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Chair

Mr. Leon Benoit

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● (1530)

[*English*]

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

We're here today for a two-part meeting. The first part of the meeting will deal with witnesses from the Office of the Auditor General of Canada, and the second part will deal with witnesses in the continuation of our study on innovation in the energy sector.

For the first part of the meeting we have witnesses, as I said, from the Office of the Auditor General of Canada. Scott Vaughan is Commissioner of the Environment and Sustainable Development. Welcome to you, Commissioner. We also have Kimberley Leach, principal, sustainable development strategies, audits, and studies; Bruce Sloan, principal, sustainable development strategies, audits, and studies; and Andrew Ferguson, principal, sustainable development strategies, audits, and studies. Welcome to you all.

We will carry out the questioning as usual. We'll start with a presentation from the commissioner. I just want to make sure that all members of the committee know that we're going to adhere strictly to the times that each member gets for questioning. So if you ask a bunch of questions when you're a minute from the end of your time, the witnesses will have one minute to answer that bunch of questions and I will adhere to that.

To the commissioner and others, as we get to the end of the member's time, you may be asked to give a very succinct answer. Hopefully that won't be the case, but it could be.

Let's get on with the business we're here to deal with in the first half.

Over to you, Commissioner, for your opening statement.

Mr. Scott Vaughan (Commissioner of the Environment and Sustainable Development, Office of the Auditor General of Canada): Mr. Chair, thank you very much. I'll try to be as brief as possible in an opening statement.

Mr. Chair, I'm very pleased to join this committee and present the findings of our fall 2012 report, which was tabled in the House of Commons this morning. Our report examined several environmental programs and activities intended to support sustainable natural resource development. Given the central role of natural resources in the Canadian economy, it's critical that environmental protection keeps pace with economic development. I am concerned by the gaps we found in the way federal programs related to natural resources are managed.

[*Translation*]

Let me start with our audit of marine protected areas.

Protecting commercial fisheries and marine species like whales and sea turtles, as well as their habitat, is important to relieve the growing pressures on our oceans and ecosystems. Over the past 20 years, the federal government has made limited progress on its commitments to set aside areas to protect Canada's marine biodiversity.

Fisheries and Oceans Canada and Parks Canada have established 10 marine protected areas, but the network that is needed to safeguard marine species and ecosystems does not yet exist. Moreover, Canada has protected less than 1% of its oceans and Great Lakes, compared to the 10% target it agreed to achieve.

[*English*]

We noted several areas of progress in establishing marine protected areas right across Canada; however, that level of protection falls short of what the Oceans Act calls for.

[*Translation*]

In the second chapter, Mr. Chair, we noted that oil spills from offshore platforms are an important risk faced by the marine environment. Our report examined the Canada-Newfoundland and Labrador and Canada-Nova Scotia offshore petroleum boards and the support they receive from federal departments.

[*English*]

We found that while the Canada-Nova Scotia and Canada-Newfoundland and Labrador boards have adequately managed the day-to-day environmental impacts of offshore oil and gas activities, they and their federal partners need to do more to prepare for a major oil spill. We identified several deficiencies that limit the offshore's ability to take over the response. For example, the boards and federal entities have not tested their collective plans or joint capacity, and roles and responsibilities are not always clear in the response plan.

Our report also examines environmental financial guarantees and absolute limits related to four sectors for which the federal government is responsible: mining in Canada's north, spills from oil tankers, offshore oil and gas platforms, and nuclear power.

[*Translation*]

Turning to the limits companies are liable for in case of spills from offshore oil platforms and nuclear incidents, we found that these limits were out of date, and significantly below levels set by other countries.

[*English*]

The government needs to review its absolute liability limits in the nuclear and offshore oil and gas sectors. We found adequate systems regarding the federal government holding of approximately $11 billion in financial guarantees to cover site remediation costs. By contrast, we found several shortcomings in the oversight of the $500 million the government holds in financial guarantees for the mining sector in Canada's north.

These shortcomings include insufficient guarantees as well as significant gaps in mining inspections required by regulation.

[*Translation*]

This report also includes a study of federal support to the fossil fuel sector. At the G20 meetings in 2009, Canada committed to rationalize and phase out inefficient fossil fuel subsidies. We found that the federal government has taken action in line with this commitment.

[*English*]

Direct federal spending to support the fossil fuels sector has decreased since 2000, and a significant portion of support is now directed to cleaner technologies. At the same time, the study identified a number of tax incentives that remain in place and provide a significant portion of support to the fossil fuels sector.

Finally, Mr. Chair, I'm pleased to present the annual report on environmental petitions. This year we received 23 petitions requesting information from government ministers on a range of environmental topics. Petitioners have repeatedly raised concerns about the toxicity of substances used for hydraulic fracturing of shale gas and the lack of public disclosure of those substances. There are some 200,000 hydraulic fracturing wells in Canada, and that production number is expected to double over the next 20 years. With the oil and gas sector exempted from reporting pollutant releases, the government cannot know if Canadians are adequately protected.

Mr. Chair, I'll end my opening statement there. We're happy to take your questions.

● (1535)

Thank you very much.

The Chair: Thank you for your presentation, Commissioner, and thank you very much for your service over these past years. It's very much appreciated by the people of Canada.

We go now to questioning. We'll start with Mr. Anderson, on the government side.

Go ahead, please, Mr. Anderson, for up to seven minutes.

Mr. David Anderson (Cypress Hills—Grasslands, CPC): Thank you, Mr. Chair.

Thank you for coming today. Thanks to some of the folks who showed up who may not be regular members of the committee but who are certainly interested in these issues.

I'd like to talk to you about the reduction in direct federal spending. You just mentioned it in one sentence, in paragraph number 17. Could you go through a little about what has happened since 2006? Give us an idea of how the subsidization has been reduced.

Mr. Scott Vaughan: With pleasure. I think this is actually an extremely positive story and a positive finding. The reason, from an environmental perspective, is because those subsidies actually have a measurable link in terms of greenhouse gas emissions.

The direct spending in the fossil fuels sector, compared, for example, particularly to the 1980s, has gone down dramatically, and at the same time, since 2006, there's been an increase in spending and public support or public subsidies to support cleaner technology. Within that, the biggest increases are for cleaner technology from natural resources programs related to carbon capture and storage.

Mr. David Anderson: So a percentage of that, something like 97% of the direct spending, is to research and development. Is that correct?

Mr. Scott Vaughan: That's correct. About 97% is R and D, and more than 50%, just a little over 50%, of the direct spending is for cleaner technologies.

Mr. David Anderson: Okay. Could we go through a bit of the tax treatment, how that's changed as well, and the things you've found we've reduced subsidization for in that area?

Mr. Scott Vaughan: I'll turn it over to my colleague, Bruce Sloan.

Very briefly, there are two main tax expenditures. One of them is for accelerated capital depreciation for the oil sands area. That's about $1.5 billion over five years, over $300 million per year. That's due to be sunset by around 2014-15. Again, that's significant progress in terms of eliminating a tax measure that contributed indirectly to greenhouse gas emissions.

There is a second one for flowthrough shares for the mining sector. I'll ask my colleague, Mr. Sloan, to respond.

The Chair: Go ahead, Mr. Sloan.

Mr. Bruce Sloan (Principal, Sustainable Development Strategies, Audits and Studies, Office of the Auditor General of Canada): As the commissioner has said, a number of the features have been phased out over the last number of years, things like earned depletion or Canadian exploration expenses, Canadian development expenses. Budgets over the last three or four years have set out a phase-out period of anywhere from three to four or five years, so within a few years those tax subsidies or tax differentials will be gone. An example would be that the accelerated capital cost allowance for oil sands will disappear within a few years.

Mr. David Anderson: You've done your study basically on energy fossil fuels and have not taken a look at renewables. Could you give us an explanation as to why you chose just to focus on one section and not on both of those to give a bit of a bigger picture for Canadians?

Mr. Scott Vaughan: It's an absolutely great question. When we were scoping this, we looked specifically at what the statement was, the obligation under the G-20 commitment. Under that, it was to look at it to identify, reduce, and eliminate those subsidies related to the fossil fuel sector.

But, sir, I think you're absolutely right. There is the other side of the story. We've done this as a study, and we very much welcome your views to look more fulsomely at this, the broader picture of direct support in renewable energy. We touched on that indirectly for the carbon capture and storage, but I think there's a much bigger story to tell, which is to look at the whole thing. I think our office would be very interested in going back if there was interest from this committee.

Mr. David Anderson: Overall, is the government moving in the right direction, in your opinion?

Mr. Scott Vaughan: Without question, the government is moving with direction on this important issue. The reason, I would say, is twofold. One is that you don't want to have one measure undermining the commitment this government has made to reduce greenhouse gas emissions through regulations. And then related to that, you want to make sure there's policy coherence. So I think this is moving in the right direction, in terms of both tax management and environmental policy.

Mr. David Anderson: I'm going to switch topics a bit. I heard your press conference. They asked about tanker safety. You said that Canada has been a leader in tanker safety—is that correct?—and that other nations have looked to us for some direction in that.

● (1540)

Mr. Scott Vaughan: What I said was on the particular issue of looking at absolute liability caps for preparedness for tanker spills, and on that we've said that Canada's amounts are absolutely in line with the international system, with the IMO, for example. In setting those international standards, Canada has been a leader.

Canada has waited to see what other countries have done. It's been very proactive in the International Maritime Organization in looking at appropriate absolute liability limits.

Mr. David Anderson: Did you take at look at the safety changes —the double hulls, the pilotage, and those kinds of things—or were you just looking at the financial aspects?

Mr. Scott Vaughan: We looked only at the financial aspects, but we did note in the chapter that there are now requirements in Canada for double hulling as well as for other safety requirements. The safety record of tankers is quite strong.

Mr. David Anderson: Were you aware of the attempts we have made to raise the nuclear liability limits as well?

Mr. Scott Vaughan: I have—

Mr. David Anderson: I didn't notice that mentioned in your report.

Mr. Scott Vaughan: Yes. In the report we said there have been a couple of attempts to go through the required legislative changes to change those limits, but as of now, they remain at $75 million.

Mr. David Anderson: Right. The government has been committed to seeing that through.

How much time do I have, Mr. Chair? Just a couple of minutes?

The Chair: You have one minute.

Mr. David Anderson: You mentioned that you went to a number of departments to find the tax information and the information on subsidization. I'm wondering about your experience obtaining information from the departments. Were you happy with the cooperation and the results you got from each of the departments?

Mr. Scott Vaughan: I'm glad you asked that.

I've been here five years now. For me, this report has been a model of cooperation with senior government officials, both in terms of working through some difficult files and in terms of the government accepting our recommendations, and also from the follow-up meetings we've had, particularly in the offshore oil and gas sectors.

I don't have the slightest doubt that this government is absolutely focused on closing the gaps we've identified. I say this because of meetings we've had with the Deputy Minister of Natural Resources, Monsieur Dupont, someone I respect enormously. I briefed the minister last week, as well as the commissioner of the coast guard. I don't have the slightest doubt this is how the system is supposed to work. We've identified inter-office gaps, and the government is committed to closing them.

Mr. David Anderson: This is a sector that contributed $164 billion into our GDP last year, so it's important. At the same time, we need to look after the environment while we're supporting it as well.

Mr. Scott Vaughan: I agree.

The Chair: Thank you, Mr. Anderson. Your time is up.

We go now to Mr. Julian for up to seven minutes.

Go ahead, please, sir.

Mr. Peter Julian (Burnaby—New Westminster, NDP): Thank you very much, Mr. Chair.

Thank you very much, Mr. Vaughan and all your associates, for being here today.

We'll certainly miss you. You've left us with a report that is quite concerning. Any average Canadian reading through this would be very concerned about how irresponsible the government has been in approaching this issue.

I'd like to start with oil and gas. You raised the issue of the current absolute liability limit in Canada. Could you give us, very briefly, the liability limit in Canada compared with that of other countries, such as Greenland and Norway, and tell us how they've handled that liability issue more responsibly?

Mr. Scott Vaughan: I'll defer to my colleague, Ms. Leach.

The offshore oil and gas platform liability down the Atlantic coast is $30 million. For the Arctic, it's $40 million. Compared with that of other countries, in the United Kingdom, for example, it's $250 million. In Greenland and in Norway, they're both unlimited. Greenland has a threshold of a billion dollars in one of the demonstrations for safety, but unlimited in terms of liability across the board.

I mention those three because the conditions in Greenland and the United Kingdom are similar to conditions in Hibernia.

Mr. Peter Julian: Thank you for that.

Could you just reference very briefly the costs from one tanker spill, the *Prestige*, which is referenced in your report, and another, the *Deepwater Horizon*? What would the costs be? Then, given how appallingly low our liability limit is in Canada, could you talk a bit about who picks up the difference in the tab if, tragically, we end up with the same kind of shipwreck as the *Prestige* or the same kind of blowout as the *Deepwater Horizon*?

Mr. Scott Vaughan: We noted the *Prestige* as $1.2 billion, and then the cleanup—and that's aligned with the absolute liability limit of the federal government in terms of spills from tankers.

With regard to the *Deepwater Horizon*, the U.S. limit remains at $75 million; however, when the White House set up its commission of inquiry into the *Deepwater Horizon*, one of its conclusions was that this was absolutely too low. It was absolutely unrealistic.

The costs for the cleanup of the *Deepwater Horizon* are now running at about $40 billion, and the question then is who is going to pick that up. That is through a series of court actions, so it's going to be the company, obviously, but in addition there is compensation. There are civil suits, so the bill is still running on this one.

● (1545)

Mr. Peter Julian: Would you think it is fair to say that what this government has done through negligence has led us to the edge of a liability cliff, where if we have an accident we simply are not covered, and Canadian families, Canadian taxpayers, could be left to pay astronomical costs?

Mr. Scott Vaughan: What I would say is that this hasn't been reviewed or updated in 20 years. To be fair, the government has attempted to in the past, but right now it stands at $30 million and $40 million. Given what we now know about the costs of these accidents—and it hasn't just been the *Deepwater Horizon*; there has been a blowout in Australia and a blowout in the U.K. as well in the last three years. So while these are rare, accidents happen, and our liability limit is quite a bit lower than other countries.

Mr. Peter Julian: Thank you for that.

You referenced one of the blowouts that was caused by CNOOC, which is the company the Conservative government just approved to take over Nexen. That is another reason Canadians are losing confidence in this government.

I'd like to move on now to the issue of nuclear liability. You have the issue around the cost of cleanup and nuclear liability. You certainly raised the issue around increasing absolute liability for the operator. This government has been pushing through legislation. Of course, we had you before us in the environment committee last spring, where you talked about the government ramming through the spring budget bill, which completely eliminated 99% of environmental assessments, you will recall. The government has the ability to ram bad bills through the House easily.

Why do you think they have been stalling on the Nuclear Liability Act? How important is it to look at that, to raise that liability so that Canadian taxpayers and families aren't caught having to deal with a nuclear disaster?

Mr. Scott Vaughan: What we say in the report is that right now it's at $75 million, and that really is significantly lower than other countries. The United States is at $12 billion, but we've also said that Natural Resources Canada has acknowledged that this is too low. They said they proposed up to around $625 million—I think I am right—but they've now gone through consultations and they said it probably should be more, around over $900 million.

My understanding—and I can't speak, by any means, on behalf of the government—is that they are looking at this now and they may be taking some action in that regard.

Mr. Peter Julian: Okay.

My final question will be to spell out the overall deposits or funds in trust for the government that we talked a bit about this morning, and the issue of how much is currently set aside for nuclear liability. How much is currently set aside for mining, and how does the government evaluate whether or not that's adequate?

Finally, for oil and gas, on the issue of what is in trust currently to deal with what could be multi-billion dollar cleanup costs, how much have agencies in trust currently to deal with that?

Mr. Scott Vaughan: I'll try the first one, and I'll leave it to my colleague—

The Chair: There's a minute left in total to answer, so choose the one you would like to respond to.

Mr. Scott Vaughan: Right.

For mining, it is $500 million, and that's for mines north of 60. We've said there are some problems with whether or not the government knows that's sufficient. We found three mines where it was clearly not sufficient, and we also said that 70% of the mining inspections required by regulation haven't taken place for mines north of 60. There was a fairly big deficiency.

Mr. Peter Julian: For oil and gas—

Mr. Scott Vaughan: Oil and gas in 12 seconds, Mr. Sloan.

Mr. Bruce Sloan: For the absolute liability of the $30 million, there are securities in place. There are also security limits for financial security up to $70 million.

Mr. Peter Julian: Yes, but how much is right now on deposit? That was my question.

Mr. Bruce Sloan: It's $70 million.

Mr. Peter Julian: In total?

Mr. Bruce Sloan: Yes. Anything beyond that is financial capacity of the organization.

● (1550)

Mr. Peter Julian: That's not my question, but we'll come back to it.

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

We go now to Mr. Hsu for up to seven minutes.

Go ahead, please, sir.

Mr. Ted Hsu (Kingston and the Islands, Lib.): Thank you very much.

Thanks for coming to the committee today.

I want to stay with the north of 60 mines. We have 70% of site visits that haven't been conducted, and we have other uncertainties. Is it fair to say that we don't know at all whether the final cost of reclaiming all of the mines is covered by the deposits, the securities, that the government has on hand? Is that a fair statement?

Mr. Scott Vaughan: I think that's the crux of the matter.

As to why the inspections are important, it's to make sure that the actual operations reflect what was in the permit or in the authorization. One example would be that if they're authorized for only one tailings pond, and during the course of the operation there become two tailings ponds, that would then affect the cost of site remediation at the end.

So we've said that those inspections...or we haven't said, the department has said, that those inspections are required by regulation in order to do a reality check on the ground.

Mr. Ted Hsu: Okay.

With regard to natural gas hydraulic fracturing, what do you think the standing committees in Parliament—the environment committee, let's say, or this committee—should be doing to help the government know whether or not Canadians are adequately protected from natural gas hydraulic fracturing?

Mr. Scott Vaughan: I'll ask my colleague Mr. Ferguson to answer. I mean, we wouldn't delve into policy prescriptions, but....

Mr. Ted Hsu: No, it's just what you think Parliament should do. For example, should this committee call witnesses on...?

Mr. Scott Vaughan: I think it might be useful to.... There's a report, for example, coming out from Resources for the Future, which is a very respected U.S.-based group. That report is coming out in two days, I believe. If hydraulic fracturing is an issue of interest to this committee, they've gone through—we've seen an advance draft—a very rigorous analysis of risk.

For example, there's wide assumption that there are risks of groundwater contamination. Their conclusion was that it's probably a very low risk.

Mr. Ted Hsu: Are those conclusions relevant to the Canadian geology?

Mr. Scott Vaughan: To some extent, yes, but I think what is important is that geology in Canada is different from geology in Florida, for example. It is important then to say....

I mean, I can tell you what we concluded, that right now there is very little information that either Environment Canada has or Health Canada has about the chemicals being used daily in these hydraulic fracturing wells.

Mr. Ted Hsu: Okay.

You've covered a lot of the gaps between your recommendations and what the government has done so far. I'm wondering, amongst all of your recommendations, are there ones that are particularly timely or urgent that should be dealt with first, and quickly? If there a couple of things you would want to tell the government that they should get on right away, what would those be?

Mr. Scott Vaughan: We don't prioritize, but I would say, as I mentioned earlier, that one area the government clearly is taking extremely seriously is the issue of marine safety. We saw the announcements last week from Minister Kent, and the announcement of Transport Canada this morning, I believe, or yesterday. I think the government realizes that the probability of an accident happening is very low, but if something does happen, the costs are extremely high. It's critical that you get this right.

In that one, given the problems, the gaps, the confusion we found, I think you need to go in and take some measures quite quickly, particularly since there are new exploratory operations in Hibernia and Hebron, and expected in Old Harry. Nova Scotia is going to be ramping up to petroleum exploitation in about three years.

So this is an area that is very dynamic, and it's important to get this right.

Mr. Ted Hsu: Okay.

The next question, kind of politics aside, is with regard to nuclear energy power generation. The liability limits haven't changed in 35 years, and it's a little bit surprising.

But then I thought about it, and I was wondering if part of the reason for that was because Bruce Power has only existed since 2001, and previous to that all of the ownership was public.

Is that part of the reason why there wasn't any urgency, and perhaps why the urgency has only emerged in the last ten years or so?

Mr. Scott Vaughan: I don't think there was the question of ownership, although I'll defer to Mr. Sloan on that.

This would be again a reason for an official to come in and explain to you...because I don't think the ownership issue would be germane to the absolute liability limit imposed by the federal government. You know, Point Lepreau in New Brunswick has been operating for many years.

I may be wrong in this, but I think the ownership issue would be distinct from the absolute liability limit that would be imposed.

● (1555)

Mr. Bruce Sloan: During the work we did for the audit, the ownership issue didn't come up. Their issues, when the limits were originally set, were more about what the costs would be for remediation or for addressing the issue should something occur. So it's more about just cost relative to risk.

Mr. Ted Hsu: Paragraph 1.14 in chapter 1 mentions that there was a request that the Auditor General of Canada conduct a performance audit of the offshore petroleum boards. I am wondering how out of date—when was the last time there was an audit? Is there something out of date that needs to be brought up to date?

Mr. Scott Vaughan: Actually, they've never had an audit in the way we go through and do one in the Auditor General's office. When we began this, we approached the government and said we needed an order in council to clarify the Auditor General's mandate, because it's a federal-provincial agreement, and we're grateful to the government for steering through that order in council. But before that, you know, in the 20 years since the Atlantic Accord, there had not been an audit of either board to the extent to which we've gone in and looked at all their systems.

Mr. Ted Hsu: For these boards you looked at the competencies and the collective competencies and experience of the board members. Do you think the skill set of the current composition of the boards is complete?

Mr. Scott Vaughan: I'll ask my colleague Ms. Leach to....

Ms. Kimberley Leach (Principal, Sustainable Development Strategies, Audits and Studies, Office of the Auditor General of Canada): Sure. We looked at the collective competencies of the board in terms of whether they had the competencies to conduct the work that was required and whether they were fully staffed with members always in place. We found that in the case of both boards they don't always have a full complement of members continually in place with all of the desired competencies.

Mr. Ted Hsu: Are there a couple of areas that are lacking that you might want to mention so that when the next appointment is made they will be covered?

Ms. Kimberley Leach: Yes. Natural Resources Canada does a competency assessment before they appoint an additional member. The competencies they look at include regulatory competencies, energy sector, experience in environment, geology, fisheries, safety, and environmental leadership. Those are the competencies they looked at for this board, and we found that they weren't always there.

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

We go now to the five-minute round, starting with Ms. Rempel, parliamentary secretary to the Minister of the Environment.

Go ahead please, Ms. Rempel.

Ms. Michelle Rempel (Calgary Centre-North, CPC): Thank you, Mr. Chair.

I'd also like to add my voice in congratulating the commissioner on his body of work and thank him for his report today as well.

I want to start with nuclear liability legislation. First of all, were you aware that legislation has been in front of the House in previous sessions of Parliament to address this issue?

Mr. Scott Vaughan: I think we acknowledged that in the report.

Ms. Michelle Rempel: Great. I believe that in these bills there was something to the effect of moving our liability limit from $75 million to approximately $625 million. Would that put us more in line with other countries internationally or move us in the right direction anyway?

Mr. Scott Vaughan: It would certainly move in the right direction.We have a list of the different countries. The high one was the United States at $12 billion, then Japan at $1.5 billion, and the Netherlands at $3 billion, but certainly it's moving in the right direction.

Ms. Michelle Rempel: Great. So you were aware that this legislation was actually defeated in Parliament by opposition parties?

Mr. Scott Vaughan: We knew it didn't move forward. We would only look at whether or not it was enacted, and right now it is not enacted, so it's still at $75 million.

Ms. Michelle Rempel: Thank you.

I want to focus a little bit on the marine protected area component of the report. One of the things I'd like to take away is that we have done a lot of work. More needs to be done—I think we all agree on that—but with regard to what's been done already, would you characterize it as a good foundation and a step in the right direction?

Mr. Scott Vaughan: I absolutely would. I know that people will get fixed on the 10% target—Canada is at 1% now—but I think when you look at the 10 marine protected areas that have been created, this is an important achievement. There are going to be two more, which are almost ready to be done in Georgian Bay and in Lake Superior, and each one of those marine protected areas has a remarkable story to tell. I think Canadians, when you talk to them, value deeply our marine environment and marine ecosystem, so I think it is a good foundation.

The other reason I think it's a good foundation is that the scientific analysis by officials of Parks Canada and Fisheries and Oceans has been completed for 17 more. Therefore, with that foundation, the question now is to move forward and keep going.

● (1600)

Ms. Michelle Rempel: I appreciate that one of the complexities you noted with regard to establishing these areas was that there are multiple areas of jurisdiction that need to be consulted with in multiple stakeholder groups. Perhaps you could comment very briefly on whether or not you feel that such a high level of consultation is something that's important to establishing these areas.

Mr. Scott Vaughan: Personally, I think it's absolutely indispensable. I think if you look at Gwaii Haanas in British Columbia, that to me is an example of a true partnership between the Haida Nation and the federal government to protect a site that is internationally recognized. Over 3,000 species have been observed in that marine protected area.

Getting the consultations right is critically important. I would say as well that officials at Fisheries and Oceans have said that complexity of consultations is one of the factors affecting the time. Money is another factor, and then sustained leadership is another. But certainly consultations are complicated.

Ms. Michelle Rempel: Just further on that point, in preparing for the committee today I asked my staff to pull how many kilometres of coastline Canada actually has. Your report noted that we protect 2,020 kilometres of shoreline. We actually have 200,280 kilometres of coastline in the country. Do you think the extent of coastline that our country has, as well as the different geographies and different climate sectors, adds complexity to establishing marine protected areas, as compared to the situation in other regions internationally?

Mr. Scott Vaughan: I would defer to my colleague, Mr. Ferguson, on this, to give him a chance to talk.

Mr. Andrew Ferguson (Principal, Sustainable Development Strategies, Audits and Studies, Office of the Auditor General of Canada): It certainly is a complex environment. There's no question about that. There are other countries, such as Australia and the United States, that have rather long coastlines as well and complex situations to deal with.

Ms. Michelle Rempel: It's interesting, because we actually have the world's largest coastline by nearly four times—and I hope my staff fact-checked that properly. I think your comment on the foundation of starting marine protected areas has been a very helpful thing, and certainly will continue on in that right direction.

This is sort of a “geek-out” question, I have to say. You made a comment earlier in response to one of my questions about the measurable link with regard to the phase-out of subsidies for greenhouse gas emission reduction. Certainly our government has been committed to that because we do want to see our greenhouse gas emissions reduced. Do you know what price elasticity assumptions the International Energy Agency used in fossil fuel pricing to come up with that figure?

Mr. Scott Vaughan: I don't know what their price elasticity assumptions would be. We'd be glad to get that. I actually know the lead economist from the OECD who worked on that report with the World Bank and the OECD, so I can get back to you. My assumption would be that whatever the standard price.... You know, there are cross-price elasticities between different energy choices. My guess would be that there would be something standardized that came from the U.S. energy agency, but I can get you the exact number. I don't know it off the top of my head.

The Chair: Thank you, Ms. Rempel.

We will look for that answer.

We go now to Mr. Woodworth for up to five minutes, please.

Mr. Stephen Woodworth (Kitchener Centre, CPC): Thank you very much, Mr. Chair.

Thank you, Mr. Vaughan, and your colleagues. I also want to add my congratulations, if I can put it that way, as you move on, and my sentiment that we're going to miss you. I've always appreciated the balance you've shown, even today. Although I know your report shows gaps, and there are those who will feign great outrage over the slightest gap, your comments have been replete with observations about how committed the government is to dealing with these issues, how the government is moving in the right direction, how the government is laying a good foundation. I very much appreciate that you've taken a balanced approach.

I want to ask first about a segment in chapter 1 at paragraph 1.29, the observation that the two boards lack approved policies and procedures to guide their review of project assessments. I want to get a notion of the date at which that snapshot was taken, if I can put it that way. I'll begin by asking you to confirm to me that your audit work for that chapter was actually completed on August 24, 2012. Is that correct?

I understand that your comment would rely on a study of 11 project assessments. Is that correct?

● (1605)

Ms. Kimberley Leach: We looked at different types of environmental assessments. We looked at strategic environmental assessments—

Mr. Stephen Woodworth: I'm just asking about the comment regarding the review of project assessments, so I want to focus on the project assessments. I understood your report to say that you studied 11 of them.

Ms. Kimberley Leach: Yes, our sample included 11 for that.

Mr. Stephen Woodworth: Could you tell me what would be the most recent of those 11 that you studied to reach this conclusion about policies and procedures?

Ms. Kimberley Leach: I'm afraid I don't have that information on hand.

Mr. Stephen Woodworth: All right. It wouldn't have been as recent as August of 2012. I assume it would have been completed some time before that.

Ms. Kimberley Leach: That's a reasonable assumption, yes.

Mr. Stephen Woodworth: Likely in the spring, perhaps?

Ms. Kimberley Leach: Yes.

Mr. Stephen Woodworth: All right. Thank you.

That work would not capture all that has been done in relation to CEAA 2012, the assessment update that the government introduced just in the late spring. Is that correct?

Ms. Kimberley Leach: That's correct.

Mr. Stephen Woodworth: So even though your report was completed in August, you wouldn't have been able to comment on the procedures and policies that were really worked out since June of 2012 to deal with some of these issues under the revised CEAA.

Ms. Kimberley Leach: As far as I recall, there were actually no new environmental assessments done under the CEAA 2012 that were included in our sample.

Mr. Stephen Woodworth: Right, so that remains to be seen, but at least the government is sort of getting ahead of it with those revisions. I guess that's the way I would look at it.

I want to also ask you about a comment at page 28 of the same chapter, which is that "boards and supporting federal departments need to do more to prepare for a major oil spill". I want to put that in context by just asking you to confirm to me that there actually has not ever—at least yet—been a major oil spill in Canada. Is that correct?

Ms. Kimberley Leach: The biggest oil spill that has occurred since the boards have been in place was in 2004—

Mr. Stephen Woodworth: Right.

Ms. Kimberley Leach: —and that was the spill from the Terra Nova facility. In figure 1.6, you would be able to see the quantity of that and—

Mr. Stephen Woodworth: Would that be considered a major oil spill?

Ms. Kimberley Leach: It was over 1,000 litres, so it was a significant oil spill.

Mr. Stephen Woodworth: Okay.

Ms. Kimberley Leach: It depends on how you define "major", I suppose.

Mr. Stephen Woodworth: I understand from paragraph 1.59 of your report that "no documented cases" came to your attention involving failure of an operator to report a spill, so they're all, to your knowledge at least, complying and reporting spills, correct?

Ms. Kimberley Leach: Yes. We do note that the boards rely on operators to assess compliance, though, and we point out that there are very few independent means of verifying operator compliance.

Mr. Stephen Woodworth: The point being that there is no indication that anyone has failed to comply, correct?

Ms. Kimberley Leach: That's correct.

Mr. Stephen Woodworth: Thank you.

Also, I have the understanding that in fact there has been no case found where federal agencies failed to respond appropriately to a report of an oil spill. Is that correct?

Ms. Kimberley Leach: Can you give me a paragraph reference for that?

Mr. Stephen Woodworth: Well, I think it may have been something that I heard earlier today, that there were no questions about that—

Ms. Kimberley Leach: Okay.

Mr. Stephen Woodworth: —and that in fact the boards had been responding appropriately.

The Chair: Mr. Woodworth, your time is up.

We go now to Ms. Leslie for up to five minutes.

Go ahead, please.

Ms. Megan Leslie (Halifax, NDP): Thank you, Mr. Chair.

Thanks to all of you for making yourselves available so we can explore this a little further. I'm hopeful that you'll get an invitation from the environment committee to come and appear before us as well, and—

An hon. member: Hear, hear!

Ms. Megan Leslie: —Commissioner Vaughan, we can give you a proper environment committee send-off.

My questions are a little all over the place. I'm going to start with the 97% of direct funding to the fossil fuel sector that you said was R and D, with more than half to clean tech, "cleaner technologies". Do you have a number for how much of that is carbon capture and storage?

Mr. Scott Vaughan: I think it's almost 100%. The classification that the government has in its budget bill is under the rubric of cleaner technologies. The bulk—I think it's over 95%—is cleaner technologies from NRCan programs.

Ms. Megan Leslie: Okay. Thanks very much.

During your press conference today I heard you talk about DFO and Environment Canada not knowing which fish habitats would be protected. With the changes in the budget bill, Bill C-38, fish habitat protection is changed to aboriginal, commercial, or cultural value.... Can you tell us a little more about that? They don't know what's protected and what's not...?

● (1610)

Mr. Scott Vaughan: I'll ask Mr. Sloan to please elaborate on this.

Mr. Bruce Sloan: When we're carrying out our audit...right at the moment, Fisheries and Oceans Canada has some $100 million of environmental financial assurances in place. Our question to them is, subsequent to those changes, would those still be kept? Would some be returned? What would be the case of people coming into the industry? Would they be required to post a performance bond or not?

Those are the areas where they had not worked out the details of the regulations. At this point, they're saying to us, and we confirmed this just a week ago before the hearing, that this hasn't changed: they don't know what the changes will be. They don't know whether they'll give some of them...if they'll continue to be held or if some will be returned.

Ms. Megan Leslie: So there's just a gap right now.

Mr. Bruce Sloan: At the present time, they haven't worked out the details. Until those details are in place, they're not sure what will unfold.

Ms. Megan Leslie: Right.

That's fish habitat. What about CEAA, the Environmental Assessment Act? We have an entirely new act. What's the status of agencies, or maybe even C-NLOPB, or the departments? How are they adjusting to these CEAA changes?

Mr. Scott Vaughan: I'll defer to Ms. Leach on that, but first, just very briefly, what we've said in chapter 1 is that with the changes to CEAA, the previous obligations that had been there in CEAA to evaluate every phase of offshore oil and gas exploration changed quite considerably.

One of those changes was no obligation anymore in CEAA to evaluate the impacts of offshore exploratory. The boards told us that, one, they were caught by surprise. Two, they then had to try to figure out what they had to do under CEAA and what they were obliged to do, under more broad terms, on the Atlantic Accord.

Right now this is a period of uncertainty, but they have said—it's in their response—that they are going to stick with the old CEAA and do all the environmental evaluations required under the old act. They're reviewing that up to March 2013. They would then decide what they're going to look at and not look at in the future.

Ms. Megan Leslie: I think I remember you saying that at the press conference as well.

The piece that catches me by surprise is that they were caught by surprise.

They said that, or that was the sense you got?

Mr. Scott Vaughan: No, no, both presidents and CEOs had called me and said they were surprised. I mean, to be fair, it was in a budget bill. I believe they were informed the day of, or the day before.

But I think the reason they phoned me to express their surprise was that this was part of their work, their daily work, to make sure that you evaluate those projects, essentially from bumper to bumper, to make sure they have a full idea of what the potential environmental risks are. With those changes, they were left asking, "What are we now supposed to do? What are we required to do legally?"

As a second question, because Environment Canada and DFO no longer have those requirements to look at those phases, they also expressed concern about whether or not the officials, the ones they've relied upon to do those assessments, would continue their expertise in those areas.

So there was a legal issue and a capacity issue.

Ms. Megan Leslie: Thanks very much.

When it comes to fracking—going to the section on petitions in hydraulic fracturing—we are often told by the government that this falls under provincial jurisdiction. But you say very clearly that there is a mandate under Environment Canada and Health Canada as it relates specifically to toxics.

Mr. Scott Vaughan: Yes, absolutely.

I'll ask Mr. Ferguson to comment further.

Mr. Andrew Ferguson: The federal mandate is to assess substances that are being used in Canada, to determine whether they pose a threat to either human health or the environment, and then, if that is determined to be the case, to control or regulate those chemicals and their use.

The Chair: Thank you, Ms. Leslie.

We go now to Mr. Calkins for up to five minutes, please.

Mr. Blaine Calkins (Wetaskiwin, CPC): Thank you, Mr. Chair.

I wanted to first express my appreciation to the commissioner. Thank you for coming. I spent a number of years on the environment committee and certainly enjoyed your candour there. I appreciate your comments today, and of course the way you keep tabs on what is happening.

I have a couple of questions for you. I'm a little confused, and perhaps you can help me understand this better. I worked in the oil field. I'm an Alberta farm boy, and of course some of us have to work off the farm, in the oil and gas sector, to support our farming habit, and I was no different.

I've worked on drilling rigs and I've worked on service rigs and so on, and I'm quite familiar with what actually happens. I've done well completions where hydraulic fracturing has actually occurred.

I looked at some of the comments you made here in the government's response to petitions, identifying some of these gaps. The points that you've raised are on identifying the substance used, assessing the risks to environmental and human health, and establishing control measures to manage the risks posed by substances determined to be toxic or capable of being toxic.

Then I went and looked for a little more information in your report. I see, for example, in exhibit 5.3, you have an oil and gas pocket typically somewhere in the neighbourhood of—well, you've actually identified it above. It says it's not to scale and typical depths are indicated. Typical well depths in western Canada at this particular point in time are well below what you show here as being the highly impermeable rock. As a matter of fact, most of the wells go through the layer of impermeable rock in order to get to the oil or gas pockets. I'm wondering if I can get some clarification on that.

Also, the Canadian Centre for Occupational Health and Safety has a list, and every oil and gas field worker that I know of has to have a transportation of dangerous goods certificate if they're involved in the transportation of these goods to and from. So every rig worker has to be completely familiar with all of the safety measures contained on a material data safety sheet. On a material data safety sheet there is the product information, such as name, manufacturer and suppliers' names; address and emergency phone numbers; the hazardous ingredients therein; the physical data; fire or explosion hazard data; the reactivity data for chemical reactions; the toxicological properties and health effects; preventative measures; first aid measures, and so on.

I'm finding it a little hard to believe that we have a gap here where I don't think one actually exists. All you have to do is simply ask what materials are being used. The material data safety sheets provide all the information, anything from toxicology right on down to human health and any of the other kinds of things that would need to be dealt with.

So I'm wondering if you can explain to me what exactly is missing here, because I'm fairly familiar with some of these chemicals and with the chemical management plan. I'm not understanding why this is receiving such criticism in your report.

● (1615)

Mr. Scott Vaughan: Thank you very much, sir.

I don't think we were trying to be critical. I think we were trying to present a portrait of the current situation.

First, I'll go through your questions. Regarding the map, it isn't to scale, and I think you're quite right. This fracking is now going down several kilometres. It's going vertically. It's going horizontally. So that's the first one.

Then, second, in terms of what the problem is, I would say—and you sound more on top of it, certainly, than I am—the question is whether Health Canada and Environment Canada are looking at that list, for example, and right now the answer is no. We've said in this report that some of the chemicals that are used have been classified as toxic substances in other applications. That would be the first part, and that then is a federal obligation.

A second part is whether the chemicals are not transported because of issues related to, for example, the back-flow. So it's not only the chemicals going in, but also then what else is coming out in addition to the chemicals used, and I'll give you one example. In Nova Scotia there are now two tailings ponds that have been sitting for seven years because radioactive isotopes, which were sitting 10 kilometres down, came out in the back-flow. That can't be transported.

I think it would be great to pose your question to officials from Health Canada and Environment Canada: are they aware of those manifests?

Mr. Blaine Calkins: Did anybody from your audit ask those questions?

Mr. Scott Vaughan: What we asked Environment Canada and Health Canada was this: what are you doing in terms of identifying the chemicals used and then assessing the potential risks of those chemicals, which have been deemed toxic in other applications?

Their answer is—up to now—almost little or nothing. They actually are going through the course of evaluating these chemicals. That will be until 2020. So right now....

In fact we started this, sir, as an audit, and we decided to do it as an information piece because right now there is no program to audit.

The Chair: Thank you, Mr. Calkins.

We go now to Mr. Julian for up to five minutes.

Go ahead, please, sir.

[*Translation*]

Mr. Peter Julian: Thank you, Mr. Chair.

I will share my speaking time with Ms. Liu and perhaps also with Ms. Leslie.

[*English*]

I just want to briefly come back to the question that I was cut off on.

Mr. Sloan, you were beginning to answer that question on the issue of the financial securities that regulators have been given around absolute liability.

My question wasn't so much around the $30 million, $70 million, $250 million threshold. It was very much to find out how much money is in trust now with the regulators from all of the oil and gas operators, so that we can a better sense of the balance in terms of liabilities. We certainly know how costly the liabilities may be if there's ever, God forbid, a huge accident.

How much is in trust now to offset those liabilities?

● (1620)

Mr. Bruce Sloan: For the absolute total across all the operators, I'd have to calculate that for you and come back to you on it.

I mean, I think we can go through.... Operators are required to post securities for the absolute limit of $30 million, so each of the operators has posted that. They are required to provide securities that can be accessed on proving fault, up to $70 million. There are securities that the boards are holding for that.

Beyond that, it is what is the financial capacity of...? The boards look at the financial capacity of individual operators, but we did not attempt to aggregate that across all operators.

We could come back to you with that information.

Mr. Peter Julian: That would be very, very helpful. Thank you very much.

[*Translation*]

I will turn it over to Ms. Liu.

[*English*]

The Chair: Go ahead, Ms. Liu.

[*Translation*]

Ms. Laurin Liu (Rivière-des-Mille-Îles, NDP): Thank you, Mr. Chair.

I'd like to quote from the first chapter, which covers Atlantic offshore oil and gas activities. It is about the boards' response. It states:

> The boards' practice [...] is to ensure that the results of up-to-date SEAs are known either ahead of the issuance of a call for bids, or sufficiently in advance of the closing of a call for bids and ahead of irrevocable decisions that would be taken by bidders and by the boards.

Yet in the report, you say that in the four cases examined, the boards had launched a call for bids before the assessment was completed. In one case, you even noted that the board responsible had granted exploration permits before the assessment was completed.

I would like to hear your comments on that.

Mr. Scott Vaughan: That is why we made a recommendation. As you said, the purpose of a strategic environmental assessment is to identify general potential risks before establishing a process, for example, for authorizations or specific project assessment. In this respect, we found a problem with timing. That is why we recommended that it was very important that strategic environmental assessments be completed before issuing calls for proposals, especially from companies. Because of the problem we observed, we made a recommendation.

Ms. Laurin Liu: Thank you.

I think there is a minute and a half left for Ms. Leslie.

Ms. Megan Leslie: Thank you.

[*English*]

I just want to finish up on the fracking and the precautionary principle, which should really be at the root of everything we do when it comes to environmental legislation.

Would you say that the precautionary principle is absent here when it comes to fracking chemicals?

Mr. Scott Vaughan: I think I would probably leave that for you to decide.

What I would say is that my understanding behind the precautionary principle is that if there is a risk of irreversible or serious damage, you actually don't proceed at all until you have sufficient information in order to make informed decisions.

What I would say on this one right now, with the lack of information...and you know, it's basic information: what are the chemicals used, and do they pose a risk?

Based on that, I don't think we have a full picture about what the risk could be.

Ms. Megan Leslie: Thanks. That's helpful.

Thank you, Mr. Chair.

The Chair: Mr. Julian, you have half a minute for one short question.

Mr. Peter Julian: Thank you very much, Mr. Chair. I want to fully use the minutes we have with the environment commissioner.

Mr. Vaughan, could you share with us—and you say it in your report—the estimate of the cleanup around the Fukushima nuclear power plant and what the liability issues were there? That contrasts, I think, very vividly with the low level of nuclear liability that we now have in Canada.

Mr. Scott Vaughan: I think in the report on the Fukushima disaster the Japanese government estimated that the full cleanup costs are anywhere from $15 billion up to I think as much as $200 billion from that tragedy. That is the full cost of all, not just within the site itself, but all the widespread issues related to fallout and the damages related to that disaster.

● (1625)

The Chair: Thank you, Mr. Julian.

We go finally to Mr. Anderson for up to five minutes.

Mr. David Anderson: Thank you, Mr. Chair.

Actually, Mr. Julian asked me a question in question period regarding this. I find it very strange that the NDP would be raising this issue, because these liability limits would have been raised had they not filibustered the bills. His House leader was the critic here. We spent weeks trying to convince him that we should pass that bill. I think probably his ideological—if you want to call it—hatred or dislike of nuclear overrode a good sense of public safety there.

I would like to give you a chance to go a little bit further. Today in question period the Prime Minister also said that we're committed to the polluter pay principle. I'm just wondering if you have any suggestions on how that might be achieved, or how we might strengthen that, beyond just raising the liability limits. Do you have any other suggestions about how that might best be accomplished?

Mr. Scott Vaughan: I may have a couple, but I certainly think this would again be an area where the committee may want to invite officials.

But one I would say just off the top of my head. We've said that, for example, first responders paid for by the private sector in offshore spills from ships go through third-party certification. By contrast, they do not have to go through that for spills from platforms, and that may be one, since the companies are the first responders. They're responsible for doing the cleanup, so that may be one to make sure that the companies actually have the capacity, because that's been a doubt now of the Newfoundland board since 2008, and that doubt remains about the capacity of the private companies to be able to respond.

Mr. David Anderson: Can I just ask you, then, how far did you engage the industry or operators in determining that? Your report is primarily dealing with a couple of jurisdictions of governments, but operators play a critical role here—they provide expertise and equipment. I'm just wondering how much time you spent with them or talking to them about their ability to provide a response.

Mr. Scott Vaughan: We certainly met with private sector officials, but at the end of the day, just to be absolutely clear, what we were auditing was only the two offshore boards as well as the federal system. I don't think it would be appropriate for us to then go and audit the private sector companies in this.

I'll just repeat that the Newfoundland board, in their regulatory oversight of the companies, have had doubts since 2008 about that capacity. We certainly also saw all the plans of the companies submitted to the boards.

Mr. David Anderson: I want to come back to the question about whether departments were receptive. You seemed to say they were. Are you comfortable with their response to your report? Do you feel that they're moving forward, that they're willing to listen to move forward on the things you suggested?

Mr. Scott Vaughan: Just to say it again, particularly on the offshore oil and gas sector, our colleagues put their heart and soul into this over two years: given the importance if something goes wrong, what are the consequences? I think when we were going through the course of this, when the gaps and the problems were being identified, the attention of the very senior public service right from the beginning...I actually haven't seen it in the five years that I've been here. This is one, I think because of the risk, where the government and senior government officials have said, "We have a problem and we will fix it." I'm very grateful, for example, to the Deputy Minister of Natural Resources and other deputies for their commitment to fix this.

Mr. David Anderson: You talked a bit earlier about the boards being surprised. It was the word you used. To be fair to them, they would not have had time, by the time you were done your report, to really take a look at the new CEAA and how it would apply to them. Is that correct? They were aware that there were changes coming and were surprised by that, but you never had a chance to talk to them about how that would then end up affecting them.

Mr. Scott Vaughan: No, I think that would be right. We did talk to them when the bill was introduced with the proposed changes, and that would have been back in the spring. That's when they both called me, and we've spoken to them subsequently, obviously, since the passage of the bill in July 2012.

Mr. David Anderson: We want to have good regulatory processes in place. I'm just wondering if you went to any international examples, regulatory streamlining or regulatory reform, that we might be able to learn from that you might be able to give us as an example.

Ms. Kimberley Leach: Yes. In terms of the offshore regime, we looked at Norway, we looked at the U.K., with Norway being pretty much the gold standard in terms of how it regulates. We also looked at other examples, for other reasons, from the United States, but the U.K. and Norway...Australia as well is a regime that's a somewhat similar size to ours.

● (1630)

Mr. Scott Vaughan: We both went down to Washington and we met with very senior officials from the Department of the Interior and other senior officials. Right now they're going through the lessons of *Deepwater Horizon*. One of the things they were surprised at, and this is a policy issue I shouldn't comment on, is that the Canadian Coast Guard has the mandate to respond to spills from ships but not to spills from platforms. Their big lesson from *Deepwater Horizon* is that to respond you need to have a seamless focus to get all your assets together and coordinated. That may be one area that I understand the government may be looking at now.

Mr. David Anderson: We all have that desire that if something happens, and hopefully it won't, you have good communication and we can work together on that.

I want to thank you for coming today.

The Chair: Thank you, Mr. Anderson.

Thank you again, Commissioner, for your report. Thank you for the great answers, which were very concise and direct, and also to the members of the committee for asking very pointed questions. The information we've gained in this hour I think is very helpful.

We will suspend the meeting for two or three minutes as we get online with the witnesses for our continuation of the study on innovation in the energy sector.

● (1630)

(Pause)

● (1635)

The Chair: Good afternoon.

We resume our meeting with two witnesses today in the continuation of our study on innovation in the energy sector.

We have a witness from Bellevue, Washington. From TerraPower, we have John Gilleland, chief executive officer. And from Edmonton, Alberta, from Syncrude, we have Glen Rovang, the manager of research and development.

Welcome to both of you gentlemen. We only have an hour, maybe slightly less, to hear your opening statements and then to have our members question you on innovation in the areas you're talking about. We'll have you present in the order you're listed on the agenda, starting with John Gilleland, chief executive officer with TerraPower. Go ahead with your opening presentation, please, sir.

Mr. John Gilleland (Chief Executive Officer, TerraPower): I'm John Gilleland, the CEO of TerraPower. Bill Gates is the chairman of TerraPower.

I'll guess we'll be a change of pace from your previous discussions. We're a young company founded about seven years ago. We are focused on advancements in nuclear power. Although I've had experience with about every kind of renewable energy you can think of, as well as fusion and other forms of nuclear, I will focus on TerraPower.

You might wonder why a young company has been started to focus on nuclear. The answer to that question lies in discussions that were conducted in 2006. Bill Gates and some of his associates—Nathan Myhrvold—were looking at the efficacy of the myriad efforts the foundation was making in their area of vaccines, medicines, and other ways to help out people. One of the keys that became very apparent is that energy, and particularly electricity, is important for raising the standard of living of people, in turn amplifying the effects of the other works the foundation was doing.

TerraPower is a private company. It is not part of the Bill and Melinda Gates Foundation. We are a separate company that Bill has started. We first did, however, an assessment of renewables, coal and other ways of achieving this increase in energy, to be made available to the two billion people on the planet who are at some risk because they don't have energy. We were quite neutral about the process.

We looked at renewables, in particular, hoping that would do the trick, but in the end we decided that nuclear power is essential as one of the elements of an energy infrastructure. We decided that we would pursue this. We of course wanted to pursue nuclear because of the concerns we all had for climate change. We didn't want to ruin our planet in the process of accelerating the movement toward the implementation of energy systems.

We decided renewables are important but insufficient, that nuclear is important but that innovation per se has not been the characteristic of nuclear, at least not in the United States for some time. We set about to try to reinvent nuclear from scratch. By that I mean we have now, in this post-digital age, great modelling capabilities that we did not have before—new technologies. We were privileged in TerraPower to try to develop a new energy system, a new form of nuclear, which would have seven key characteristics.

One of the characteristics, of course, is that it would have enhanced safety. We started the company before Fukushima, but we decided that one of our goals would be to achieve what's called inherent safety features in a nuclear plant. It was important for us to come up with a scheme where no on-site or off-site power is required in order for the reactor to keep itself cool and not have a Fukushima-like experience.

We decided that this sort of energy should be available to everyone. We looked for ways to use the 90% of uranium we now throw out as part of the enrichment process. About 90% of the uranium we mine is not used, so we decided that the concept should use that uranium. It should use the uranium fuel more efficiently.

● (1640)

One of our concerns was proliferation of weapons and the materials that make nuclear weapons, so we decided we would have as a goal the development of a system that did not require the risks associated in the long run with enrichment or what's called reprocessing.

We then decided that another goal should be to reduce the environmental impact, which means if you don't do these other things, you have much less waste produced along the way, i.e., you would have a simplified nuclear infrastructure. Lo and behold, we found that the seven objectives we had in mind were indeed achievable. This was a surprise to us, and led to the acceleration of the company into a more serious development phase. We now employ the national laboratories in the United States, the universities, several companies in the United States, as well as institutions in Korea, Japan, and Russia in the pursuit of the necessary technological developments to make this reactor possible.

This reactor is called a travelling wave reactor. The key to its operation is that it can produce power on the basis of using that depleted uranium, we call it, or DU, which is in great supply in the United States and other countries. These are like mines made by man. If you can use depleted uranium as a basic fuel, then all these other objectives fall into place.

So one might ask, what's the catch? The catch is that it requires some materials development and fuel development, but we were stunned to find that's about all it needs. The concept is based on types of coolant and fuels and so forth that have been used before, so the basic technologies are there. Innovation brought us to this point. We now have about eight universities, five companies, and maybe 30 institutions around the world working with us in a coordinated way. Our objective is to have some sort of prototype working in the early 2020s. So far so good. The testing we're doing around the world is turning out very attractively.

Mr. Gates and others are participants, not just investors, in this activity, so we are having, I'll call it, a very good time with an example of nuclear innovation. I'm sure other such endeavours should be undertaken. We're an unusual company. We would like lots of competition, because our fundamental goal in starting this whole business was to try to solve a problem, i.e., the problem of bringing energy to more people as fast and as economically as possible without severe impact on the planet.

You had a few questions. I can either stop for Q and A or I can address some of the questions you sent me via e-mail. What would you like me to do?

● (1645)

The Chair: After the next gentleman makes his presentation, members of the committee will ask the questions, so we'll just wait.

Thank you very much for your presentation, which was a fascinating and a refreshing approach to evaluating nuclear energy and moving ahead.

We go now to Syncrude, from Edmonton, Alberta, Mr. Glen Rovang, manager of research and development.

Welcome. Thank you for being with us today, and please go ahead with your presentation, sir.

Mr. Glen Rovang (Manager of Research and Development, Syncrude): Certainly.

Good afternoon, members. I am pleased to appear before you today to speak about research and development efforts at Syncrude. The Syncrude R and D department exists to directly support the Syncrude operation. For us, the goal is to develop and deploy technology innovations to deliver enhanced reliability, profitability, and environmental performance in the Syncrude operation. You will see that innovation in the oil sands is about far more than producing oil. It's about producing oil in an environmentally responsible way.

Research was actually the first department at Syncrude; it was formed in 1964, which was 14 years before we produced our first barrel of oil. Today, about 100 scientists and technologists work at our research facility here in Edmonton. Syncrude has a proven track record for developing technology suited to the oil sands. We have more than 140 Canadian and U.S. patents for our technologies, and many of these are in use in the oil sands today by other companies as well. More than half of our $60 million annual research budget is spent on environmental research activities. We remain one of the top 50 R and D spenders in Canada.

We have a commitment to R and D. As part of it, we are responding to public concerns and government requirements for more rapid reclamation of former mining and tailings areas. As part of these efforts, we collaborate with universities across Canada and with other organizations on research projects aimed at continuous improvement in the development of Alberta's oil sands, as well as the environmental aspects of that development.

I want to show you a chart, which hopefully you have in front of you, of our resource distribution for 2013. This is expressed in terms of our total effort, which includes expenditures. We can see by looking at the tailings and fluid fine tails management category and at the environmental research category that together these form about 58% of our total effort. We also have efforts in our core process improvements, equipment reliability, bitumen processing—which is on our upgrader side—and in analytical research as well.

We also support different aspects of environmental R and D. I'm going to talk about emissions for a second. We have supported such projects as the flue gas desulphurizer, which was installed and operational in 2006 with our Coker 8-3 expansion, the Syncrude emissions reduction project, which will reduce sulphur emissions by more than 60%—this is a $1.6 billion project that does not increase production and is going to start operation in 2013—and further, reclamation research, which includes research on land forms, soils, and revegetation, such that sustainable closure landscapes are achieved when we are finished with mining activities. There are a couple of specific research chairs in this area: forest land reclamation with the University of Alberta and mine closure with the University of Saskatchewan.

In the areas of tailings and water management, we have several projects under way. I'm going to speak to a few specific examples of those as well.

Of course, research and development efforts sometimes result in rapid deployment into the field of equipment and process technology, and in some cases, decades of research precede full-scale field demonstration. One of those examples is what we call Base Mine Lake. The research behind Base Mine Lake began back in 1989 in the field, with tailings being placed in demonstration ponds and then capped with water. They have been carefully monitored over the last two decades to get an understanding of the biological and ecological development. You can see some images in these slides that demonstrate how, over the course of time, these tailings-capped ponds developed.

That has led us to what we call the Base Mine Lake demonstration project. This is a much larger version of those earlier test pits—about eight square kilometres in size. At the bottom of this lake is a mined-out pit that contains clay-based tailings materials. This will eventually become a clay-bottom lake similar to other lakes in our region, but will involve essentially two phases.

● (1650)

Since December 31, 2012, this particular body is no longer a tailings facility. It's been turned over to us as a lake facility. There are no longer any active tailings going into that location.

The initial phase of development will be a water remediation phase through ecological development of the lake, and in the long term this will become part of the closure landscape in Syncrude's overall closure picture.

We're also doing novel research in the areas of water treatment. An example would be the use of petroleum coke. Coke is a by-product of our refining operation. The coke particles are in fact activated carbon that have the ability to do detoxification of naphthenic acids, and they're also a filter for suspended solids. If you take a look at the image on the upper right, you can see a container of coke particles, a container that has slightly yellow-tinged process water. When we pass the process water through the coke particles, we end up with the clearer water that you can see, and it sufficiently removes naphthenic acids so that it can support aquatic life, such as the goldfish that you see there. In fact, we have a tank down at our research facility where these goldfish are thriving today.

The very bottom image on this page is a much larger test pit that we have constructed. We have several of them, in fact, where we've placed coke particles, and we're flowing our process-affected water through that now and testing the results. So we continue to work on these novel water treatment technologies to provide more options for future reclamation.

Switching gears to tailings treatment for a second, we have a process that we have recently developed that's called centrifuged tails. The process consists of three basic steps. Initially we flocculate the tailings materials, which is essentially water with suspended clay particles. The flocculant is a polymer that is similar to that used in municipal water treatment. This is in turn then spun in centrifuges to produce what is known as a cake. It's a higher-solids content material. Then the cake is placed in pits for subsequent further dewatering and dessication, to the point that we can then undertake reclamation activities on top of that.

On the bottom right you can see one of our test locations where we're driving a vehicle on top of what was once tailings material. We have moved through technology development phases on this, and currently we have under design and construction a full-scale centrifuging plant about the order of $1.8 billion that will be operational around 2015. This centrifugation tailings technology development is important to us. It enables us to comply with the ERCP Directive 074.

I'll move to what we call the Sandhill fen project. This is an example of the development of a man-made groundwater-fed wetland. On the upper right there's an image of a naturally occurring fen in our region. What we are doing is replicating that in our tailings environment. The Sandhill fen technology, as we call it, will essentially enable soft tailings closure and reclamation. We'll have water table control through the placement of the hummocks, and you can see a little bit of that in the lower right where we've actually constructed this Sandhill fen. It's a 17-hectare pilot where we have the rises and falls in the landscape to enable these groundwater-fed wetlands to thrive.

An important part of this is the ability to transplant and place peat so that it will grow effectively, as well as other vegetation. On the lower left, there are some examples of test cells that preceded the significant pilot in order to understand how we could effectively do that with the peat and the vegetation.

So we are progressing this such that we can have the types of groundwater-fed wetlands in our landscape that were there before mining activities.

● (1655)

The information on our current reclamation status dates from year end 2011, given that the 2012 data is currently still being reconciled. The total land disturbed in our operations is just under 26,000 hectares. Soils have been placed and are available for revegetation on 1,200 hectares. Our permanent land reclamation is approximately 3,200 hectares. And land that's certified and returned to the Province of Alberta totals 104 hectares, which is the only certification in the oil sands region. We do have an upcoming area for recertification called South Bison Hills of approximately 1,000 hectares, and you can see an image of the South Bison Hills here on this page.

That's the material I intended to cover. Thank you for your attention. l will also take any questions at the appropriate time.

Thank you.

The Chair: Thank you very much, Mr. Rovang, for your presentation.

We go now directly to questions. For the seven-minute round we'll have Mr. Allen, Mr. Nicholls, and Mr. Simms.

Mr. Allen, up to seven minutes, please.

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

Mr. Gilleland, I'd like to start with you because you've posed some very interesting thoughts with respect to where the Bill and Melinda Gates Foundation is going on this, as well as your company.

You indicated the study started in 2006. One of the things you went over very quickly, though, was the idea that renewables, in your conclusion, based on your studies, would be insufficient. What led to your conclusion that straight renewables that we know of today—I assume you mean wind energy and other things—would not be sufficient?

Mr. John Gilleland: Mainly it had to do with baseload, as well as the diffuseness for solar and the diffuseness for wind. It gets down to energy storage, and they are intermittent sources. As everybody knows, the wind doesn't always blow, the sun doesn't always shine. There's a tendency for the wind to be blowing where the people aren't and the sun to be shining where they aren't, but there are some very good exceptions.

As we went through this, and just believed in mathematics and what the experts told us, we came up with the view that wind and solar should be pushed. We also came up with the idea that, via the arithmetic and by what experts themselves told us, perhaps 10% of the needs of people could be met by solar, if you're an advocate, and by wind somewhat more, but it left one quite short.

We then took a look at what people were advocating with regard to coal and the sequestration of $C0_2$, and we did not see very viable options there, plus some countries are a bit short on coal.

We moved from that to examination of nuclear concepts, and I won't say we disliked the nuclear, but we saw an opportunity to do considerable improvements over what we had seen used in the last century and the beginning of this century. The United States was doing, for example, innovative work in nuclear, but that pretty much ended in the 1990s. The belief that uranium was not going to be as rare as people thought, other priorities, and Three Mile Island all led to a decline in the basic research in nuclear.

You can argue somewhat about whether it's 10% for solar, or 15%, 18%, or 8%, but all of the discussions we had with the experts came out in that range, despite the fact that the solar constant, of course, multiplied by the surface area of the earth, is a very big number. The practicalities brought us to that conclusion.

It was an interesting experience, as in the initiation of it we had models—

● (1700)

Mr. Mike Allen: I've only got about four minutes left, so I'd like to get a couple more in.

As part of the analysis that you are doing, does the nuclear technology that you're talking about allow for different kinds of sizes? We've had different presentations that small nuclear could be in the future. Are you seeing that as a possibility?

Mr. John Gilleland: Yes, small modular reactors are a possibility. In the type of reactor we talk about, some of these inherent advantages are accrued only in the larger types of reactors. Ours tend to be in the range of a few hundred megawatts and above.

Mr. Mike Allen: Okay.

You talked about testing. Realistically, if you don't have a model that's potentially licensed, what kind of testing are you doing today?

Mr. John Gilleland: Our focus is on materials and fuels. Because this particular type of reactor does not have to be fuelled very often —in fact, in some versions the initial load of fuel will last for decades—it means that the materials and the fuels that are in the reactor have to be warranted to be able to withstand that environment for decades.

That is the emphasis of our research. There's lots of other stuff, but if I have to pick out the main technology that we're working on, it's that.

Mr. Mike Allen: Okay.

One thing we've heard before when it comes to modular reactors is that sometimes it's a real challenge getting some of these licensed. It can take a significant amount of time.

Have you had any discussions on that? And given that you're looking at a prototype by the early 2020s, have you entered into any preliminary discussions on what it might take to license your technology?

Mr. John Gilleland: Yes, we have. They are preliminary. We have worked out with experts in the field a licensing plan and what sorts of things you would have to do to gain that licence.

One of the advantages we have is that very similar reactors have been licensed before.

Mr. Mike Allen: If you don't mind me asking, what kind of budget have you allocated to bring this to fruition—to a prototype?

Mr. John Gilleland: To a prototype, it will take several billion dollars. That's what I can tell you right now, that it's in the order of $4 billion for a prototype. The research and design budgets are about a quarter of that.

Mr. Mike Allen: Thank you.

In terms of who you're working with, you talked about eight universities, five companies, and approximately 30 institutions around the world. Are you getting some of our major players that develop some of these major nuclear facilities involved in this? Are they interested in taking part in this with you?

Mr. John Gilleland: Yes, they are. Right now we're in preliminary discussions with a number of companies.

Mr. Mike Allen: Okay. Thank you.

The Chair: Thank you, Mr. Allen.

We go now to Mr. Nicholls for up to seven minutes.

Go ahead, please, sir.

Mr. Jamie Nicholls (Vaudreuil-Soulanges, NDP): Thank you, Mr. Chair.

Welcome, Mr. Gilleland. My questions are going to be primarily for you.

Mr. Allen mentioned modular facilities. The previous study we did here was trying to find alternative power sources in the north, which uses diesel fuel. While we were doing that study, I discovered the travelling wave reactor, and I'm interested in asking you some questions about it.

The fourth-generation reactors seem different from previous nuclear technologies. They seem to promise to be cleaner and smaller. I'd just like you to maybe outline or summarize the advantages of the technology in terms of security issues, proliferation issues, and environmental safety.

● (1705)

Mr. John Gilleland: First of all, our approach is not very small, but I'll be happy to talk about the proliferation advantages and safety advantages.

Proliferation advantage comes mainly from the fact that the fuel is left inside the reactor for some length of time. The proliferation advantage comes because eventually the reactor system can sustain itself without the need for enrichment plants. In Iran and other places, you know that's a problem. Because depleted uranium and natural uranium can be used as the fuel and used much more efficiently than previous reactors, you don't need to take the waste and separate out plutonium, make a new fuel and put it back in; therefore, one has eliminated the proliferation risk of reprocessing, as it's called.

Finally, you can take this reduced amount of waste that the reactor produces and put it directly in the ground. Some folks at MIT and Berkeley are advocating the use of the bore hole, which means you immediately dispose of the waste. So the infrastructure is so simplified and the number of times you have to refuel so reduced, the approach to proliferation is much more attractive.

When it comes to safety, the reactor operates at higher temperatures. This is not our idea; it's been put forward before. If you have a reactor that operates at these higher temperatures and something goes wrong, clever engineers can arrange a chimney effect basically that allows this coolant, which is very good at conducting heat, to dispose of that heat à la the chimney effect to an infinite heat sink, namely the atmosphere. You can screw up the operations, the operator can do the wrong thing or not, a wave can come and shut down diesels, but this thing will stay cool enough to be fine.

Mr. Jamie Nicholls: My second question is twofold. Regarding the target markets for TerraPower, which countries are you thinking about selling this technology to? Have any Canadian agencies contacted you about this technology, governmental or private?

Mr. John Gilleland: I'll start with the second first. No, no Canadian agencies have contacted us. I had experience decades ago with Canadians who were working on fusion and nuclear, but that's a decades-old experience.

We are trying to interest large companies in the United States, Japan, Korea, etc., in adopting this. Our plans are not to become a Westinghouse or a Toshiba; our plans are to influence the direction of nuclear in the world. We'll get something out of it, we hope, but we're hoping that the profitability presented to these large firms will motivate the sales everywhere in the world—China, eventually India, Africa, etc. You could ask what good are these reactors around small villages, but the fact is that villages in some parts of the world are huge populations. Our goal is to do this development and catalytic investment, which will influence the big players.

Mr. Jamie Nicholls: It's funny, Mr. Gilleland, because we're talking today a lot about changing the nuclear liability regime here in Canada. In terms of liability issues, it hasn't been updated in quite a while. It's surprising to me that no Canadian agencies have been looking into your technologies. It seems on paper that it would be a safer option, so I'm puzzled that the Canadian nuclear agencies haven't been in contact with your company.

My third question regards funding for this innovative idea. I know the Department of Energy is involved in this. You have the Los Alamos National Laboratory and Lawrence Livermore. I'm wondering what the funding mix is. I know private investors are involved in this as well.

In terms of Mr. Gates talking about getting a prototype online by 2022, what has been the funding mix to get to the point of commercialization for this idea?

● (1710)

Mr. John Gilleland: Right now the funding has been entirely private. It has been from Mr. Gates and other visionary investors. The government has been very supportive, helping us in ways it can to allow us to have discussions on a foreign basis as well as domestically. They've been very cooperative in making research samples and materials that they have worked on in the past available to us. They've cut through the red tape so that we could do that. The national laboratories have been very helpful because of the support from DOE.

But the funding, including most of the money in the national labs, has come from us. Eventually when it comes time to—

Mr. Jamie Nicholls: Just to clarify something, the Department of Energy's implication is that there is a spending implication for that department in terms of their collaboration with you. Is that correct?

I know, in terms of funding, maybe activities of your company have no direct subsidy from the U.S. federal government, but they are using the weight of those agencies to assist you, and there is a spending implication there.

Mr. John Gilleland: I think there is. We pay for CRADA's joint development things, but some of the stuff they've had available they've gone ahead at their own expense, whereas the specific tests conducted precisely for us have used our funds. But, yes, indeed, because we generated this interest, a true intellectual interest, in the labs, they've gone out of their way to do things for us as well.

The Chair: Thank you, Mr. Nicholls.

Mr. Simms, you have up to seven minutes. Go ahead, please.

Mr. Scott Simms (Bonavista—Gander—Grand Falls—Windsor, Lib.): Thank you.

I just want to follow up on the conversation you just had about that. You alluded to direct help, but also that cutting down on regulations makes it a lot easier for innovation. In this particular case—and the question is for both, from both sides of the border—do you look at things like tax credits that are available, in a large sense, to help you innovate, or do direct subsidies become a better mechanism by which you can move?

Now I know, Mr. Gilleland, mostly you're private money, but I'm sure you have some experience, if you would like to weigh in on that first.

The Chair: Go ahead, Mr. Gilleland.

Mr. John Gilleland: Right now, of course, they're tax credits because we're not profitable. But my experience in the past with renewables, for example, and some nuclear stuff.... One of the great times in California, when I was doing this sort of work, was when the regulators would allow research to be an allowable expense for utilities. When that went away in California, it had a profoundly negative effect. This may be useless information to you, but I'm just giving you my own experience here.

I found direct funding from a government very useful if it was attached to an attitude that you're allowed to take reasonable risks for big rewards. That's typically not a government characteristic, unless it's declared clearly to be R and D, in which case, of course, you're forgiven for more give and take in the results.

I think the ARPA-E that DOE has going is a refreshing change from some of the ways I've seen governments fund things. Again, I'm speaking of my experience in the U.S. I apologize for having very little experience in Canada.

I don't know whether this is helpful.

Mr. Scott Simms: No, it certainly is. All information is helpful here.

Mr. Rovang, would you like to come in on that as well? Being on this side of the border, maybe you'd like to talk about the SR and ED tax credit as part of that.

● (1715)

Mr. Glen Rovang: Certainly, our research and development efforts, which we conduct, are submitted to SR and ED. In addition, if there are research and development qualified activities that are conducted in our operations, we will also consider and submit those, if appropriate. How it mechanically works is this flows through to our owners as tax credits, but it's certainly one of the items that does help to encourage research and development activities.

Mr. Scott Simms: Am I good on time here, Mr. Chair?

The Chair: You have three and a half minutes.

Mr. Scott Simms: Mr. Gilleland, I'm going to start with you on this one, but just very briefly, because I only have a few minutes left.

Earlier, you mentioned the term “carbon sequestration”. Pardon my ignorance—I'm a guest here on this panel today—but I do remember some heavy investments into carbon sequestration. There was a great amount of interest in Europe about it. I just want to get your opinion on where we are with that now.

Is it something that is stagnant, or is it, pardon the expression, full steam ahead?

Mr. John Gilleland: My impression—and please take it as an impression, since I haven't look at it for a while—is that it is somewhat stagnant. But I would not like to present this as the latest information. That would be five years ago.

Mr. Scott Simms: So it's not as prominent to you as it once was?

Mr. John Gilleland: No.

Mr. Scott Simms: Mr. Rovang.

Mr. Glen Rovang: Is the question at hand the one with respect to sequestration?

Mr. Scott Simms: That is correct.

Mr. Glen Rovang: We are interested, and we partner with others for research in that area. We don't directly conduct research at our facility, but we do participate with others. Currently, we are concentrating our resources on a process efficiency that in turn directly reduces emissions, instead of having to sequester them once they are produced. It's certainly an area of interest.

Mr. Scott Simms: Is that something the federal government has invested in heavily, or is it your own investment?

Mr. Glen Rovang: At this point, I would say it's our own investment, but it is leveraged through work with others. By working collectively with others, we essentially leverage our effort, resources, and expenditures.

The Chair: You have a minute and a half, Mr. Simms.

Mr. Scott Simms: That's not bad.

I want to talk to Mr. Rovang for just a moment.

Syncrude collaborates extensively with academia, with the universities. To that extent, how much do you consult with the public as well?

Mr. Glen Rovang: That's an interesting question. I want to answer it in two parts. First, I just want to touch on the collaboration with academia and universities for a second, because a significant part of that is the involvement of the Natural Sciences and Engineering Research Council. Basically, the chairs at the university that we participate in are also partially funded by the Natural Sciences and Engineering Research Council. I guess it's an indirect answer to your question initially, but if you like, the public funds and moneys are actually also supporting those university chairs, so that's the tie-in.

With public consultation, there are different processes in which what is important to the public enters our specific research and development activities. An example I may have mentioned earlier was that public stakeholder desire for more rapid and effective reclamation is translating directly into our efforts. As I mentioned, we have a high degree of environmental research. Over the years, we have shifted from some of our fundamentals. For example, bitumen production research, while still a key component, is no longer nearly as large as our tailings and environmental research, which are both demanded of us as a company—it's something we want to do—from a regulatory perspective and also from a public stakeholder perspective. We do receive feedback and react to that.

● (1720)

The Chair: Thank you, Mr. Rovang.

Thank you, Mr. Simms.

As the members can see, we have the bells going for votes. We'll take about another five minutes. I think that has been agreed to.

Mr. Leef and Ms. Crockatt can divide that five minutes between them as they wish.

Please, go ahead.

Mr. Peter Julian: I have a point of order.

The Chair: Yes, Mr. Julian.

Mr. Peter Julian: Actually, we had agreed to 10 minutes. The bells are for 5:45, so it was to go right to the end.

The Chair: Okay, that's fine.

Go ahead, Ms. Crockatt.

Ms. Joan Crockatt (Calgary Centre, CPC): Mr. Gilleland, you are talking about fourth-generation reactors. I just wanted to ask you a little bit more about that. According to my information, it will take at least 15 to 20 years before one could actually be built. Is that what you are working with too? It looks as though your timeframe is a little shorter than that.

Mr. John Gilleland: Yes, our timeframe is shorter. We hope that by 2023 we could have a prototype up and running. I can't warrant that date, but we are that optimistic because the particular concept is a variation on reactors that have been built before. We found that innovation can lead you to adopt some things that exist and do new things with them. That's our approach. There are other concepts that aren't planned to be online until 2050. There are a number of concepts like that as well, including some of our own.

Ms. Joan Crockatt: I really appreciate your moral cause, that you want to bring energy to people who don't have power right now. But I wonder whether you're going to be able to secure a social licence to operate by putting a nuclear reactor in third world countries.

Have you given consideration to that?

Mr. John Gilleland: We've given consideration to it, and I cannot pretend I can predict social response that far into the future. Therefore, our approach has been to try to develop this reactor in countries that have nuclear expertise, but to design a reactor that one of my Korean colleagues said is socially responsible to export. For example, this particular type of reactor could be received and operated without the need for a sophisticated infrastructure, and it would have these inherent safety features that we mentioned.

The attempt is to formulate and develop and demonstrate a reactor that is as close technically as you can get to something that an unsophisticated infrastructure could accept. That's the best answer I can give you.

Ms. Joan Crockatt: What essentially is the barrier, then? Is it just technological at this point?

Mr. John Gilleland: The barrier is the length of time it takes to show the device operates as you predict. There's this profound enhancement and modelling capability, a huge database that was not available in the previous century, and these side tests that you can do. The barrier, basically, is to find the sponsor and be up and running, and to build this thing efficiently.

We're thinking that in the end it will take state money, not just the money of visionary investors, to build this device. The 2022 schedule assumes that some state does indeed step in to support it.

Ms. Joan Crockatt: Thank you.

I'm going to turn my time back to the chair now.

The Chair: Thank you very much, Ms. Crockatt.

Mr. Leef, you have about four minutes. We have to get out to the vote soon.

Mr. Ryan Leef (Yukon, CPC): Thank you, Mr. Chair.

I'm on the record thanking Mr. Julian for his cooperation and good nature today.

The Chair: Such cooperation.

Mr. Ryan Leef: My question will be for Mr. Rovang, before my colleagues get distracted because of these votes and we all have to rush out.

There was a question posed a bit earlier with respect to the SR and ED tax credits. There's an implication that research and development is done because it's incentivized. I'm wondering if I could get you to project the future for your company in continuing to invest in R and D.

I noticed in your presentation that you put $60 million into environmental research. Was that to improve the bottom line? Is that to simply comply with regulations that exist? Is that for a corporate social licence, or is that investment also because it embodies the corporate values of today's industry, or a combination thereof? With those questions in mind, I wonder if you can project the future investment picture in terms of environmental research and development.

● (1725)

Mr. Glen Rovang: You hit a couple of the answers actually in your question, but research and development for Syncrude is certainly in our DNA. We started as a research and development organization long before the company was the much larger company of today, back in 1964 with our 30 employees of Syncrude.

Certainly, our research efforts are targeted toward those areas I spoke about, the environmental areas, so environmental and tailings management are key, but it's also continued efficiencies that have benefits in emissions and also in profitability. And we continue to work on new and better processes, especially in our core technologies, which are really those that are key to our operation and that we have developed. We need to continue to improve those.

I don't see that we would stop pursuing these. In fact, innovation for us is key to our environmental performance, to our social licence, and to our ongoing profitability and good business sense. So for Syncrude, yes, research is in the future.

On your comment on incentivized research, we do research for those reasons. It's good business and it's good for sustainable operations and for improvement in performance, not necessarily for external incentives, while those do help.

Mr. Ryan Leef: Gentlemen, thank you very much to both of you for your time today.

The Chair: I want to thank you both very much. This is fascinating information. It will be very helpful for our study. Thank you very much, Mr. Gilleland, from TerraPower, and Mr. Rovang, from Syncrude.

The meeting is adjourned.