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Chair

Mr. Leon Benoit

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● (0905)

[*English*]

The Chair (Mr. Leon Benoit (Vegreville—Wainwright, CPC)): Good morning, everyone.

We're here today to continue our study of the regulations and the status of the emergency response to offshore oil and gas drilling accidents.

We have two panels today to continue our study. In the first panel, from the International Association of Drilling Contractors, we have Kevin Roche, general manager of Noble Drilling (Canada) Ltd. Thank you for coming today. From York University we have Gail Fraser, associate professor, faculty of environmental studies. Thank you very much for coming today.

Mr. Cullen.

Mr. Nathan Cullen (Skeena—Bulkley Valley, NDP): I have a very small point of order, through you to the clerk.

Just to confirm, I know different parties had included some of the companies that actually do the drilling—the oil and gas companies that are doing the drilling off Newfoundland and the proposals off the arctic.

They were invited, correct? I just want to confirm that they were invited and chose not to come.

The Chair: I can explain some of that. Actually, there are nine individuals or groups who declined to come or couldn't. Husky Energy is actually appearing right now before the Senate committee. Apparently the individual has a flight right after and couldn't make it work. Chevron was invited and chose not to. I have the list here.

Mr. Nathan Cullen: Okay.

Is it possible to provide the list of companies? For future reference, if the committee were to go at this issue again, it would be very helpful to know which companies were invited or declined, so we can put a little bit more energy into making sure they come, because they're the ones ultimately doing the drilling. Those are the ones that I think a lot of committee members would like to hear from at some point in our process. If we could have that list from you, through the clerk, that would be great.

The Chair: We will get that list to you, Mr. Cullen.

We'll start now, in the order appearing on the agenda, with Mr. Roche from Noble Drilling, if you could just go ahead. You're here on behalf of the International Association of Drilling Contractors.

Go ahead with a presentation of up to 10 minutes. Once we've heard from both witnesses, we'll go to questions and comments.

Go ahead, please.

Mr. Kevin Roche (General Manager, Noble Drilling (Canada) Ltd., International Association of Drilling Contractors): Thank you, Mr. Chairman.

Let me provide a little background. Noble Corporation, headquartered in Geneva, is a member of the International Association of Drilling Contractors, which is based in Houston. Noble Drilling Canada Ltd. is a Canadian subsidiary of Noble Corporation. It is headquartered in St. John's and is a member of the Canadian Association of Oilwell Drilling Contractors, based in Calgary. IADC is a trade association representing drilling contractor interests worldwide, which covers some 700 mobile offshore drilling units. CAODC is a trade association representing drilling contractor interests based in Canada, which covers some 800 drilling and 1,100 service rig units. Noble Drilling Canada has conducted drilling operations on the Hibernia platform for the last 13 years, since its tow-out in 1997.

I'm the division manager for Noble's operations in Canada. I'm a graduate in mechanical engineering from Memorial University. I've got 32 years in the drilling industry, and that includes assignments in the Beaufort Sea for six years, the North Sea, and Atlantic Canada off Nova Scotia and Newfoundland for 18 years. I've spent the last two years running our Mexico division for Noble. I currently hold the position of chairman of the CAODC Atlantic Canada division.

Noble and IADC believe the *Deepwater Horizon* incident was a tragic but preventable event. We mourn the loss of the 11 lives of our industry co-workers and we lament the environmental damage that is still in progress.

Coming from Noble's operational culture, in which there's no job so important that it can't be done safely, I find it very difficult to fathom the series of events that occurred on April 20, which sequentially overrode several key fail-safe features and led to the blowout. It's also very difficult for us to rationalize how, or why, experienced people did not stop unsafe activities that could, and did, lead to such significant loss of life and environmental damage. We must await the final investigation of the incident to understand the real root causes, effectively apply the lessons learned, and establish if there are indeed opportunities for us to improve our regulatory system and current operational practices.

I will next discuss accountability versus responsibility. In our world, the drilling contract between the licence-holder, which we call the operator, and the drilling contractor is the governing legal document that establishes accountability and liability. The operator leases the land, prepares the drilling program, and obtains approval from the regulator to drill the well. The operator contracts with the drilling contractor and many other contractors to bring equipment, people, and processes needed to deliver a cased conduit—the well—through which oil and gas are delivered for processing. Each contractor is responsible to the operator for executing its contracted duties according to its contract terms. Standard, typical drilling contracts recognize the operator as being ultimately accountable to the regulator for compliance and performance in delivering the well according to the plan submitted.

Now I will discuss emergency response assets. Standard drilling contract terms in Canada and internationally make the operator accountable for pollution and spills emanating from the well and for the associated response and contingency plans. The drilling contractor is responsible for pollution emanating from the drilling unit and its equipment, subject to mutually agreed indemnities and caps. A three-tiered oil response capability is required by Canadian offshore drilling permit regulations; it is coordinated by the operator, typically using outside specialists and third-party services.

With regard to the adequacy of the current regulatory regime, we believe Canada has a very robust regulatory system in place, and the processes used for pre-auditing and permitting are highly regulated. Authorization submissions by the operators must include a safety plan, an environmental protection plan, and a contingency plan for drilling and production regulation compliance. Regulatory regimes around the world are moving to less prescriptive and more goal-oriented regulatory models. Goal-oriented regulations should not decrease the standards, but rather, we believe, should promote more effective and more innovative practices. The operator remains accountable for compliance to its plans and for its decisions, the drilling contractor remains responsible to the operator for compliance to its contract and service agreement, and the regulators remain accountable for ensuring that effective goals are met in executing approved drilling and production plans.

In conclusion, with a focus on the tools we have for preventing spills, effective risk management is a fundamental and common goal of the operator, the drilling contractors, and the regulators. The primary focus of the drilling contractor must be on managing operational risks to prevent the loss of well control, and in doing so, to remove the risk of injury to people and the environment.

● (0910)

We have five primary tools in our arsenal for managing well control risks, which are prescriptive and fundamental to providing effective and professional service to our contracts. Those five items are as follows.

We always maintain two independent well barriers during drilling operations, and we ensure that the operator and subcontractors support and enforce this obligation in compliance with the drilling permit requirements.

We employ a robust competency assurance program to document the competency of key people and ensure they've got the training and the experience to identify potential problems and correct them in advance.

We conduct regular drills and well control exercises to test personnel competency and to manage complacency.

We deploy an effective planned maintenance program to ensure that critical equipment will work as designed and when required.

And we enforce a comprehensive health, safety, and environmental management system where hazards are identified and corrected spontaneously, where personnel are empowered with the right to refuse any unsafe work, and where the workforce believes there is no job that important that it can't be done safely.

Thank you for your invitation to meet with the committee today.

We support the initiative, and we are available to assist you, the regulators, and the operators in finding ways to improve the processes used in the safe and responsible development of our oil and gas resources.

Because I know the history of this committee, I've tried to keep my comments short, thinking we were going to be part of a big group of presenters. In my early career I spent 10 years involved in BOP and well control systems design and construction. With the time we've got here today, if I can help you to understand any of these issues, I'm wide open to answer any questions you have.

Thank you very much.

The Chair: Thank you very much for your presentation, Mr. Roche. I'm sure you'll have lots of questions later.

We go now to Gail Fraser, associate professor, faculty of environmental studies, York University.

Go ahead with your presentation, please.

Dr. Gail Fraser (Associate Professor, Faculty of Environmental Studies, York University): Thank you, Mr. Chairman and members of the committee. I'm honoured to be here today. I want to thank the committee for asking me to participate in this very important process.

I'm going to focus my presentation on three key points around the regulatory regime in Newfoundland and Labrador. That's my primary focus: Newfoundland and Labrador. The key points are going to be around transparency, the conflict between the Atlantic accord and the Canadian Environmental Assessment Act, and the intersection between the Canada-Newfoundland and Labrador Offshore Petroleum Board—the C-NLOPB—and the Migratory Birds Convention Act.

I want to first consider the context in which we're operating oil and gas in Newfoundland on the Grand Banks. The northwest Atlantic is a globally important habitat for some 30 million to 40 million migratory seabirds, some of which come from Greenland, Antarctica, and the Gulf of Mexico. Seabirds are also a local resource, providing revenue for tourism, and locals also hunt certain species of seabirds. Environmental assessments associated with offshore oil and gas production identified seabirds as what's called a "valued ecosystem component". They also identified these organisms as the group most vulnerable to oil pollution.

Transparency is a value identified by the federal and provincial governments of Canada through various acts. When a process is transparent, it is understood to be open to public scrutiny, yet this fundamental value of transparency is exactly what's missing from the current administration of offshore oil and gas in eastern Canada. I will support this statement with two examples. I had three; I was going to do one, but since I have a little bit more time, I'll do two.

Here is the first example. In conjunction with Newfoundland-based non-governmental organizations that had participated in the environmental assessment reviews for all three offshore oil and gas production projects, we placed four freedom of information requests between 2006 and 2007 to the C-NLOPB. All four requests were related either to pollutants containing oil or oil-like substances or were related to oil spills. We were requesting these data to evaluate how the operators meet waste treatment guidelines and to specifically link environmental assessment predictions to realized effects. All of the information was requested. It was underlined by our interest in understanding how offshore oil and gas intersects with marine birds.

Offshore oil and gas projects are approved on a basis of risks to the environment, and these risks are presented in the environmental assessments. Following the EA approval, the responsible authority, which is the C-NLOPB in this case, approves what's called an environmental effects monitoring program. Environmental effects monitoring programs are critical, as they verify—or should verify—what the realized impacts are. Without linking environmental assessments to environmental effects monitoring programs, environmental assessments are a paper exercise in which nothing is learned. Marine ecosystems are not well understood, and therefore it's important that we proceed in a transparent manner with marine-based industries so that we can improve our understanding of these complex systems.

All four of those data requests were denied.

The second example of the lack of transparency was another request that we placed to the C-NLOPB in 2007. This was not for data, but for information regarding the methods used to understand how they determine the effects of an oil spill on wildlife. We asked for the methods, not data.

That request was also denied.

So all of the requests for information—five requests in all—were denied to the very stakeholders who had reviewed these environmental assessments. The C-NLOPB cited subsection 119(2) under the Atlantic accord as the reason for this denial. They were unable to disclose information because the operators did not want the information disclosed.

This lack of transparency associated with the Atlantic accord creates other problems. One is the relationship with the Canadian Environmental Assessment Act. The Canadian Environmental Assessment Act expresses a commitment to “facilitating public participation in the environmental assessment of projects...and providing access to the information on which those environmental assessments are based”.

● (0915)

The Canadian Environmental Assessment Act has committed to doing follow-up programs related to environmental assessments through these environmental effects monitoring programs. Based on the examples that I provided, the Canadian Environmental Assessment Act is in fact in direct conflict with the Atlantic accord under subsection 119(2). Further, the C-NLOPB is also placed in a conflict because they are both supposed to promote public engagement through these environmental assessment processes and subsequently deny data related to those environmental assessments.

The final point I would like to make is that the C-NLOPB is self-described as at arm's length from government, yet this same entity is the decision-making body related to issues around the protection of migratory birds. It's Environment Canada's mandate to enforce the Migratory Birds Convention Act, but through a memorandum of understanding that Environment Canada and the C-NLOPB signed in 1988, Environment Canada is moved to a position of consultation in all issues relating to offshore oil and gas. While I don't have time to present the details—perhaps I could give you some in the follow-up questions—my colleague and I have conducted research that demonstrates that this arrangement is compromising Canada's international obligations to protect migratory seabirds.

Mr. Chairman and the committee, this appears to me to be a very serious issue on which I would recommend that this committee seek legal counsel.

To conclude, the devolution of federal jurisdiction over environmental protection through the creation of these special status bodies such as the petroleum boards, in my professional opinion, requires review. The current legislative structure does not provide the marine environment with full protection or complement our understanding from offshore oil and gas activities. The Atlantic accords are flawed, and this is manifested by a lack of transparency. An immediate recommendation would be to change the particular sections of the Atlantic accord that relate to transparency, including subsection 119 (2) in the Atlantic accord and section 122 in the Nova Scotia accord. I would also recommend the use of third-party independent biological and technical observers on board all oil and gas operations.

In the current system, transparency is not a public right but is administered as a privilege granted by the industry when it decides whether or not to release information. We cannot hope for sound management, which I assume is what this committee is aiming for, to reach its full potential without the fundamental value of transparency, and I would argue that a broad review of related legislation is in fact fully required to address these challenges.

Thank you for your time.

● (0920)

The Chair: Thank you very much, Ms. Fraser. We go now to questioning. We have about 40 minutes.

We will start with Mr. Regan. You have up to seven minutes.

Please go ahead.

Hon. Geoff Regan (Halifax West, Lib.): Thank you very much, Mr. Chairman. Thank you to the witnesses.

Ms. Fraser, should I call you Professor Fraser or Doctor Fraser?

Dr. Gail Fraser: Gail is fine. Doctor, Professor—they're both fine.

Hon. Geoff Regan: Okay, Professor, I have heard that in the event of a spill in the Orphan Basin, given typical wind and wave conditions in the North Atlantic, only a small percentage of oil—between 2% and 12%—can be recovered, and in winter it's more likely the 2%.

I don't know if you've studied this question or if you have expertise in terms of this question of recovery of oil, but what can you tell us about that? I'm asking because on Tuesday we had NRCan officials and Environment Canada officials and officials from Indian and Northern Affairs, and none of them knew the answer to that question, which was a bit of a surprise to me.

Do you know?

Dr. Gail Fraser: I will do my best to answer that question, although I'll footnote my answer by saying that I'm not an emergency response expert.

I heard the chair of the petroleum board in Newfoundland say to the media a couple of weeks ago that in fact the recovery of a spill would be very difficult. He estimated less than 5%. He said that in the gulf situation it's currently less than 5%, and he certainly didn't anticipate it being any better on the Grand Banks, or off the Grand Banks in the case of the Orphan Basin. In the environmental assessment there is a statement that cleanup and containment of a spill would in fact be extremely difficult.

Hon. Geoff Regan: Mr. Roche, is your knowledge of this any different? Would you have a different answer?

Mr. Kevin Roche: No, I wouldn't have a different answer. What we all understand is that with the harsh weather and the wind and wave action in Atlantic Canada, it would be more difficult to contain.

Hon. Geoff Regan: Professor, would you say that the federal government should have an overall contingency plan to deal with a major spill offshore, and if so, how would this help to coordinate the response efforts? Are there any lessons that we've learned from the gulf disaster in this regard that would help?

Dr. Gail Fraser: There are certainly lessons. One could look to California, which has a detailed spill response plan that is incredibly detailed. It is down to the nuances of who is doing what, and when, and how it's going to be administered. I've looked at Environment Canada's oil spill response plan, which is about 14 pages long, and frankly, I found it a bit lacking. I think more nuance is needed. More details are needed, because, as we know, when a spill occurs is not the time when we need to be figuring out who is doing what. We need to be figuring out who is doing what before a spill occurs, and make sure that it is all running smoothly.

Certainly the federal departments need a bit more coordination and discussion. They really need to hammer out these details.

Hon. Geoff Regan: Can you comment on the environmental expertise of the offshore petroleum board and the number of people they have? Is their level of expertise in this regard adequate, in your view? The chair of the Canada-Newfoundland Offshore Petroleum Board told us that they are not industry promoters and that other departments have some of that role. Are the boards seen as industry promoters?

After you, Professor, I'll ask Mr. Roche to answer this also: what about government departments like NRCan or INAC?

Dr. Gail Fraser: To answer your first question, all I can comment on is the makeup of the board. It's worth reflecting on what the board's mandate is in this regard. The board's mandate is, first, safety, and second, environmental protection. If you look at the expertise that the board is bringing—and I understand that these are appointments made by the ministers of natural resources—it's economics, it's finances, it's industry engineering expertise. None of those really speaks either to safety or to environment, yet these people are making very important decisions about what's happening.

I understand that maybe they're not involved in the day-to-day decision-making process, but nonetheless I find it really quite odd that there is nobody on the board who says they have environmental expertise, given that protecting the environment is their number two mandate.

● (0925)

Hon. Geoff Regan: Thank you.

Mr. Roche, could you answer that question, and can I add one to that? Are you able to provide us with a list of the spills that have occurred in Canadian waters in the last few years?

Mr. Kevin Roche: I'm not prepared to do that today, but—

Hon. Geoff Regan: If you could provide that—

Mr. Kevin Roche: Yes, sure. The C-NLOPB has that data readily available, so that is not a problem.

I can't comment on the qualifications of the personnel employed by the regulatory body. I know they do have people who review and audit environmental aspects of the drilling program approvals, and I know that the structure that holds the operator accountable for spill response allows that three-tiered response program through which you have experts employed by companies such as the Eastern Canada Response Corporation, which brings that expertise and can access other experts as needed.

That's my understanding of the structure.

Hon. Geoff Regan: My understanding is that the Canada-Newfoundland and Labrador Offshore Petroleum Board has six environmental affairs group members as employees and that Nova Scotia has seven or eight, but only two work directly on environmental protection. That doesn't seem like a lot. These days, when we're looking at what's happening in the gulf, that is worrisome.

Let me ask you about what we've heard from others. We heard from Craig Stewart, a previous witness who is a World Wildlife Fund Arctic program director. He said that Greenland, Norway, and the U. S. all have regulatory processes governing both the leasing stage and the exploration stage, but ours only kicks in at the exploration stage.

Should that be different? The NEB stage only kicks in basically halfway through. Should there be, in your view, a different regulatory process, and what is the regulatory process for granting leases in the Arctic?

Dr. Gail Fraser: I wish I could fully answer your question. I did listen to Mr. Stewart's presentation to this committee, but my area of expertise is associated with eastern Canada and not the Arctic. It does seem odd to me, though, that across Canada we have three different regulatory regimes. Frankly, I don't think industry would be very happy about having to deal with three different regulatory regimes in Canada.

In Newfoundland, they deal with the leasing process. They deal with the leasing process all the way through, yet that is different in the National Energy Board.

The Chair: Thank you, Mr. Regan; your time is up.

We go now to the Bloc Québécois. Please go ahead, Madame Brunelle. You have up to seven minutes.

[*Translation*]

Ms. Paule Brunelle (Trois-Rivières, BQ): Good morning, madam. Good morning, sir. Thank you for being here.

Mr. Roche, you have extensive experience in drilling, and it is important that I understand. You said it was hard to understand how experienced people could have let a situation like the Deepwater Horizon accident happen, in the Gulf of Mexico.

In addition, you said that Canada has an excellent regulatory system. What is your opinion of our regulatory system based on?

[*English*]

Mr. Kevin Roche: I can't tell you for sure exactly what went wrong in the incident in the Gulf of Mexico, but we're all gleaning little bits and pieces. One of the critical elements of failure, we suspect, was with the two-barrier system.

The basic concept of well control maintenance is that you always have two means of keeping the oil and gas pressure contained. One of them is with the drilling fluid; the other is with casing and cement. In the case of the Gulf of Mexico incident, we understand that in the first case, the cement job and the casing job and the bonding of the cement to the wall to give pressure integrity were suspect. While that suspicion existed, they then proceeded to remove—displace—the heavy hydraulic fluid that would contain the pressure as a second barrier. The removal of that second pressure barrier is what prompted the uncontrolled flow.

We don't understand how that could happen, because the drilling program approvals that we have in Canada require that you always maintain two barriers. In Canada, with every daily report and every casing running report, the regulator gets to see and observe the operation that is being carried out on the rig. If you got to the stage of eliminating that second barrier, there would be intervention, from our perspective, from both the crew members who had been trained in basic well control and from the regulator to say that you can't do that.

There's a much closer intervention and a much closer observation with the regulatory bodies, in my experience.

● (0930)

[*Translation*]

Ms. Paule Brunelle: For a number of weeks, we have been talking a lot about relief wells in Canada. People are saying they have to be part of a safety plan. However, I understand they do not have to be drilled before extraction begins. Could a relief well be drilled before extraction begins? Could that be an appropriate safety measure to prevent disasters?

[*English*]

Mr. Kevin Roche: The purpose of a relief well is to intersect the original well bore and provide an alternate route to let the pressure bleed back so that you can control or correct the damage in the original well. In order to be able to drill a relief well, you have to know the exact trajectory and orientation of the first well. There is an advantage to drilling both of them simultaneously, but you're still going to lose time by having to find the exact trajectory. Relief wells are not always successful in finding that exact trajectory.

If you picture it, you've got a conduit that's 12,000 or 18,000 feet long, with a diameter of 8.5 inches; you're a mile away, or a kilometre away, and you're trying to drill another 18,000-foot hole to find that line. You have to do a lot of pre-work first to plot out that trajectory. It's not always as effective to do them together; they have to be staggered in order to do the analysis.

[*Translation*]

Ms. Paule Brunelle: This situation bothers me a bit. The people at Chevron want to drill wells 2,500 metres deep off the coast of Newfoundland. That would be the deepest well. That is 1,000 metres deeper than the Deepwater Horizon well.

I was wondering whether it was really possible to establish a credible contingency plan, when we see how impossible it is to fix the situation in the Gulf of Mexico. If it is that deep, are we not just flying blind?

[*English*]

Mr. Kevin Roche: No, I don't think we're proceeding blindly. A water depth of 2,600 metres is not uncommon these days. That same drilling unit just finished a well in 1,900 metres of water south of Newfoundland. The technology exists for up to 10,000 feet of water depth, and the equipment, if it's used properly, should contain well bore fluids. Our primary focus as a drilling contractor—and I'm sure other presenters who have been here have said the same—is to make sure you do not lose control of that pressure. By having two barriers, if you manage that plan correctly, you should never, ever, have uncontrolled release of fluids at surface.

[*Translation*]

Ms. Paule Brunelle: Good morning, Ms. Fraser.

I would like to know whether you have been able to carry out a more in-depth analysis of the marine ecosystem in the Gulf of St. Lawrence, as part of your studies. There will be drilling off the coast of the Magdalen Islands. The fishermen in the Quebec islands are worried.

Do they have reason to be? Do you have any data on that?

[*English*]

Dr. Gail Fraser: I'm not a fisheries expert. I can't speak directly to that, but I do know that drilling can impact fish populations. One interesting study shows that seismic testing can negatively affect fish larvae, but I'm really wandering outside my expertise. I can't really speak to fish populations.

[*Translation*]

Ms. Paule Brunelle: You said something that worried me. You said that five of your requests for environmental data were denied. That lack of transparency gives rise to questions. Why do you think there is a lack of transparency? What do they have to hide?

● (0935)

[*English*]

Dr. Gail Fraser: That's certainly my question as well.

I think the general public would think that the types of information we're asking for should not be proprietary information. It's oil pollutant data. It's somewhat like letting the fox guard the henhouse. With the Atlantic accord, we've essentially let the operators—the oil and gas companies—decide what they want to disclose, but that doesn't seem to me to be a very effective system. To really be able to understand what's going on so that the public and the academic community can try to get at the environmental effects of these offshore oil and gas installations, we need those data.

[*Translation*]

The Chair: Thank you, Ms. Brunelle.

[*English*]

Your time is up.

Mr. Cullen is next, for up to seven minutes. Go ahead, please.

Mr. Nathan Cullen: Thank you, Mr. Chair.

First I have a small point of order for the committee. Through you to the clerk, I believe that after 37 years on the Hill, this might be Mrs. Chafe's last day. Is that correct?

The Chair: I was going to mention that at the end of the meeting, Mr. Cullen.

Mr. Nathan Cullen: For putting up with MPs like us and chairs like yourself for 37 years, I think she deserves our undying gratitude. I wanted to make sure that was acknowledged.

Some hon. members: Hear, hear!

The Chair: Thank you for that, Mr. Cullen.

Mr. Nathan Cullen: I'm sorry, Chair. I didn't want to ruin your announcement of it; I just wanted to make sure it got on the record.

The Chair: Lord knows the people she has to put up with day after day, and I'm not talking about the witnesses. Let's be clear.

Go ahead, Mr. Cullen.

Mr. Nathan Cullen: Thank you for your testimony today.

I suppose what the committee is seized with, and what I think many Canadians are asking, is whether what happened in the Gulf of Mexico could happen in Canada.

The two primary places we're looking at are the east coast, where drilling is going on at depths that are greater than those drilled by the *Deepwater Horizon*, and the Arctic, where exploratory leases are being granted, which one would presume leads to drilling in Arctic conditions. That is the overall question we're facing today.

I have a specific question for Mr. Roche. When you start to get down to depths of 5,000, 8,000, or 10,000 feet, is the geology at the subsurface level any different from what it is in a 50- or 100-foot well? By that I mean the subsurface. Once the drill goes in, is there anything different about what comes up, the types of pressures you're dealing with, or the types of materials you're dealing with as drillers?

Mr. Kevin Roche: In Atlantic Canada, the answer is definitely yes. The deeper you get, the harder the formations are.

Mr. Nathan Cullen: The actual structure you're drilling through is harder. The pressures, which we've talked about already, are different in terms of what's coming out of the ground itself.

Mr. Kevin Roche: The pattern we've discovered over the last 40 years or so is that the Atlantic region is not over pressure. But the deeper you go, the heavier the mud weight you need to restrain that force. Typically, there are no hydrocarbons in the shallow section.

Mr. Nathan Cullen: Since there are no hydrocarbons in the shallower sections, having to deal with those hydrocarbons as a driller-operator changes the game a bit in terms of how you compensate for different things.

Mr. Kevin Roche: Right, but that's not much different anywhere, really. I'm not very familiar with the Arctic, but typically, in the Hibernia formation, I encounter hydrocarbons at the 12,000-foot vertical level from the mud line.

Mr. Nathan Cullen: We've either seen a practice failure or a failure of equipment in the deep water. You made some mention of the second barrier not having been inserted into the well. How does a company go about testing the blowout preventers at the pressures at the depths we're now going into? Do you test a certain amount in the lab and then simply have to put it in the field and give it a shot there?

These are very expensive pieces of equipment, extraordinarily expensive, and what they do is crush pipe. They ruin what they're engaged next to when they come across and try to clamp off a well. Is that correct?

Mr. Kevin Roche: It's partially correct. It's a very sophisticated piece of equipment that typically works under pressures in the 10,000 to 15,000 psi range. It is factory tested and approved to that test pressure.

● (0940)

Mr. Nathan Cullen: Just to be clear, is 10,000 to 15,000 psi the kind of pressure you would experience at a 3,000-metre well or a 2,600-metre well?

Mr. Kevin Roche: Yes. The 15,000 psi blowout preventer design is currently the standard for the typical worst case. That would cover your worst case formation pressure. Bear in mind that BOP is your last resort.

Mr. Nathan Cullen: There are others.

I guess the secondary question in terms of the equipment and the backup, the so-called fail-safe mechanisms—I'm not sure that British Petroleum can use that exact term anymore—is that it is also operating at that great depth. What BP has told the world is that capping the well with the equipment—the submarines and whatnot—is so much more difficult than it would be at a depth of 100 metres. When you're down at 1,500 metres, you can't have manned subs. You have to use different things. Everything becomes a greater challenge. That's recognized by the industry. Is that correct?

Mr. Kevin Roche: That is correct.

Mr. Nathan Cullen: The industry has been operating at much shallower depths for most of its history. We have been drilling in the offshore for a long time but not at these types of depths for the large majority of wells. Is that fair to say?

Mr. Kevin Roche: In the last ten years, it has been increasing. That's correct.

Mr. Nathan Cullen: In some senses, we're learning as we go as an industry, because things change. BP is saying that it's learning a lot right now. It's very expensive learning.

The association you represent, the international body, also operates in the gulf. Your association was comfortable operating under the rules and regulations in the gulf. They felt they were safe. They felt they did enough to protect the environment and the workers. Is that correct?

Mr. Kevin Roche: That is correct.

Mr. Nathan Cullen: Is there any difference between the regulations in the U.S. and the ones in Canada?

Mr. Kevin Roche: As I mentioned earlier, my experience is that in Canada there is a lot more engagement with the regulatory body. To your first question about pressure testing, you purchase a big piece of equipment that's designed to a maximum pressure. Before you ever run it into the well, you have to pressure test it. Every seven days you have to function test it to make sure that all of those things work. Every 14 days you have to pressure test to its maximum pressure rating for the casing you're going to be using. It's tested all the time.

Mr. Nathan Cullen: That's interesting.

Have you read the recent Norwegian report on blowout preventers that was just released?

Mr. Kevin Roche: No, I haven't.

Mr. Nathan Cullen: It bears some interest, because they point out some significant concerns with what's happening.

In a letter that you wrote to Ken Salazar, the Secretary of the Interior, your organization wrote, on June 4: “The 30 deepwater rigs in the Gulf of Mexico are operating according to established industry best practices and emphasize the best possible safety and environmental practices.”

We keep hearing that Canada has the best rules and regulations in the world. Your association also believes this of the rules and regulations guiding practices in Mexico. That's simply not enough. There also have to be the practices and the vigilance.

I want to get to Ms. Fraser for a second, because what you said disturbs me in terms of the public's ability—the stakeholders' ability—to get at information about spills and what's happening in real time with oil companies. You said there is a caveat in subsection 119(2) of the Atlantic accord. Essentially, the C-NLOPB has to go to the company and ask if it wants to release its information. The company invariably says no, and then they turn to the public and interest groups and ask.

Is that correct?

Dr. Gail Fraser: That is correct. In fact, I started this work in 2002, and in 2005 they were not releasing oil spill data on a per project basis. They were just saying there were 16 spills on the Grand Banks this year and this is how much has spilled. So that completely prevented the linking of environmental assessments to particular projects. But now apparently, from what I have heard from the chair and the media recently, they do have to go to these operators and ask their permission to disclose these spills.

Mr. Nathan Cullen: So I don't understand—

The Chair: Mr. Cullen, I'm sorry, but your time is up. I've let you go a little beyond it.

We go now to Mike Allen from the government side for up to seven minutes.

Go ahead, please.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you, Chair, and thanks to our witnesses for being here today.

Mr. Roche, I just want to follow up on a couple of comments you made with respect to the regulatory aspect of things.

You have the drilling fluid and the casing. So there's built-in redundancy there. Is the relief well a third level of redundancy after something would be in operation?

Mr. Kevin Roche: No. By current practice the relief well is, and has only been, deployed as a means of providing an alternative conduit for the fluid to go after you've lost control of the well.

● (0945)

Mr. Mike Allen: Okay.

You were just starting to comment on the regulatory oversight, and you were talking about seven days and 14 days. As a drilling contractor, you said there's significant observer status.

Who are the observers, and can you elaborate a little more on what are the controls exercised by the regulatory authorities while you're drilling? Then I want to get into the hand-off to the operator.

Mr. Kevin Roche: An example is that the BOP has to be pressure tested and function tested every seven and 14 days, respectively. Typically, if you're in the middle of an operation, that's difficult to do; and the only way you can get a dispensation from doing that is to seek approval from the regulator. The idea is that you test this big piece of equipment before it goes to the bottom, then you put it on the bottom, and then every seven days you make sure it's working. This goes back to the proper maintenance and control of the critical equipment you're going to use in your barrier provisions.

You cannot delay or defer that confirmation of the integrity of the equipment without approval of the regulators. Every day you do a minute by minute morning report for the day and you send in the report at six o'clock the next morning. The regulators, the operators, and the drilling contractors all see those details every day.

So you report when you make those tests, and if there's a delay beyond 14 days in doing a pressure test, you get picked on for that. The regulator will go to the operator and say, "You've missed your deadline. Stop what you're doing and do a test." But typically it runs well.

Did I answer your question?

Mr. Mike Allen: Yes.

You talked a lot about your five tools, and a couple were based on people skills and personal competencies in your company. Can you talk a little more about those personal competencies.

I'd also like to understand the following. Once the well is drilled, you as a drilling contractor hand it off to the operator. How does the regulation follow that hand-off to the operator to ensure that the same levels of control are in place?

Mr. Kevin Roche: That's a good question, but it illustrates what I was trying to do in my presentation. There's confusion about the whole hierarchy of accountability and responsibility.

There is no actual handover, as such. The only handover that happens when the well is drilled is that you take it from the drilling team and hand it over to the production team—if your well is a producer and it's hooked up to infrastructure that allows the oil and gas to flow. Typically the operator and the drilling contractor and a number of other subcontractors, such as the cementing people, all work together daily to manage the progress of that well. There is no actual hand-off to the operator as such at the end of the well. What you do is you move locations when the well is finished and you go to another location and you restart the process.

But the operator is accountable for the day-to-day running of that plan to execute that well, day in and day out. The contractors who work for the operator follow the plan, as instructed and as contracted. So that accountability never changes. As I said, the only subtle change is that you turn it from a drilling operation over to a production operation. But still, the operator is accountable in that transition.

Mr. Mike Allen: Okay.

You talked about these operating practices, the casing, and the cement, and you commented a little bit about what happened in the gulf. If standard operating practices such as the ones you use had been followed, in your view, would we have had that problem in the gulf?

Mr. Kevin Roche: No.

We have to qualify that by saying we have to understand the findings of all of this. I'm saying that if you have a drilling program approval that requires you to have two barriers and maintain two barriers, then nobody in that chain of command should ever, ever decide to go back to having only one barrier, which is what the BOP situation is. There's a lot of confusion and there are mixed messages about what happened with the BOP. We won't know for sure. But if you don't have a good cement bond in the beginning—which is your barrier when you're getting ready to leave... You have a cased hole, and you're supposed to have centralizers on the casing to make sure all the cement goes all the way outside of that casing. If that casing is leaning to one side because it's not centralized properly, and you didn't get cement all the way up through it, and you get ready to leave that well, now you've displaced the mud inside of that casing and let the formation fluids go. What happens is that anything in that well can shift up into the BOP and block all of your fail-safe functions.

Now you have six rams. In answer to the question that was raised earlier, a BOP doesn't just cut the pipe off, it also seals around a number of different diameters of tools that we're using, so by design you have redundancy six times over in the BOP. But if you push everything up inside the BOP because it's not cemented properly, now you have a catastrophe, because that last resort you have can't close around that diameter because it wasn't designed to close around that bigger diameter, and it couldn't share that big diameter.

● (0950)

Mr. Mike Allen: How much time do I have, Chair?

The Chair: You have one minute.

Mr. Mike Allen: Typically, what is the ratio of wells drilled to successful wells? Your company has been doing this for how many years? I do know there's a lot of mapping and a lot of things done that way. Is there a typical ratio of total wells built to successful wells?

Mr. Kevin Roche: Then you break it down into exploratory and wildcat versus development. In the exploratory phase, it's one in ten. Once you figure out the geology from that good well, your success ratio after that could be 50% to 80% once you have the model done. On the exploration side, it could be one in ten.

Mr. Mike Allen: Thank you very much.

The Chair: Thank you, Mr. Allen.

We will go now to the second round of questioning, starting with Mr. Tonks for up to five minutes.

Mr. Alan Tonks (York South—Weston, Lib.): Thank you, Mr. Chair.

It's always a challenge to follow Mr. Allen and Mr. Cullen on these kinds of technical issues.

Mr. Roche, the testimony we've heard up to now, combined with observations of what's happened in the gulf, has led the committee to the notion that a relief well would be an approach that would compensate for the breakdown of the two-barrier technology you've described. You have said, though, that the trajectory issues with respect to a relief well at the depths we're talking about would militate against a simple interface. Yet, in the gulf that is the only backup that appears to be possible at this point. Everything has failed, and they're talking about a same-season relief, something which in the arctic might be a little bit difficult.

From a technical and a professional perspective, how do you marry the reality of what's happening in the gulf with the incongruity of your answer with respect to trajectories? Would you not say that the trajectory issue against all of the other options and the failure of the two-barrier system is the only alternative, and that professionally, from an engineering perspective, you should find a resolution to the trajectory issue and get on with a relief regime in deep-sea drilling?

Mr. Kevin Roche: How I rationalize that is that a relief well is just another well. All it's providing is an alternate conduit so you can relieve the pressure in the well that's failed, so you can fix it. There's a whole technology here at play. If you could close those BOPs that the well is flowing through now, with all the flow they've had, they may in fact create a worse situation because the fluids will blow out under the BOP, and then you'd never be able to fix that conduit.

If you've had so many sequential failures in all of the redundancy systems you've created, and you get to where you are now, the reason a relief well is needed is that everything else you could do has other risks with it.

But if you stop and think about it, if you have a well here that you're drilling in this location and you go a mile away and drill a well in the other location, both wells have the same challenge, in that if people don't follow the procedures, you could have a relief well blowout. Now you've got two blowouts. What do you do then? Do you get another relief well that drills into both of those?

My point is that from an engineering perspective, you've got to focus on prevention first. That's one basic rule in our industry. You never ever go back to a one-barrier piece. As soon as you make that failure—we need to understand why that step was taken—then you need to decide how you're going to fix that.

● (0955)

Mr. Alan Tonks: Thank you for that, Mr. Roche.

Professor Fraser, with respect to the California detailed response regime that you talked about, do you think the federal government should have an overall contingency response in place with respect to a major oil spill? We've heard about hand-offs, and we've heard about your difficulty in acquiring information under the Freedom of Information Act and the Atlantic accord and so on.

If there was one predominant response regime that was accountable through the federal government and its ministries, following the California example, do you think that would give us some comfort?

Dr. Gail Fraser: Because there's always the probability that the government may have to handle a spill because of the failure of the operator to be able to deal with it, it seems as if there should be a complete detailed capability of the government being able to take over a spill, as a backstop.

The Chair: Thank you, Mr. Tonks.

I go finally, for this round, to Mr. Anderson for up to five minutes.

Mr. David Anderson (Cypress Hills—Grasslands, CPC): Mr. Roche, I think there were some safety concerns about BP in the past. They had some problems with a refinery, and I'm not sure that those problems were addressed to the satisfaction of a lot of people. There were reports that the drillers had some concerns on the rig as well, but they were overruled by BP. I'm wondering what would cause BP to make those decisions that they're going to remove one of the safety barriers. Do you have any insight into that?

Mr. Kevin Roche: I think that's probably one of the most important findings we'll get from the investigation. Anything I say is only speculation.

We've all heard in the various press releases that there was an issue around budgets and timing and schedules on the well, but that should never ever take precedence over making sure you've got the barriers in place.

Mr. David Anderson: So for the decades that your folks have been drilling wells, this double system has worked well.

Do you think there's a need for a third barrier, a triple barrier? You're saying that the way it's set up now works well, as long as the companies are willing to abide by the present regulations and rules.

Mr. Kevin Roche: As I said, I've been 32 years in the business, and I've run drilling operations in many parts of the world. I've never experienced a blowout. If you manage the process and make sure people understand the expectations, that there are no shortcuts in this particular case at all, no discretion, it's worked really well to this point.

Mr. David Anderson: We probably won't have someone with your expertise back here again, unless we extend these hearings a long time, but can you run us through how a well is drilled and what the process is? We've only got three minutes here, so I know you're not going to be able to fully cover that.

You put the rig on site. Can you run us through what happens when the safety barriers go in, to the completion of the well, if possible?

Mr. Kevin Roche: For an offshore floating operation, you get to the location, drill a 30-inch diameter hole, and run surface casing, so all of the tools are big and bulky at that stage. Then you put your BOP on and you start drilling smaller, consecutive-sized holes. You go from 30 inches at 200 feet, and you can drill down gradually with a smaller hole size, down to seven or eight and a half, then to a five-inch hole, anywhere up to 35,000 feet. You case every section of that hole off so that you start with 30 inches, then you go to 20, 13, 12, nine and five-eighths, seven inches, all the way to the bottom, and then five inches as a liner goes all the way there. You cement those casing strings all the way along the sides and then perforate holes in them to get into the formation, and that's how your oil and gas come in and flow up.

Water weighs 8.3 pounds a gallon. Formation pressures can be up to 16 pounds per gallon coming the other way. While you're drilling that hole and setting those pipes to create a pressure integrity conduit, you use a mixture—barite and other chemicals—so that you take water at 8.3 pounds a gallon and make it 18 pounds a gallon, and you pump that into the well as you drill the hole. Then that 16-pound-per-gallon force that oil and gas want to come in with, you're holding that down with the mud at 18 pounds a gallon. That's barrier number one.

Barrier number two, as you're drilling, is the BOP. As long as you keep that 18-pound-per-gallon mud in the well, it's going nowhere. It stays right where it is. To make the oil flow at the end, you put in all these special valves; then you reduce the weight of the fluid column under a controlled condition so that you let the formation fluid come in slowly, and then you send it for the production train. That's the gist of it.

Every time you run a casing string, you're holding it back with that mud weight, but when you get it done, you cement the outside and then you have a big plug in that thing until you drill through it again. Every time you drill through that cement plug, you have a different set of rams in that BOP that close on the different sizes of pipe that you used to make that hole.

The BOP has four sets of rams that are set for different sizes, but it also has an annular, which can close on any size, from 18 and three-quarters down to three and a half inches. They're another redundancy, but they're typically there for lower pressure holdbacks, whereas the big rams and the shears are the stuff that keep you from the 10,000- or 15,000-pound pressure.

So those are your barriers: the mud weight, the cement, the casing, and ultimately the BOPs.

The third barrier concept...I assume you're talking about the relief well.

● (1000)

Mr. David Anderson: Unless you have some other suggestion.

Mr. Kevin Roche: The relief well concept to this date, and it may change from what we find here in the investigation, is an after the blowout fact. The idea of drilling two wells together, the idea of trajectory...you can drill two wells together, but in order to make them come together you have to stop, go away, and figure out how you're going to make that happen. That's the only issue. It's not a deal breaker. You can run them both together, but you still have to stop at a certain point in time and figure out how you're going to make them come together that doesn't hold you back.

The idea of drilling two wells together at the same time is a different concept than the relief well concept. You can have the same procedural problems and failures on the relief well as you have on the primary well.

Mr. David Anderson: So safety considerations would be the same for both wells.

Mr. Kevin Roche: Exactly. You're doing the same process.

The Chair: Mr. Anderson, your time is up. Thank you very much.

Thank you very much to the witnesses. You've been very helpful this morning. We really do appreciate you coming, so thanks again.

I'll have to suspend the meeting for two to three minutes as we set up the video conference and get the next witnesses to the table.

● _____ (Pause) _____ ●

● (1005)

The Chair: We will resume this meeting.

For the second hour, we have two witnesses from the Government of the Northwest Territories: the Honourable Robert McLeod, Minister of Industry, Tourism and Investment, and Peter Vician, Deputy Minister, Department of Industry, Tourism and Investment. Thank you very much for coming today.

After the first presentation, via video conference from Memorial University in Newfoundland, we have Kelly Hawboldt, associate professor, faculty of engineering and applied science.

We will start with the witnesses in the order in which they appear on the agenda. We will begin with the Minister of Industry, Tourism and Investment from the Northwest Territories.

Go ahead, please, Mr. Minister.

Hon. Robert McLeod (Minister, Department of Industry, Tourism and Investment, Government of the Northwest Territories): Thank you, Mr. Chairman. I'm very pleased to be here and also to have my MP and our neighbouring territory's MP sitting in on this committee.

We want to thank you and committee members for giving the Government of the Northwest Territories the opportunity to appear before you to speak about its perspective on an issue that is on the minds of so many Canadians these days: emergency responses to drilling for oil and gas in the offshore.

Today's meeting represents important work, and the Government of the Northwest Territories appreciates that this committee is being proactive in gathering information on an issue that is so important to the people of Canada and to the people of the Northwest Territories. I believe it is efforts like this that will lead to improvements in the measures used to guard against the risk of offshore drilling incidents so that the terrible images we've seen over the past two months from the Gulf of Mexico are not repeated here in Canada.

Mr. Chairman, when I was invited by your committee to appear at this meeting, there was no question in my mind that the Government of the Northwest Territories had to have its voice heard on this issue. While the Minister of Indian and Northern Affairs, the Minister of the Environment, and the National Energy Board all have varying degrees of responsibility when it comes to development of oil and gas in the Beaufort offshore, I am here today representing the Government of the Northwest Territories, the elected government of the people of the Northwest Territories. The people of the Northwest Territories look to our government to provide leadership, engagement, and action on issues of importance to them. This is clearly one of those issues.

For our government, the chief concern regarding offshore oil and gas exploration and development is the Beaufort Sea. The petroleum potential of this region is substantial and represents a tremendous opportunity for our territory. The Government of the Northwest Territories recognizes this opportunity and has consistently advocated for oil and gas development in our region, both onshore and offshore, provided it can be done in a responsible manner and provided that benefits from that development are maximized for Northwest Territories residents.

We see this development as crucial to our territory as we develop our economy. Our territory must diversify its economic base. We need jobs and business opportunities for people in all of our regions and communities. That is why we have been supportive of responsible oil and gas development. It will assist us in allowing our territory, our communities, and our people to become more self-sufficient.

However, the Government of the Northwest Territories does not support oil and gas development at any cost. The tragic events and the resulting oil spill in the Gulf of Mexico have demonstrated the significant potential environmental risks of hydrocarbon exploration in offshore waters. Those risks would be increased in the Beaufort Sea, where operating conditions are often harsh and the remoteness of the area makes access difficult.

The Government of the Northwest Territories does not want a repeat of the Gulf of Mexico in the Beaufort. Neither do the people we serve. We have been hearing that loud and clear in recent weeks. We have heard it from leaders such as former NWT premier Nellie Cournoyea, and we have heard it from, in particular, the Inuvialuit people, who have strong attachments to the Beaufort Sea region. That is why the Government of the Northwest Territories wants to ensure that there is satisfactory technology in place to protect the Beaufort Sea ecosystem before offshore drilling proceeds there.

What are the Government of the Northwest Territories' expectations for oversight of offshore drilling in the Beaufort? First of all, let me state that we have confidence in the ability of the National Energy Board, which has regulatory oversight for offshore drilling in the Canadian Arctic, to come up with the appropriate measures to ease the concerns of northerners about offshore drilling in the Beaufort Sea. The NEB is one of the best in the world at what it does, and we recognize that.

The NEB has proven this again by deciding to hold a comprehensive public review of arctic safety and environmental offshore drilling requirements, and it will not consider any drilling applications in the offshore until that review is complete.

● (1010)

The Government of the Northwest Territories is supportive of this review and welcomes the opportunity for a public discussion among government, regulators, industry, and other interested parties on this issue of critical importance to our people. We also intend to be active participants in it.

The incident in the Gulf of Mexico has highlighted the need to gain a better understanding of what went wrong there and what could go wrong in the Beaufort offshore. As I mentioned earlier in my remarks, and I cannot stress this enough, we cannot have another Gulf of Mexico in the Beaufort. The effects would be too catastrophic on the ecosystem and our people for us to allow that to happen. Therefore, we need an open and frank discussion about how the government, regulators, and industry would prevent such an event from happening. Northerners need to be shown, and it needs to be proven, that blowout well mitigation and oil spill remediation technologies could work in the Beaufort and the arctic.

The Government of the Northwest Territories also believes the federal government can play a greater role in providing the comfort northerners require if drilling in the Beaufort offshore is to occur. Specifically, there is a need for the federal government to provide adequate environmental measures to protect the Beaufort and the Canadian arctic. This could be done by investing in areas that will improve accessibility and infrastructure in the arctic. It could come through improving northern marine transportation, through development of ports and barge landings, and even creating new icebreaking capabilities.

It could come through improved roads, bridges, and airports, or it could come through a renewed effort to train and equip northerners to deal with hydrocarbon accidents in an arctic environment, an area, I might add, Canada was once a leader in during the Beaufort exploration heyday in the 1970s and 1980s.

Mr. Chairman, I just came from a series of meetings in Washington, D.C., with oil and gas representatives and U.S. congressmen and senators, such as Dan Boren, Lisa Murkowski, and Mark Begich. I was there to promote the importance of the Mackenzie gas project and the development of arctic gas in general to the North American economy and environment. But obviously the issue of how to protect offshore ecosystems and still have responsible oil and gas development was on the minds of everyone I talked to in Washington. That not only drove home to me the seriousness of the situation in the United States, but also what is at stake in the Beaufort and in the arctic.

It has only strengthened the resolve of the Government of the Northwest Territories to continue to work to ensure that hydrocarbon exploration and development in the Beaufort offshore, and indeed the entire Northwest Territories, is done in a way that not only benefits our people and our economy, but leaves future generations an environment they can enjoy.

Mr. Chairman, I will end my remarks there. Thank you for your time.

● (1015)

The Chair: Thank you very much, Minister, for your presentation. I'm sure you'll have lots of questions when we do get to questioning.

We will now hear from our second witness by video conference. The witness is from Memorial University in Newfoundland, Kelly Hawboldt, associate professor, faculty of engineering and applied science.

If you would go ahead with your presentation, please, and if you could present quite slowly, I think the interpreters have a more difficult time when the presentation is by video conference. Go ahead, please.

Dr. Kelly Hawboldt (Associate Professor, Faculty of Engineering and Applied Science, Memorial University of Newfoundland): Thank you.

I wasn't quite sure what to say here because it's my first standing committee, and I tend to speak quickly...so I'll do both, I hope.

I'm a chemical engineer. My research is on sustainable and green processing of natural resources; the processing of oil and gas, particularly focused on the offshore in harsh arctic environments; environmental effects, and monitoring and detection when you're in those environments; and biofuels not related to this.

I thought I'd give a few points on the knowledge base in this area and then leave it open to questions. Again, I wasn't quite sure where to go with this.

Oil and gas exploration, as you've probably been hearing over the last few days, is going to more and more unconventional sources. Unconventional just means oil or gas that's tougher to get at because it's deeper, something like the tar/oil sands, and those sorts of things.

With this kind of exploration and production comes environmental impacts, so we have to design our systems a little differently to try to prevent and mitigate the impacts.

When accidents like spills or blowouts occur, the response in the marine environment is more challenging than onshore, because onshore you can contain and remediate, whereas offshore the containment becomes the issue.

The control measures to prevent oil from spreading and the countermeasures to contain and clean up the fluids are critical parts of any emergency response plan that an industry partner puts together. The type of response is really a function of many things: the type of petroleum fluid you're dealing with; the sea state; the location—the open sea versus the shoreline; and the safety of the personnel. It's likely to be multi-pronged, so a boom alone will probably not work.

Once oil is released into the environment—or any petroleum, because you could be talking about anything from condensate right up to a heavy oil—how it transports and transforms the environment is a function of the type of oil you're dealing with. Again, the sea state, the climatic conditions, and all sorts of things have to be taken into account.

The responses can vary: mechanical, which is when they use booms; chemical, which is when they use dispersants; thermal, which is when they light it on fire; or even biological. The type of response will really depend on where you're at. You also have to weigh the risks of one against the other.

That's all I really have to say. I guess I'll leave it open to questions or comments.

I hope I wasn't speaking too quickly, which I tend to do.

● (1020)

The Chair: No. Thank you very much for the presentation.

We'll go directly to questions and comments, starting with Mr. Bagnell.

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

Peter and Robert, it's great to see you again. We've discussed many things together. I think we're all singing from the same songbook. We asked for a moratorium quite a while ago. The four Inuit groups have all—we agree and you agree, until the safety regulations... We too are excited that the NEB is reviewing the whole safety regime.

A year ago I brought before this committee the fact that scientists have proved there's no way to clean up oil coming under the ice, in the ice, if it's been left for any time. I encouraged the government to follow up and do research on that so we could drill there, and that hasn't been done.

Are you concerned that we're not doing the research required on cleaning up an oil spill if it occurs in the ice, under the ice?

Hon. Robert McLeod: Certainly in the Beaufort the conditions are very different from anywhere else because of the ice considerations. As far as I understand, there is no proven way to clean up oil from under the ice.

I understand that a previous presenter talked about some of the research that had been done on testing for oil spills under the ice and the recovery. Certainly that is a concern. I think it indicates the requirement to make sure we prevent any blowouts or oil spills.

Hon. Larry Bagnell: Do you think we as a government should be better prepared? As you know, Shell has the licence to drill in the Beaufort. I think it's been put off for six months by the President. Mr. Regan and I have asked nine times now in question period if there's a plan to clean that up if it drifts into our waters. Apparently the Government of Canada has no plan, or at least they haven't answered that question.

Do you think we should have a plan, that if it drifts into the waters of the Northwest Territories from the Alaskan Beaufort we should be able to deal with it?

Hon. Robert McLeod: In my view, my expectation would be that the United States government and their regulatory process would be able to contain on the narrow waters, or their near shore. As the other presenter indicated, onshore or near shore it's a lot easier to contain any spills or blowouts. The drilling in the Chukchi Sea and the American side of the Beaufort is in onshore or near shore waters, and although it's been lumped in with the deep water drilling, it is in fact drilling in the near shores. So my expectation is that any event would be able to be contained.

● (1025)

Hon. Larry Bagnell: Well, that's good.

Kelly, my understanding is that the dispersants being used in the Gulf of Mexico are toxic, and in fact they're not even allowed to be used in Europe—the 5000 series, I think. What effects would these have on our fish or our environment in Canada? Should these dispersants be allowed to be used? Are there studies on the effects of them? When I asked the oil company, they actually said there weren't really any studies on these.

Dr. Kelly Hawboldt: I'm not a toxicity risk type person. There have been studies on dispersants. I sent, just yesterday, some notes I put together outlining at least some of the references for studies that have been done.

The issue with dispersants is they're really a short-term solution. You don't want to be applying dispersants over a long period of time. They're meant more for just trying to break up the sheen and increase the biodegradation so they have a larger surface area of oil to deal with. Any time you apply a dispersant, it's because I would say you are trying to weigh the fact that oil is both physically and chemically toxic and dispersants are more on the chemical toxicity side.

On their impact on the environment, that would be so hard, especially on the open ocean, because they're dispersed. So I would say probably the only way—and again biologists are going to jump all over me—would be to actually go out and do environmental effects monitoring, where you take samples of fish, or things maybe that don't move in the area, like crustaceans or clams or oysters, and test for levels of the dispersants in them.

I don't know if that really answers your question.

Hon. Larry Bagnell: I have two more quick questions. One is, if you were on the National Energy Board, would you allow drilling in the arctic based on the problems that I outlined earlier? Those are that there's no science to clean up oil spills under ice, and the oil companies have said they can't drill a relief well in the same season, which would mean an *Exxon Valdez* every four days would go for over a year.

On my second question, we asked for a spill plan on the new well on the offshore on the east coast. They told us it would be available in a week, redacted, and many weeks have gone by and it still isn't present. Don't you think that should be public?

The Chair: You have about 30 seconds to answer the question. Go ahead, please.

Dr. Kelly Hawboldt: I was going to ask if that was a job offer for the NEB, but apparently not, then.

Voices: Oh, oh!

Dr. Kelly Hawboldt: Listen, I really can't comment on the NEB part because I don't have all the information in front of me. I think if you do anything out there, there has to be mitigation, control, and countermeasures in place. The whole issue of under the ice requires some research on how to deal with that. The whole idea is prevention—don't have it happen in the first place.

The second part, on the oil spill part, I think they should be public. I think that's just... Any emergency response plan should be public.

The Chair: Thank you very much.

We go now to the Bloc Québécois. Monsieur Guimond, for up to seven minutes.

[*Translation*]

Mr. Claude Guimond (Rimouski-Neigette—Témiscouata—Les Basques, BQ): Thank you, Mr. Chair.

Good morning, sir and madam.

The thing that has struck me since the committee began discussing this issue is how many stakeholders there are when a tragedy such as the one in the Gulf of Mexico happens. As recently as Tuesday, someone from the Canadian Coast Guard told us that in the event of an incident, the Department of Transport could be involved, as could the Department of National Defence and the contractor. That is a lot of people. There are also the territorial representatives, such as yourselves, and the provincial ones. We know that Quebec could have a stake, given its shore.

In your wildest dreams, what would be the best possible contingency scenario to deal with a crisis? Should the federal government manage the crisis? If not, should that role be left to the private corporation, as is happening right now in the Gulf of Mexico?

● (1030)

[*English*]

The Chair: Is that question to the minister?

[*Translation*]

Mr. Claude Guimond: Yes, it is for Mr. McLeod.

[*English*]

The Chair: Go ahead, Minister.

Hon. Robert McLeod: Thank you, Mr. Chair.

That's a very good question. In the Northwest Territories, we don't have a lot of infrastructure. If you look at the Gulf of Mexico, they're drilling, on average, 4,000 wells a year. In the Northwest Territories, two near-shore wells have been drilled in the last 10 years. When I compare it to the Gulf of Mexico—you talk about the same season and relief drilling wells—there are a lot of drilling rigs or drilling platforms in the gulf that could be used in the north, unless you specifically require another drill rig to be there as part of the process. You might have to go a long way, and it would take a long time, to get another rig in there.

In my view, and in our government's view, the clean-up cost has to be the responsibility of the operator, or whoever has the lease and is responsible for the drilling. I think it has to be combined with the government, which has the responsibility to make sure there is some infrastructure that would allow them to deal with a spill or an incident. In the Northwest Territories, on the Beaufort side, we don't have any ports, we don't have any oil spill clean-up equipment, so whatever is done would be something the regulators would have to require the operators to provide. And certainly I think the government has a role to play by ensuring that there is infrastructure that would facilitate dealing with any incident.

[*Translation*]

Mr. Claude Guimond: Thank you for your answer. It is very interesting. It could help guide us in our actions, especially in the Beaufort Sea and in your area.

You were asked to appear before the committee in Ottawa today. With everything going on right now, do you get the sense that there is a willingness, do you feel that the federal government sees you as an important player in gas exploration? As a territory and as a region with tremendous development potential, do you feel adequately involved in the creation of a contingency plan or the review of the legislation?

[*English*]

Hon. Robert McLeod: There are a number of processes in place. As you know, a territory is different from a province. On the offshore, in every instance, the federal government has responsibilities for the offshore.

In the Northwest Territories, we're involved in a process of negotiating devolution and resource revenue-sharing. As part of that, we would negotiate our role in the co-management of the offshore. As such, the NEB is undertaking a review of all the best practices and the regulations to control the offshore. We have been invited to participate, if we see fit that in our government's view we should be a participant, and we will be going through the process to seek intervenor status in that review.

[*Translation*]

Mr. Claude Guimond: Thank you.

[*English*]

Dr. Kelly Hawboldt: Could I just comment on actions?

● (1035)

The Chair: Go ahead, Ms. Hawboldt.

Dr. Kelly Hawboldt: I think that's a very good question.

I wanted to say that on the action side of things, it has to be a coordinated approach. It may not look like it, at least in the Gulf of Mexico, but the oil and gas companies are in the best position to figure out what's happening in the reservoir. They know the pressures. They understand the characteristics. In the case of a blowout or a spill, they can actually give technical information. The fishermen and people who work provincially in the area are going to have a very good idea of how the ocean current flows—I'm talking more about Newfoundland and Labrador—or how things might transport in the environment.

To me, it should be multi-pronged. It's the industry, the federal government, the provincial government, and the associated stakeholders.

The Chair: Thank you.

Merci, Monsieur Guimond.

We go now to Mr. Bevington.

Go ahead for up to seven minutes, please.

Mr. Dennis Bevington (Western Arctic, NDP): Thanks, Chairman.

I want to thank, of course, my fellow territorial people. I just want to say to Minister McLeod that I don't think when we were sitting together in grade 9 science that we actually thought we'd be here in Parliament talking about these kinds of issues, but I'm glad we are. I think it's the wonderful thing about Canada.

On blowouts in the Beaufort, we had a very bad blowout on King Christian Island in the seventies. In the drilling that's taken place there, we've already seen that sort of thing happen. That was one of the longest lasting blowouts. I think it set a bit of a record. Is that not correct?

Hon. Robert McLeod: That's my understanding. I don't know if it was a record, but it was a very significant blowout.

Mr. Dennis Bevington: The risk factor is there with equipment in these isolated and difficult conditions.

Now my understanding is that the Beaufort basin is one of the worst basins in the circumpolar arctic to work with in terms of the conditions—weather, changing ice conditions. Is that accurate?

Hon. Robert McLeod: Mr. Chair, in the Beaufort they operate under very harsh conditions. We also have very cold waters. We also have ice conditions. All the drilling in the Beaufort to date has been in the onshore or near shore. There are two leases that have been issued in the deep part of the Beaufort, which are at depths of 700 metres, which is about half of what the blowout well was. I think the blowout well was at 1,200 metres. In the deep part of the Beaufort the conditions are very difficult, because it abuts the ice pack, so you always have to be careful of ice floes moving back and forth.

Mr. Dennis Bevington: In the next while, leading up to perhaps the opening of the drilling, do you think we need to see an increase in monitoring and research into the nature of the changing conditions in the Beaufort? Have we seen that Environment Canada has taken a lead role in starting off this kind of work, given that we gave out these lease arrangements almost, what, two years or a year and a half ago?

Hon. Robert McLeod: Yes, the leases were issued I think three years ago. The planned drilling was to be after 2014. So there are at least four or five years before any drilling is planned.

With regard to the arctic, I think everybody realizes that the arctic is changing. The ice is melting a lot faster. The Northwest Passage is open a lot longer. Even as a government, we've taken advantage of it by changing our resupply routes. We can now go over the top to resupply our arctic communities. Certainly the Beaufort is changing.

As far as whether enough research is being done, every year there's a large research team that goes up and researches in a number of areas.

Thank you, Mr. Chair.

● (1040)

Mr. Dennis Bevington: Now, regarding the oil spill cleanup capacity in the Beaufort, are you familiar with Alaska's preparedness for oil spills? How would you compare Alaska and its preparedness with the resources it has with what we have right now in the Beaufort?

Hon. Robert McLeod: I haven't reviewed Alaska's preparedness plan to date, so I'm not familiar with it.

Mr. Dennis Bevington: My understanding of the Alaska plan is that capacity and resources have been allocated there for a fairly extensive plan. My concern, of course, is that we really have nothing in terms of actual resources on the ground: personnel, equipment, and those sorts of things. We had a little more in the seventies, but we seem to have lost that edge. Is that correct?

Hon. Robert McLeod: In the seventies and eighties, as I referenced, we had a whole marine fleet. I think we had ships that outnumbered the navy, so they were prepared for every eventuality. But to be fair, I should point out that there's been no drilling in the deep part of the Beaufort Sea for the past few years. There's none anticipated for another four or five years, and the NEB has indicated they will not be approving any applications until such time as they have completed their review. My understanding is that when and if any drilling is required, the expectation would be for industry to provide a large part of that oil spill containment equipment.

Mr. Dennis Bevington: Now when it comes to the National Energy Board, they are going to hold some hearings. If these hearings are held with CEAA, there would be intervenor funding guaranteed. Do you think it's very important that these National Energy Board hearings that are going forward in the next while provide decent intervenor funding for the many groups who will want to comment on the conditions and the difficulties of working in the arctic?

Hon. Robert McLeod: When I look at the stakeholders, I think most of the stakeholders who would want to participate could pay their own way, but there are communities, and likely individuals, who would want to participate, and I would think that providing intervenor funding would be a good idea. Certainly my preference would be for all of the hearings to be held up in the north, or the majority of hearings.

The Chair: Thank you, Mr. Bevington.

Mr. Minister, when you were together with Mr. Bevington in grade 9, do you think that if he'd maybe paid more attention in class, he might be here as a Conservative instead of a New Democrat?

Voices: Oh, oh!

An hon. member: That's a neutral chair!

The Chair: I rule that question out of order.

Anyway, we're going to Mr. Anderson, for up to seven minutes.

Mr. David Anderson: I'd certainly like to welcome Mr. Bagnell and Mr. Bevington here today, and we'd certainly welcome Mr. Bevington to come over to this side if he wants to.

I want to thank you for coming as well. It's good to have you here today. We crossed paths in Calgary a few months ago, so it's good to see you again.

I want to ask you a question. You are satisfied with the review process to this point and the way you see it going. I'm just wondering if you can explain a little more about what your role is and how you see your territories' participation in the review process.

Hon. Robert McLeod: Thank you.

Yes, to date we're satisfied. Initially, before this spill occurred, the idea was to review the same-season drilling well requirement in the Beaufort, which is different from other parts of the offshore in Canada. But following the incident in the Gulf of Mexico, it was decided to pull back and now focus on a review. We think that's very important.

As I mentioned to some other colleagues here, a territory is different from a province. The federal government—at least in the Northwest Territories—still has the responsibility for oil and gas, which is different from the Yukon, which has obtained devolution.

So we are satisfied with our ability to participate as an intervenor, if we choose to do so, and we will be making representation to do exactly that.

● (1045)

Mr. David Anderson: Greenland has been committed to drilling a couple of wells. We work well internationally. The minister has collaborated with their minister as well. The news reports say that we'll be allowed to station an NEB person in Greenland in order to work with them on this. Is that something that meets with your approval?

Hon. Robert McLeod: Certainly. We've practised that in the past, domestically, between Alberta and the Northwest Territories on some other development projects. I think that's a good move.

Mr. David Anderson: Can you talk a little bit about how the petroleum exploration issue for you is related to the success of the Mackenzie project? You mentioned there aren't ports in the Beaufort Sea. Can you talk a little bit about the link between those two things?

Hon. Robert McLeod: We don't see a link between the two. The Mackenzie pipeline project has been undergoing a regulatory process that has been very extended. It's taken up to six years and counting. We expect the government response to the recommendations of the joint review panel to be out in September 2010.

All of the business case for the Mackenzie pipeline project is focused on three fields that were drilled in the 1970s or 1980s. They're all either onshore or in the near shore. My view is that there are no implications for the Beaufort offshore, although if there is a view to expanding it in the future to develop or access some of the significant discoveries that are already offshore, then I think at that time there would be some consideration required.

Mr. David Anderson: Do you want to tell us a little bit about the economic benefits or economic opportunities that would come out of, first, the Mackenzie project, but then also the development of the offshore oil and gas? Have you done any analysis within your government?

Hon. Robert McLeod: We've done some significant research and significant analysis. We see the Mackenzie pipeline as a basin-opening project. The main benefit from the pipeline would be the increased exploration once the pipeline was going to be built because the industry would see an opportunity to drill for oil and gas and be able to transport it out if they find anything.

The pipeline project would be a $16.2 billion project. The benefits and opportunities would be tremendous. In the construction of the pipeline, there would be something in the neighbourhood of 220,000 jobs created during the construction life. In the Northwest Territories, there are only 42,000 people, so we would need to get a lot of the labour supply from outside the territories.

Our analysis is that the southern provinces would be the main beneficiaries. Ontario would see its GDP increase by $5.5 billion. Alberta would see the biggest benefit, with its GDP increasing by $9.1 billion. The federal government would collect $86 billion in taxes.

When you look at the resource potential of the Northwest Territories and the Beaufort, they're very significant. So the project would be very beneficial for not only the Northwest Territories, but for Canada, in our view.

Mr. David Anderson: Thank you.

I would like you to comment. I don't know if you were here for the last hour or were able to hear the previous testimony, but we had some fairly strong testimony about the confidence the contractors have in the safety regulations and the present improvements that have been made in the safety situation. He talked about the fact that they are required to have two barriers in place in the wells, but that one of them seems to have been removed in the gulf, and that may be a contributing factor to that whole exercise.

He also made the comment that there's “a lot more engagement” at the regulatory authority in Canada than they saw in other countries. I'm just wondering if you have any comment on that.

He was very strong in his presentation that the present safety situation and requirements are adequate if they're adhered to. Do you have any comment on that?

● (1050)

Hon. Robert McLeod: Very similar to what he said, not knowing fully what happened in the Gulf of Mexico, until we know that for sure... But I've been saying it myself that in Canada we have a stronger regulatory requirement to follow. We feel there is more oversight, and at least in the Beaufort we are probably the only offshore jurisdiction where there is a requirement for same-season relief well drilling, although the main challenge is the ability to do it because of the short drilling season and the ice conditions.

The Chair: Thank you, Mr. Anderson.

For the second round we go to Mr. Regan for up to five minutes.

Hon. Geoff Regan: Thank you, Mr. Chairman.

I want to say first that we on this side noted that in your role as chair you were unable to resist showing your party colours, but I will say in this instance it was funny.

The Chair: Thank you. That's unusual.

Mr. Geoff Regan: It was humorous this time, other times not so much, but here it certainly was funny.

Speaking of your grade 9 science teacher, Minister and Mr. Bevington, I don't know what he or she would say, but I'm sure if my grade 9 science teacher saw me delving into scientific matters, he'd be both concerned and alarmed—and amazed. Hopefully he's out playing golf or going for a hike or something today, and in good health.

I'm going to turn to Professor Hawboldt. Let's go back to this question. You've now been appointed the chair of the National Energy Board. Congratulations. I think it's a pretty good salary.

Dr. Kelly Hawboldt: Thank you.

Hon. Geoff Regan: You've talked about mitigation control and countermeasures. It's not clear they're available at the moment in terms of arctic drilling. You talk about the fact that it requires research. I guess the question is, in view of the need for this sort of stuff and the lack of some of these things, now that you're chair of the NEB, wouldn't you say that drilling should be suspended until these things are worked out?

Dr. Kelly Hawboldt: I'd say again—and I'm not waffling here, but I don't have all that information in front of me. I don't know how much research has been done per se in oil under ice floes. I confess I haven't worked in that area. So I'm not trying to dodge the question. It's just that at NEB I'd have a bunch of information in front of me and I'd be able to assess that. I don't have that, so I don't feel I can answer the question.

Really, you're not paying me as NEB, so I don't have to answer the question today.

Voices: Oh, oh!

Dr. Kelly Hawboldt: It's really just out of ignorance more than anything else.

Hon. Geoff Regan: So much for that pay cheque, I guess.

Dr. Kelly Hawboldt: I don't have the information in front of me, and I'm sure a lot of documentation is available that I just haven't seen.

Hon. Geoff Regan: In the previous hour we heard from Professor Gail Fraser, who is from York University's faculty of environmental studies, about a concern with access to data. I'm wondering if this is an issue you've had. I don't know if you've sought data from either the offshore petroleum boards or from the NEB, and if it has been a problem for you. She is saying she can't get access to basic data in relation to environmental matters and in relation to what studies are done of seabirds, etc., where there are drilling areas.

Have you had to try to do any of that to get information?

Dr. Kelly Hawboldt: Yes, I've needed access to data sometimes, more in the produced water, so more when the platform is already producing and it's having impact on the environment.

I haven't had a problem. The oil and gas industry, at least in Newfoundland and Labrador, has a fairly good relationship with the university. It could be because of the type of data I'm looking for.

What Gail is looking at, from what I know about Gail's work, would be more biological and environmental effects monitoring data, and I honestly haven't looked for that. Any time I've been involved with the seabird side it was with Phil Montevecchi, and those are the studies they've done independently of the oil and gas companies.

● (1055)

Hon. Geoff Regan: Thank you.

The Chair: Mr. Bagnell, for one short question.

Hon. Larry Bagnell: I have just one short point.

Bob, you made a great point that there are no ports or resources in the Beaufort right now for cleanup, and in fact they're using 8,000 boats in the gulf right now.

The *Exxon Valdez* caused a lot of damage, obviously. We just found out that the Russians are sending two tankers this fall through the Northeast Passage, and we've been asking whether there are cleanup plans if a boat has a problem in the north and we haven't had any answers. So you can rest assured that we're going to be pushing for the federal government to have a cleanup plan in that respect.

I don't know if you want to comment on that.

Hon. Robert McLeod: Yes, cleanup and oil spills are always a concern. We all know that the ice conditions are changing. There is likely more traffic through the Northwest Passage. We're even seeing cruise ships going up north. So certainly that is a concern.

The Chair: Thank you.

Mr. Hiebert, you have about three minutes. Go ahead, please.

Mr. Russ Hiebert (South Surrey—White Rock—Cloverdale, CPC): Thank you, Mr. Chair.

My question is for Professor Hawboldt.

We've heard from other witnesses about the methods used to try to clean up the oil spill in the gulf—booms to skim the oil, burning in situ, and chemical dispersants—but few people have mentioned something that you did, even just briefly, which is the use of biological methods for cleanup. I've heard references to the use of bacteria. I'm not exactly sure of the biological or chemical process, but can you elaborate on that at all for the committee as to how that would work and what technologies are available in that area?

Dr. Kelly Hawboldt: Onshore, it's very well extensively done. If you're going to remediate oil-contaminated soil, or even surface water contaminated soil, you can either use the naturally occurring micro-organisms and then add nutrients, things such as nitrogen, and aerate it; just give it enough food so that the micro-organisms can grow and start breaking down the hydrocarbons. All they do is break it down to, hopefully, CO_2 and water, but usually it's a partial breakdown and then some other microbes take over. So it's a biodegradation process that usually occurs over anywhere from weeks to hours to years.

Offshore, in the saline environment, it's a little bit different because you can't contain it, or if you can, it's limited containment. There hasn't been as much research on the biological side offshore because of that fact. There is the whole natural biodegradation that occurs anyway. That's why they add the dispersants, to increase the surface area so that the microbes can attack it. The heavier the oils get, the more difficult it is for the microbes to break it down. The naturally occurring micro-organisms are going to occur anyway in the marine environment, but if you want to somehow enhance it, it's much more difficult, because if you want to add nutrients or some kind of medium to enhance the microbial growth, it's really hard to do, because you add it and it just gets dispersed into the ocean.

So there is much less study offshore, but it's quite common onshore. Does that answer your question?

Mr. Russ Hiebert: Yes, it's helpful. It's certainly informative to have that level of understanding.

What is your relationship with the oil and gas industry in Newfoundland? Through the faculty of engineering, do you work with them on projects? Are you in research? Is this an area of your expertise? I'm just trying to make the link.

Dr. Kelly Hawboldt: I'm not a consultant. We do research in offshore oil and gas. Sometimes the oil and gas industry is a partner in that they've put funding through PRAC or some other organization, and sometimes we just do independent research.

So some of the things we're doing on produced water is just research we're doing independently.

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

We're out of time for the second group of witnesses. I'd like to thank all of you—Ms. Hawboldt, Minister McLeod, and Deputy Minister Vician. Thank you very much for your testimony here today. It has been very helpful, indeed.

And I would just like to say before we leave, once again, thank you, Carol, for over 30 years of service as a clerk. That's remarkable, and we do thank you for that.

Some hon. members: Hear, hear!

The Chair: I would also like to sincerely thank this committee. We're a committee that has functioned very well throughout the year, thanks to the cooperation from all of you, and thanks to having great staff at the front here. So I do thank you for that.

This may be our last meeting before we reconstitute in the fall, and if it is, again, I do appreciate that and Canadians appreciate that. Thank you.

The meeting is adjourned.

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