridges are viewed as linear submarine features that have topography. Elevations are submarine features that also have topography but aren't necessarily linear. For example, a plateau, a whole area that is high, would be considered an elevation as opposed to a ridge, which would be long and narrow.

Hon. Larry Bagnell: If the interpretation comes out that there's an overlap where they both fit under the UNCLOS definition, my understanding is the UNCLOS rules suggest that has to be determined bilaterally between the two countries involved. Do you foresee that happening in the science that's been mapped so far?

● (1255)

Dr. David Boerner: I'm not sure yet. We haven't got all the data. I don't think there is a major period or space that overlaps. I think you're right. Where there is any overlap, it's dealt with in the same way as there's overlap now. In many places around the world people are claiming the same territory, and it is a bilateral discussion. I couldn't actually say if I have knowledge that there would be a significant overlap.

We'd have to try to get you that answer. You have to recognize that some of the data collection is incomplete. We're still taking a look at what's going on.

Hon. Larry Bagnell: Are there any active volcanoes north of 60°?

Dr. Marc St-Onge: Yes, off the west coast of Alaska.

Hon. Larry Bagnell: Thank you.

The Chair: Thank you very much.

I will give the floor to Mr. Boughen for five minutes.

Mr. Ray Boughen (Palliser, CPC): Thank you, Chair.

Thank you, gentlemen, for sharing part of your day with us.

I have just one question about the map. Does the map give any idea of the concentration of minerals at their various levels, such as surface minerals or deep-seated ones? Or are there any indications of gas reserves and those kinds of things, and whether it's economically feasible to go after some of them because of their depth?

Dr. Marc St-Onge: It's not part of this map database. The map certainly documents on the energy side, for example, what might be considered source rocks, reservoir rocks, cap rocks, and things of that nature. But it doesn't document the depth of the resource.

We have a new compilation project that began this year focused specifically on Canada, the three northern territories. So it's a tri-territorial compilation on a much more detailed scale, again including onshore and offshore projects, during which we plan to expand the digital database to include more variables and attributes —and that would be one of them. So it's a work in progress.

Dr. David Boerner: If I could add, we're not actually trying to look for resources, but to evaluate where resources might potentially lie. The private sector would take this information and become much more detailed and put a lot more effort into trying to delineate actual resources. One analogy is that we try to point out where the haystack is, and it's the private sector that goes in and tries to find the needle.

The Chair: Thank you very much.

Our last member to have the floor for four minutes, or maybe five, is Mr. Paillé.

[*Translation*]

Mr. Pascal-Pierre Paillé: Thank you. In any case, my questions will be brief.

As part of this research, are you able to identify fairly clearly all of the seabed on your map? You go even lower than the seabed.

Earlier, I expressed my concern about maritime shipping of hazardous goods. We were told that the seabed must be clearly mapped to ensure an increase in maritime traffic.

Are you able to provide us with a detailed map, like this one, of the seabed for the entire Arctic region?

Dr. Marc St-Onge: There is a Natural Resources Canada program called Seabed Mapping designed to provide the information that you are requesting. It is true that in Canada, the seabed is now mapped to this scale, but in terms of knowledge for vessel skippers, there are certain areas that are well known, like the St. Lawrence River, but many regions remain uncharted.

So the department has this program that allows us to study this issue and produce detailed maps, which will be necessary with a view to increasing traffic.

Mr. Pascal-Pierre Paillé: So the work is already underway.

Dr. Marc St-Onge: That's right.

Mr. Pascal-Pierre Paillé: Okay.

You referred to research that is underway on the seabed. Is this research developing quickly? It was stated earlier that Canada will be submitting its report in 2013. Could we say that things are moving so quickly that in 2013, this map, which has just been published, will already be obsolete?

● (1300)

Dr. Marc St-Onge: We will keep the map up to date; it's easy to do now because everything is digital. As we acquire information, we will add it to the map, including what will be prepared for our submission to UNCLOS.

As concerns seabed mapping, that is limited because it can only be done in the summer. I don't know how quickly the terrain is covered.

Dr. David Boerner: That is a responsibility of the Department of Fisheries and Oceans.

Mr. Pascal-Pierre Paillé: Is your work facilitated as the ice melts? I assume so, obviously.

Dr. Marc St-Onge: Absolutely. The melting ice facilitates ground work and ocean research. Geologically speaking, by looking at the data that has been collected, it is clear that the work is much easier. With longer summers, shorter winters, and less ice and snow, we are able to see much more than what previous generations saw, and are able to deepen our knowledge of the land and the seabed.

Mr. Pascal-Pierre Paillé: I have one last brief question. As far as resources are concerned, earlier, it was said that many people have downloaded the map. You have, after all, done a study.

Do you feel pressure from certain companies? Do you receive calls from lobbyists? Lastly, have you noticed growing interest in your research, and information you may find, in recent years? Do you have the impression that some people are keen on getting information before others do?

Dr. Marc St-Onge: There is no doubt that the work we do has always been of interest to mineral exploration and energy companies. Nonetheless, there has been greater attention paid to Canada's northern region in recent years, which explains why our organization has received a bit more money to conduct our work. This interest is therefore timely. We could do more if people are more interested. It seems that we were in the right place at the right time.

Mr. Pascal-Pierre Paillé: Thank you.

The Chair: Thank you very much.

Thank you, Mr. St-Onge and Mr. Boerner.

[*English*]

Thank you very much for being with us this morning. The study you're doing is very important for our committee. I appreciate that you're going to be available for some members if they have more questions in private.

[*Translation*]

That concludes our work for the 28th meeting of the Standing Committee on National Defence.

Before ending, I wish to remind members that this is our last meeting before the summer recess. Therefore, there will be no meeting tomorrow. We will see you all again in the fall, God willing.

Thank you, and good day.

Dr. Marc St-Onge: I wish to add something. Once again, if somebody wishes to have a copy of the map, we have several copies. We would prefer not to bring them back to the office.

[*English*]

If anyone wants a copy, there are copies available.

[*Translation*]

The Chair: All right. To our members and the clerk, it would be a good idea to keep a copy of the map.

Thank you.

Thank you very much.

Meeting adjourned.

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