

Hebron Public Review Commission
Hebron Development Application

Record of Proceedings

Public Review Sessions, Day 5:
Development Plan and Benefits Plan Session

28 November 2011

Holiday Inn
St. John's, Newfoundland and Labrador

Public Review Commission

Commissioner: Mr. Miller Ayre

Official Clerk: Ed Foran

Proponent:

ExxonMobil Canada Properties

Senior Project Manager for Hebron Project &
Vice-President of ExxonMobil Canada Limited: Geoff Parker

Hebron Project Technical Manager: Dave McCurdy

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Development Plan and Benefits Plan Session

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COMMISSIONER'S OPENING REMARKS

COMMISSIONER (Miller Ayre): Well, I think I can certainly forego the long and laborious statements that I usually make. We're not sure what we're going to do with the time, that's the question. Right. I think that my opening comments, apart from welcoming everybody here, really relate to procedure, which everyone in the room is aware of at this point.

So, I guess, for purposes of the record we'll take, as read, the detail with regard to procedures and outlining what we've done prior to the beginning of the hearings. So Geoff, now, so that remains as to whether you'd like to give your presentation to your family. (Laughter all around). Are they here?

GEOFF PARKER: I can do it at home tonight. (Laughter all around).

COMMISSIONER (Miller Ayre): But the difficulty with the absence of this is that I don't know that we have anyone who we want to proceed with right now.

ED FORAN: Our first presenter is actually at 10:15. And then, I mean, we have a published schedule, and if we Unfortunately, people are obviously scheduled per the, are here per the schedule, so.

COMMISSIONER (Miller Ayre): Yes. Now is everyone here in-house so to speak? Mr. Daley is there. Okay. Well, I think, I guess we will go through the process then, I think that's fair enough. Mr. Daley should see the presentation. And so we will. I think it is best just to do that, Geoff, just to do it. And then we will But you're not up first, though, are you?

ED FORAN: Charles Newhook is up first.

COMMISSIONER (Miller Ayre): Yeah, Mr. Newhook is up first. Okay. So we'll do the presentation and then we'll take a coffee break, and we will have our session that we usually have because we have some questions. But I think, just for the record, I think the media and so on might well show up in later in terms of the response you had for the question with regard to journeymen and with regard to returning labourers or whatever the case. We can get to that, we should do that later.

GEOFF PARKER: Okay.

COMMISSIONER (Miller Ayre): Okay? So, and I certainly hope that you get the proper round of applause when you finished.

GEOFF PARKER: For a change.

PROPONENT'S PRESENTATION

GEOFF PARKER: Good morning. First on behalf of the entire Hebron team, I would like to thank you for the opportunity today and in the coming days to talk about the Hebron Project. We are very proud of the project and the work that is being done on it to date. During the sessions we'll talk about our fundamental commitments to safety and protecting the environment, as well as our general approach to the proposed and potential development of the petroleum resources within the Hebron Significant Discovery Area.

We will outline the framework that ExxonMobil has created to put these commitments into action. That framework is called the Operations Integrity Management System, or OIMS for short. OIMS is a structured and rigorous approach to identifying hazards and managing risks. We will also cover the tremendous benefits the Hebron Project represents for the people of this province and the entire country, and we will explain how the project will meet the requirements of the Benefits Plan.

But before we get into all that, I would like to give you a little background on myself and my colleague joining me at the table, Dave McCurdy. I'm Geoff Parker, and I'm the Senior Project Manager for the Hebron Project, and Vice-President of ExxonMobil Canada Limited. I'm an engineering graduate from the University of Western Australia, and I've been with ExxonMobil for more than 20 years. During that time, I've worked on gravity based structure projects in Australia, Western Europe and Russia.

Dave is the Hebron Project's Technical Manager. He's a mechanical engineer who has spent nearly 30 years working in the International Oil and Gas Industry with ExxonMobil. Dave has lived and worked in the United States, Canada and Italy, and has been with the Hebron Project since early 2009.

A lot of work has been undertaken and substantial progress has been made since the Hebron agreements were signed by the province and the Hebron co-venturers three years ago. You can see the names of our co-ventures listed on the slide. They are: Chevron, Suncor, Statoil and Nalcor, and we are very pleased to be working with these companies who share our commitment to responsible development.

Our Development Application, which we submitted earlier this year, lays out our plans for the life of the project. We are confident that we have a strong project. Our plans for engineering, construction and operations are being developed to ensure the safety of everyone involved in the project. We've conducted a detailed Environmental Impact Assessment which included significant interaction with external stakeholders through the Comprehensive Study Report process. We have worked diligently to ensure that our project is having a positive socio-economic impact.

The Hebron Development Application has been assessed by the Board and deemed to be complete for the purposes of this Public Review. That scrutiny will continue during the review process and throughout the remaining regulatory process. The project application has been shaped, to a significant degree, by the input received from a number of parties.

The project team consulted with the supply community, post-secondary institutions, municipalities, provincial and federal government officials, the Offshore Petroleum Board, as well as local organizations and other interested parties during the extensive public consultation that led to filing of the Development Application.

The Hebron Project has a number of direct benefits for the people of this province. First and foremost, it will provide meaningful jobs and careers for Newfoundlanders and Labradorians; diverse jobs for a diverse workforce.

Furthermore, our investments, combined with the province's equity in the project, plus the royalties and taxes generated from the operation, will help fund provincial infrastructure, social programs, research and development, education and training and services for decades to come.

And it's very important to recognize that the Hebron Project will offset projected declines in oil production offshore Newfoundland and Labrador, and will help meet global energy demand for many years into the future.

During this Review Process we should keep in mind that the Hebron Project is in the defining stage that occurs prior to detailed engineering and detailed execution planning; and while all details have not been developed at this stage, we can confirm that the engineering and execution plans will be consistent with the Regulations, Development Application and Benefits Agreement.

Commissioner, I am here today with members of the project team to walk through our plans and answer your questions, as well as the questions from other interested parties.

This project is an important one for everyone in the room. If the Development Application is approved and the co-venturers sanction the project, it will benefit virtually everyone in the province.

Now I will provide a Summary of our Development Application, starting by outlining the commitments that underpin our plans for development of this world scale resource.

Summary of Development Plan

So we frame our commitments in terms of successfully delivering the Hebron Project, while doing that, achieving world class levels of safety, security, health and environmental performance. We will be providing substantial benefits to Newfoundland and Labrador, and building and strengthening relationships with the Newfoundland and Labrador community, and, ultimately, creating an offshore platform that will operate safely and reliably.

The Development Application, itself, consists of two primary documents: the Development Plan and the Benefits Plan, and some supporting documents: the Concept Safety Analysis, Socio-Economic Impact Statement, Comprehensive Study Report and Development Application Summary.

Throughout the Development Application, we describe our core value around safety. It is very important to us that everybody who works on the project gets to go home at the end of the day in the same healthy condition they were in when they started the day. We've really pushing towards our vision of nobody gets hurt, and we've begun applying some programs already in the engineering and the construction site during the early stages of construction.

We've been working with many of the local contractors in Newfoundland and Labrador, and for the last several years we've been holding safety forums here and sharing our tools, our expectations around safety, and learning from them at to how they've been able to manage safety in the province. So the partnership around safety has already begun.

But safety isn't just around safety on the construction sites, it is also around designing for Safety. And one of the documents describing the early initiatives around that is the Concept Safety Analysis which forms part of the Development Application. The Concept Safety Analysis identifies major hazards associated with the Hebron facility, taking into account the basic design concepts, the layout, and the intended operations. It assesses the risks to personnel and the environment resulting from these hazards, and then those risks will be addressed during the detail design phase. So you can think about the Concept Safety Analysis as being the first step in a structured process for risk management that will continue throughout the engineering, construction and operations phases.

You can also see on the right, another part of safe define which is making sure you understand the loadings on the platform. And so that is a scale model of the gravity base structure in the offshore engineering basin in St. John's where we're evaluating the wave loads on the structure.

The Development Plan also describes the petroleum resource and the offshore platform facility. The resource was first discovered in 1980 and then further exploration in 1999 discovered Pool 1. Pool 1 is the largest of the five pools. It contains a heavy crude oil.

The five pools, we estimate the recovery around, between 660 million barrels to over a billion barrels of oil.

The facility itself, we talk about that in terms of a topsides and a GBS. The GBS is the concrete gravity based substructure which is predominantly the piece under water, and topsides is the drilling and production equipment which is predominately above water. The GBS consists of a single shaft and in that shaft are 52 well slots through which the wells are drilled. The base contains 1.2 million barrels of oil storage. Then the topsides is sized for an oil production rate of 150,000 barrels per day. You can also see that there is a large amount of water injection on the topsides and that's to maintain the reservoir pressure so that we can produce the heavy oil that I mentioned on the left-hand side of the slide.

This overview of the construction plan shows, on the left-hand side, the various topsides modules which make up the topsides that I showed on the previous slide. Consists of a Utilities Process Modules, Living Quarters Module, Drilling Support Module, Drilling Equipment Module and a Flare Boom Module. And all of these modules come together at the Bull Arm integration site where the complete integrated deck is formed. So all those modules together on the integration pier at Bull Arm form that deck that you can see there.

And then at the same time as their topsides is being constructed you can see the gravity base structure is also being built with the base in the dry dock at Bull Arm, then it floats around the corner in Mosquito Cove to the deepwater site where the gravity base structure is completed while it's floating. Once the gravity base structure is complete, it is joined with the topsides. So the complete integrated deck that we had over here is floated over on top of the GBS to form the complete platform. Then, that platform is towed out to the Hebron field, set down on the seabed where it sits under its own weight; hence, called a gravity based structure. It is connected to the pipelines that export the oil to the offloading system where it can go to tankers.

So it looks very simple on one slide but, really, believe me, this is a large world scale complex project.

This shows the overall time line for the project, where we commenced FEED, front-end engineering and design, last year. Earlier this year, we submitted the Development Application and a few months ago we actually commenced the preliminary site work at the Bull Arm site. By the end of the year, we expect approval of the Comprehensive Study Report, the Environmental Impact Statement, and then next would be commencing the detailed design for both the topsides and the GBS. We'd be targeting Development Application approval, followed by project sanction, and then construction of the GBS would commence at Bull Arm. In 2013, we'd commence topsides fabrication and then that construction period continues through till 2016 when we'd have the hookup and commissioning that piece where all the pieces come back together, and then moving towards our target of first oil in 2017.

The Development Application also includes our approach to benefits. That approach covers both the development and the operations phases. So by the development phase, that includes the engineering and construction, which is really the first few years, perhaps five years of the project, and then the operations which really goes more for 30 years. So, when we're talking about this Benefits Plan, you do need to remember that it is intended to cover the entire period of the project, including operations.

We include a focus on long-term sustainable benefits. Really want to leave a lasting legacy in the province. We want to further advance the development of industry in the province. We can utilize and build on the capability that is here from previous offshore projects. To do that, we've been undergoing a lot of consultations to help shape our benefits efforts. Those consultations have been with the supply community and many other organizations. The Benefits Plan addresses the Atlantic Accord Acts and the Benefits Agreement, and the Plan does address the measurable commitments made in the benefits agreement. The Benefits Plan itself contains several key areas: the project management describing the organization for the overall delivery of benefits, the supply development plans, including information sessions, some of which where we can help with the local community, supply community understanding our expectations around such thing as safety, quality and procurement. It covers the procurement and contracting and our plans to provide full and fair opportunities for all the local companies. It covers education and training. Examples of that is shown in some of the photographs. You can see a photograph of the process labs at The College of North Atlantic that we've set up to train future operators of the offshore platform. It covers research and development where there is many initiatives that have already been kicked off to develop some of the needed technology. And it covers diversity, where, again, you can see we've been awarding scholarships at Memorial University and also The College of North Atlantic, and supporting several organizations in the community helping us with our diversity efforts.

What I do like about these benefits efforts is that they make business sense. If you look at, for example, education and training, it's in our interest to develop a qualified workforce to work on the project and to work in the offshore operations.

On research and develop, it is in our interests to develop more cost-effective technologies to help us develop some of the challenging resources that we have.

And then on diversity, it is definitely in our interests to expand the pool of qualified candidates and to draw on some of the underutilized sectors in the workforce, and with the added benefit that diverse teams are higher better performing team.

The Development Application also outlines our approach to environmental management where that is implemented through systems, policies, processes and tools consistent with ExxonMobil's Operations Integrity Management System that I mentioned earlier. And those

systems are all designed to get us through to our goal of "**Protect Tomorrow.Today**".

Our environmental manage approach is based on sound science and a life cycle approach. By life cycle, I mean it goes through from the initial planning, through concept selection, design, construction, operation, through decommissioning of the platform. We want to actively manage environmental risks and focus on continuous improvement. So the approach is a structured approach and starting early. And what I mean by that is that the approach to environmental management, environmental protection commences way back even before concept selection. So if you look at the left-hand side of this slide, well, say, the Hebron Project, we'd do a project specific environmental analysis looking at all the different concepts being considered for the development, and then that would move through concept selection.

And once we've chosen a concept, we would do our Environmental and Socio-Economic Impact Assessments. In this case, the Environmental Impact Assessment is the Comprehensive Study Report. So then once we have those for the specific concept, we include the identification and implementation of mitigation measures, and then those are formed into the environmental protection plans. In this case an environmental protection plan for the Bull Arm site and an environmental protection plan for the offshore field. Those plans contain, among other things, the training, prevention and mitigation measures. They include the environmental monitoring and reporting, and they include the environmental and regulatory compliance assessments. And so this entire chain of activity from back before concept selection, through the definition, and then the plans, and then the implementation of those plans moves towards our goal of environmental protection and "**Protect Tomorrow.Today**".

Another key part of the project is our community investment program where we really think it is important to support the communities in which we live and work. Many of the project team are from Newfoundland and Labrador and others are living here for several years. Some of the photographs here, in the top left we can see girls from school in the Bull Arm area where we sponsored them in the Techsploration program to let them learn more about science and technology. And as well as the funding, we also provided role models where these girls could work with members of our project team to understand what a career in science and technology is all about.

In the top right, you can see children from the Dunne Academy robotics team, where they won the provincial team for robotics, and then we sponsored them to attend the international competition in St. Louis.

We also support the arts. This is the Newman Sound Men's Choir. We sponsored their debut CD, and that recently won Classical Artist of the Year at MusicNL.

And in the bottom left you can see one of our United Way activities. ExxonMobil and the

Hebron Project are very involved in supporting the United Way in terms of funding, in terms of donations from the project team members, but also the time of the project members. And this one was where the project team took a day off to clean up in the St. John's and Mount Pearl area.

I'll close by just reiterating our commitments. Again, remember our ultimate objective is to successfully deliver the Hebron Project, but at the same time we will achieve world class levels of safety, security, health and environmental performance. We will provide substantial benefits to Newfoundland and Labrador. We will build and strengthen relationships with the Newfoundland and Labrador community, and, ultimately, creating an offshore platform that we can all be very proud of and will operate safely and reliably for many years.

Thank you, Commissioner.

COMMISSIONER (Miller Ayre): Thank you very much, Geoff. People very often say that it is nerve wrecking the thought of public speaking in front of a large audience. Let me say, it is more difficult to do it in front of a very small audience and to do it with feeling. So I'm going to give you a ten out of ten for that this morning. (Laughter all around). Geoff and I, of course, generally speaking, heard our opening remarks - so I got out of mine today - so often we're thinking we may switch places at some point and see how we can do reading each other's presentations.

Public speaking in that context, we assume that everybody gets to see and hear themselves speaking and so on, but the many great orators of the past, really wasn't till the 20th century that you could even hear your own voice, and so many of these great orators you hear about, going back many centuries, had absolutely no idea what they sounded like. And William Pitt, the younger prime minister of England, used to actually go into an extremely large hall, stand back from the wall and try desperately to hear his voice bouncing back to him in an echo. So, if he had heard anything it would have been one word or a limited sound. So you can see, it is an interesting process.

I think at this stage, I haven't introduced the team of people, which everyone, I think, you know Claudine and Shannon, but with us today is Luc Chabot who's helped with our engineering, giving us engineering advice. So, Luc has joined us from Houston for today's and perhaps tomorrow's presentations, and part of Wednesday. So I just thought that we should introduce Luc.

I did have a ... I should introduce, oh the clerk, our trusty clerk, Mr. Ed Foran, who also manages the project which, actually is his bigger role. Clerk is sort of an honorary thing that you get, very important title.

At this stage, we usually review a little bit about any outstanding items that we have from a

previous session or two, and bring up items that either the Proponent or the Commission would like to get on the record. We did have a question relating to the Benefits Plan and so on, and I just wanted to, and I think this may be something you can answer, it is a clarification for us: Last week in response a number of presentations and questions regarding the benefits commitment, ExxonMobil responded that the Benefits Plan is a high level document. It is a process-oriented document covering the entire project life cycle from construction to operations over a 30-year period or more. They've also stated that the C-NLOPB has referred the Development Application to the Commission following its completeness review. As the Commission is continuing to seek additional detail on procurement and labour commitments, would it be possible for ExxonMobil to clarify the use of the term "pre-FEED" within the Development Application; specifically, the Hebron Platform Summary Schedule? Both the topsides and GBS have FEED commencing in Q3 and Q4, 2010, and detailed engineering commencing in Q-4, 2011. So specifically we would like to get clarification of the distinction between "pre-FEED" and "FEED", review the ongoing activities of the FEED phase and clarify when it will be ready to provide more detailed information concerning schedule, labour and procurement specifics?

So I don't know if you got all that towards the end when I finally got around to the questions. So the distinction between "pre-FEED" and "FEED", and review the ongoing activities of FEED, and clarify when it will be ready to provide more detailed information concerning schedule, labour and procurement specifics? And we can give you a copy of this, but just for now, I mean, those are the issues.

GEOFF PARKER: Maybe I can, certainly. The distinction between "pre-FEED" and "FEED", for us pre-FEED is back when we're doing particularly sort of very conceptual work, and then we'll actually award a contract for FEED. And it is a contract for FEED with a defined scope. So in terms of when did FEED start, it was when we awarded the FEED contract for the GBS to Kiewit Kvaerner contractors, and for the topsides when we awarded the FEED contract to WorleyParsons. Typically, in pre-FEED on many projects we may have several contractors working on different concepts or different scopes of work to lead us through to defining the front-end engineering and design, which is around a specific concept with a specific set of deliverables defined in that contract. So, those dates back in 2010 for the GBS and the topsides, they were when we sort of locked down on one contractor for the topsides, one contractor for the GBS to do that FEED work.

We can, in a subsequent session, come back to you and give you a bit of an update on where we are in the FEED. There's typically, on many projects, a bit of an overlap between FEED and detail design, depending on your contract strategy. Sometimes you will have a FEED that stops and then you will start another contract for detail design. On others, you will have a FEED that rolls over with the same contractor into the detail design. And so in that case it is a bit more of a fuzzy line between FEED and detail design. So, as an example, the Kiewit Kvaerner are already mobilizing people here. In fact, we talked about the over a dozen

engineers from Newfoundland and Labrador who were in the Oslo office doing the FEED. They have now moved back to here and they're setting up the office for the detail design. So it is sort of a transition there rather than a hard line from FEED to detail design.

COMMISSIONER (Miller Ayre): I think that was the only issue we had. So we look forward to hearing a little bit more from you on some of the specifics there later on.

I think at this point we usually take a break while we wait for the first presenter to show and get ready, which is scheduled for 10. If it's possible to get started a little earlier, after we've had a 10- or 15-minute break we'll do that, but we'll have to check to see who's here at the moment and when the first presenter is available.

So, did you want to make The comments that we discussed earlier, did you want to make the comments now? I mean, I think it is better for you to wait because I think this is something that may be relevant to I mean, we want the public to hear the issue because it was a general concern to the people. I would like the people in Marystown and Clareville to hear back on this issue. Okay. So we'll have our break now. I'm sure we're all exhausted, and stiff and everything, so we'll take a few minutes. Thank you.

(Nutrition Break)

COMMISSIONER (Miller Ayre): Okay. I think we're getting to the point where we're virtually ready to start the sessions. Now I'll get, our clerk, Mr. Foran, to call on our next speaker.

ED FORAN: Thank you, Commissioner. And so, Charles Newhook is going to present to us. And again, we have Charles' presentation which is on the Public Review website. And Charles, perhaps if you could, as you start, give us a bit of a background on yourself.

ORAL PRESENTATIONS

CHARLES NEWHOOK: Good morning. Thank you for allowing me to speak. My name is Charles Newhook. I've worked offshore Newfoundland pretty much since the beginning of Hibernia. My background is crude oil tankers. I've been at that kind of work for 20 years; on shuttle tankers, in particular, for about 15 years now. And I've worked on just about all the tankers that have worked in the Canadian sector here on the Grand Banks. I have spent a little bit of time in Brazil loading offshore installations in Brazil and also in the North Sea. So, also being from Newfoundland is a big part of why I would like to speak and why I'm interested in the Development Plan as it relates to tankers.

I don't know if everyone is aware or not but in past projects we've had new tankers delivered for each project. Starting with Hibernia, the Kometic and Mattea; Terra Nova, we had the

Vinland. The Vinland is gone now. The contract expired in 2010. And the last field to come into production, White Rose, the Heather and Jasmine Knutsen were delivered. So, that sort of peaked my interest and got me wanting to check the Development Plan to look into it to see what was proposed for Hebron. And from the Development Plan, I'll quote directly: "Initially the existing tanker fleet operating on the Grand Banks will likely be used." So this is paragraph basically says that the four tankers remaining, I guess, will be considered for operations for Hebron. That's fair enough. Production is declining and whatnot. New tankers may not necessarily be required.

In fairness, the Development Plan going on to state, "suitability of the tanker fleet will be verified during detailed design." And this is what has me questioning the details of the plan, the Development Plan. It would have been nice to have some additional detail on suitability or description of suitability, what defines a suitable tanker for Hebron.

Like I said, it would be reasonable for this statement to be accompanied by a reference to a standard or criteria that provides guidance as what defines suitability. This is important to me because as someone who works offshore, a captain on a tanker, leave Placentia Bay with a crew of 24 men, you're heading offshore, I want to make sure that I have the right equipment for the job at hand.

I mean, from the plan, suitability could be tonnage or cargo capacity. It could refer to the age of the vessel. It could refer to the structural condition of the vessel. Again, one is left to interpret from what details are in the plan or lack of details.

It is not uncommon for operators around the world, especially major oil companies, to have minimum criteria for tankers they have on hire. One that's directly applicable to our operation on the Grand Banks would be Statoil's. They have a minimal technical and operations requirement for offshore loading shuttle tankers, and that document describes shuttle tanker requirements for operations at Statoil fields in the North Sea. We don't have that here in Newfoundland. I'm sure each operator, Statoil being a proponent, is likely to be motivated to use a similar approach and whatnot, but again, it would be nice to have some additional detail in the plan as what defines suitability.

And given the age and maturity of the industry in Newfoundland now, I think it's appropriate. We've been in this business long enough to know what type of vessels we need to operate on the Grand Banks now.

The tankers for Hibernia that are presently used - Mattea and Kometik - by the time Hebron goes into production in 2017 those tankers will be 20 years of age. And most operators they wouldn't hire tankers 20 years of age. They are reaching the end of their life. Given you're bringing on a new field, it seems kind of odd that you would propose using the existing tankers. I'm not sure if you are targeting the older tankers or the newer tankers. Again,

some additional detail in the Development Plan would be beneficial to clarify that. I think it needs to be clarified.

I should also say, from what I can gather it's up to the operator to provide that guidance. I don't think the Board requires you to do so.

Also, from the plan there is a mention of ballast water development; the disposal of transport tank or balance water. This is mentioned in the plan, and I mention this again because it goes back to the suitability of tankers. All these tankers that are operating out there, they are designed to load heavy weather ballast in the cargo tanks. And although this operation occurs very infrequently, given the nature of the environment that we work in, it's reasonable to assume that conditions would exist where they would have to take heavy weather ballast but that's not mentioned in the plan. And the disposal of heavy water ballast is not mentioned as well, but, yet, ballasting of tankers is mentioned in the plan. But again, I don't know why that's omitted.

The reason why I mention the ballast water again, this goes back to suitability of the ships employed. The rougher the weather, the more design features, the better the equipment has to be to work in the environment. The ships out there now, the tankers that you use now, they don't all have the same ballast capacity. The more ballast capacity you have, the less cargo capacity, but, that said, the better they are for the environment they work in. So again, this speaks to the suitability of the tankers employed.

Also I would like to mention the offshore loading system as a statement from the Development Plan. The plan states that the system is designed for an in-service life of Hibernia. I think at Hibernia the system lasted for about 15 years. This is a system that we use to load the ships. I'm not sure what design or engineering that has been approved to get you the extra 15 years from what's out there now. What's out there now works well but it's in a tough, it is in a tough, tough environment we're working in. And again, if these systems are to go out there, they should be suitable for the environment they work in, and I think the system they have at Hibernia is good. I am glad to see that it's being proposed again for Hebron, and hopefully you guys will get your 30 years out of it. But again, it speaks to my point that this equipment must be suitable and sufficiently designed for the environment.

Another comment of mine is the offshore pipeline conceptual design. The system is, as I said, similar to that of Hibernia, the OLS system; however, the crude to be pumped from Hebron is different characteristics. It is heavier with a higher wax content, according to the Development Plan, but I don't see anything in the plan that speaks to how this will be addressed for the subsea line; if there is a concern there for yourselves with regard to precautions to be taken from having this crude sitting in the subsea line, having it parked and there for extended periods, if that will cause issues or not for the tankers or the offloading system. It would be good to have further detail on that. And some simple solutions to that

would be flow meters installed on the tankers, so you can instantaneously know if there is a problem with gel crude in the pipeline. I think this is stuff that's used now in certain installations on boat on the Grand Banks and in the North Sea and it could be easily adapted for Hebron.

That conclusions my submission for this morning. Thank you very much for letting me speak. It is much appreciated. If you have any questions for me, by all means, I'm willing to do my best at it.

COMMISSIONER (Miller Ayre): Yes, Charles there are a number of questions that I think arise from your every thoughtful presentation. And first I would ask some questions of you, and if the Proponent has any, of course, they will ask you the questions. And perhaps you can answer. This gives you a chance to elaborate on some issues.

I have a couple of questions first that I would like to just ask. Are all the vessels that are now operating out there, were they purpose-built vessels, the ones that presently are willing used by the various producing wells?

CHARLES NEWHOOK: Yes, they are purpose built. Built at different times, mind you. The Hibernia tankers being the first delivered, Class 1 DP for station keeping. That's dynamic position tankers. So a certain level of redundancy in the machinery there, the minimum level of redundancy, but in its day a very good system; ice class ships and very nice. But as I said, they'll be reaching their --

COMMISSIONER (Miller Ayre): Well, I think double hulling and all that kind of issue was part of a great concern during Hibernia phase. Would you think there is an inventory of such vessels available now in the world such that you could lease them from other operators or?

CHARLES NEWHOOK: No, sir.

COMMISSIONER (Miller Ayre): You think they have to be built?

CHARLES NEWHOOK: Right now, in Brazil and in Angola there is a lot of deepwater exploration or production. There is a big demand for this type of vessel now. Vessels with ice class in particular, if the Proponents choose to use ice class vessels, in particular, are difficult to find.

COMMISSIONER (Miller Ayre): I just wanted to ask you a question. Perhaps better asked of ExxonMobil on this point. Charles raised the issue of Statoil having an understanding about what it requires in terms of these vessels. I presume that Statoil would do that, it has those conditions, if it's a majority shareholder? Does it also comment on these things in terms of this particular operation?

GEOFF PARKER: Each of the individual co-venturers is responsible for their own transportation, and, so, and each of those co-venturers has their own requirements for their worldwide fleets. And so what we end up with is a situation where we go, we end up with the most stringent of everybody's is what's used. Because even though each is responsible for their own, we end up pooling the tankers, so.

The other piece is Eastern Canada is a fairly small market. It is not like you get a whole lot sort of independent tankers coming in. They are much, you have the tankers there for that service. So, in committing to get them there you need to commit to a long period, and so that vetting process to get the right ships happens at the beginning and then they are the tankers that keep on operating throughout the life of the field. So, it's not like some areas, like the North Sea, which is Statoil would also have a lot where you have a lot of independent tankers coming in, so you need to have these guidelines to vet them against each time a new one comes in.

COMMISSIONER (Miller Ayre): On the very large question he asked about the 30-year period and the life of these tankers and so on. Did you have a comment on? Could you speak to that a little bit?

GEOFF PARKER: Yes. The tankers have, like all ships go back in - Charles probably knows more about this than me - is going back in for ongoing inspections and any required maintenance to make sure that they still meet the requirements as they go along. And the actual design life is something that you come back and you go into a dry dock and check the tanker and then the class societies decide whether it's okay to come back into service or not.

COMMISSIONER (Miller Ayre): And so the general, the issue of whether there are enough tankers to take the produced oil away is not a major concern then?

GEOFF PARKER: It is not a concern but it is something that we're studying and deciding what, if any, additional tankers we would need to meet the Hebron requirements. Because, remember, some of the other fields are coming down in their production while Hebron is coming up. So you need to look at what fleet is needed for the entire field there. And as Charles said, that would quite likely require a new tanker to come in if you needed an extra one. There is not just spare ones floating around that you could pick up.

COMMISSIONER (Miller Ayre): Charles raised the issue also of the heavy weather ballast issue and how that gets disposed of. What happens now in terms of that issue, or is the heavy weather ballast issue not a concern very often in our area?

GEOFF PARKER: It's a non-routine operation and it may never so be done in our area; but the tankers, the new tankers are designed for that, where you would have the heavy, where

the ballast going into an empty cargo tank. So all modern tankers are designed for that. In the very unlikely event that it was required, then what you would do, would have the water in that cargo tank, you would leave it there long enough that any oil that was mixed with the water would rise to the surface and then the water would be decanted off the bottom of those tanks and discharged into the sea according to the applicable marine pollution regulations and limitations. So, you basically, you just leave that tank until it is completely settled and the oil is at the top and then you can decant the clean water from it.

COMMISSIONER (Miller Ayre): On the suitability issue, I wonder if you could just ... you would have thought, you're really saying the suitability should include all the items you listed? Is that what you're saying?

CHARLES NEWHOOK: I believe so. I believe we've been at this long enough to know what constitutes a suitable tanker for offshore Newfoundland for the Grand Banks.

There is a lot of these ships going around the world now, not a big lot, but there is some areas where the conditions are much more forgiving than the Grand Banks. You could have a ship, a shuttle tanker operating in Brazil or off West Africa, you wouldn't need the same amount of redundancy; certainly, you wouldn't be encountering the same amount of harsh weather. It is important that we have equipment that is well-designed and suitable for that environment.

I don't ... I wish we had more details in the plan there to constitute the ExxonMobil's definition of "suitability" there. I would like to have seen a reference to some sort of standard similar to Statoil's to be honest with you. Twenty years on the Grand Banks working one of these large ships, they do take a beating, and I'm not sure if Exxon or ExxonMobil is proposing to use those 20-year-old tankers for another five years, 10 years.

COMMISSIONER (Miller Ayre): But, I mean, are you familiar with the process, with the refit processes and so on that would go on?

CHARLES NEWHOOK: Yes, I am. Yes, I am. Generally speaking, normally the oil majors, they will not charter ships that exceed 20 years of age. And I think Mr. Parker has already alluded to, they will use the highest standard of amongst the proponents. But again, that's not stated in the plan. The ships do, as Mr. Parker had mentioned, they do go for routine or time-framed maintenance and inspection and whatnot, and this is strictly adhered to and regulated; but again, this is some of the harshest conditions in the world that you're going to be operating ships of this size.

COMMISSIONER (Miller Ayre): Are you familiar with any design issue that it's now generally agreed would be put into a new tanker that's being built?

CHARLES NEWHOOK: Yeah, I'm fairly familiar with the design of the tankers that are

currently used and of some newer construction. Certain classification societies, regulators, they recognize structures that are designed for harsh weather environment, North Atlantic sort of a standard that is used in the North Sea for frontier regions, North Sea. And it is in use for the tankers operating on the White Rose field.

COMMISSIONER (Miller Ayre): Now, would you have recommendations that you would make or is it normal to ask people who have your experience or skippers, as it were, that could say, look, here's something you could really do to improve the next tanker built?

CHARLES NEWHOOK: Well, age wise, I think 20 years of any construction is probably long enough out there. Certainly, 25 years would be the end of it. And like, as to ballast capacity, we could easily have 50 percent. Well, ballast capacity is based on the deadweight of the ship. The conventional tankers have about 35 percent of their summer deadweight is ballast capacity. We could easily have ships with 50 percent of the summer deadweight. That would give you additional ballast and make those ships better design for heavy weather, which is routine out here.

COMMISSIONER (Miller Ayre): Do you see that, you're talking about what Statoil does or what the Proponent might do and so on, but would you see, really, that Transport Canada should have a role in this or does it already play a major role?

CHARLES NEWHOOK: This sort of goes beyond the scope of Transport Canada.

COMMISSIONER (Miller Ayre): Okay.

CHARLES NEWHOOK: This is kind of very specific design criteria for

COMMISSIONER (Miller Ayre): So, it's not the kind of thing, what you're talking about is not something that you'd expect the standards to be maintained by or inspections to be carried out by Transport Canada.

CHARLES NEWHOOK: No, not at all. These are sort of more detailed requirements for the specific operation as opposed to general seaworthiness.

COMMISSIONER (Miller Ayre): Geoff, did you want to add anything to the comments now, just in terms of things Charles has said here and in terms of suitability criteria and so on that he was concerned about?

GEOFF PARKER: A lot of very well thought-out points. As you said, I would reassure you, I don't think we're thinking that the current tanker fleet would last for the life of the Hebron field. That's one of your points there and that that would be assessed along the way.

CHARLES NEWHOOK: I assume that. It is just it's not in the plan and, therefore, I believe it is worth mentioning, so.

GEOFF PARKER: Yeah. No, that's good. And, Commissioner, the other really good points were also around the offshore loading system and the design of that and the learnings from Hibernia to fold into the Hebron loading system so that we'll have a better loading system than what Hibernia originally had. Hibernia had a system that we've actually been replacing recently because these components in this harsh environment, they can be subject to fatigue, and, so, there is a new system that's this year being put in at Hibernia. Hebron would be using a system similar to that but would also have the advantage of learning anything around the Hibernia experience during the installation happening now, but, even, maybe the first year or two of operations to be able to feed that into the engineering of the Hebron system. So, really working very closely with the Hibernia team to make sure we're picking up all of their lessons relating to the offshore loading system.

COMMISSIONER (Miller Ayre): Could you also comment on the subsea line and what happens with heavy oil in a situation like that, and does the line get pumped free or what process is used?

GEOFF PARKER: I'll ask Dave if he could respond to that one.

COMMISSIONER (Miller Ayre): Yeah, I know. I mean, these ones, we're talking pretty long lines. I mean, several kilometers. Well, at least a few kilometers of line.

DAVID McCURDY: Yes, and that's a very good question. We, as you probably noticed in the Development Application, it's got some of the characteristics of the various crudes that we will be handling. An important point is to note that kind of the general pour point is such that when it's circulating on the seabed there, we won't get below pour point. So it still can move. It is going to be very hard to move. So we have a number of studies going on, on the various ways to deal with that flushing, circulating the line clean at the end of loadings but we're also building into the design the horse power it needs to move it and the line strength to be able to handle it should you have to move it in a state where it's cooled down to that level. We're also looking at other kinds of things like injectants and heatings and things that we could do to help it along, and we're refining that as part of our design process, and we'll have the ability to monitor the loads and pressures.

You mentioned the measurement on the ship. It is a very good point. We're looking at it, even before that, looking back to what kinds of pressures and loads we're seeing on the loading system as we start the system up so that we can monitor that and know what the state is. So you raise a very good point. It is an important one. We got a lot of really sharp people looking at the details of refining that process.

CHARLES NEWHOOK: Yeah, I believe it is worth mentioning because it is a lot of pipe in the water and lot of times we're out there it is zero visibility, fog, it's dark, and you could go a long time with a small leak. It could cause you quite a bit of grief. I'm glad to hear that you're addressing it.

COMMISSIONER (Miller Ayre): I think that's all the questions we have. I don't know if you had anymore or if there are any comments? No other general comments? Then, thank you very much for your presentation.

CHARLES NEWHOOK: Thank you very much.

COMMISSIONER (Miller Ayre): I think you have raised issues and hopefully we'll helped indicate some ways in which they'll be dealt with.

CHARLES NEWHOOK: Yes, thank you again. I appreciate the opportunity.

(Nutrition Break)

COMMISSIONER (Miller Ayre): All right, Mr. Clerk, are you ready? Is the next presenter?

ED FORAN: More to the point.

COMMISSIONER (Miller Ayre): Yes. No point introducing someone who's not here.

ED FORAN: Right.

CLAUDE DALEY: Am I next?

ED FORAN: Yes.

COMMISSIONER (Miller Ayre): You are. Okay, thank you, Claude.

ED FORAN: So, we have next up the Ocean Engineering Research Center, Faculty of Engineering and Applied Science, and it's Dr. Claude Daley, who is both Professor and Chair at the Ocean and Naval Architecture Engineering Program. And please proceed.

CLAUDE DALEY: Yes, good morning. Thanks for the opportunity to be here today. I appreciate this opportunity. My name is Claude Daley. I'm Professor and Chair of the Ocean and Naval Architectural Engineering program at Memorial. My colleague, Dr. Wei Qiu, is the Director of the Ocean Engineering Research Center, and I'm a member of that center and he's away. So I agreed I'd give this presentation today.

These comments relate to education, training, research and development issues around the Hebron Project. Maybe I should give a bit more background. I'm a Professor at MUN. My background, I have two degrees in Civil Engineering and one in Ocean Engineering. My first degree was with University of Western Ontario, then I have a Masters from Princeton, and I did my Doctorate in Helsinki in Naval Architecture; arctic naval architecture, in fact. So, and I've been a Faculty Member at MUN since '95. Anyway, a quick summary of me.

The premise to my presentation is that I see Hebron as a world-class engineering project. It is a good news story. St. John's has become one of the world centers of ocean engineering and the Faculty of Engineering participates in that. There is a lot of organizations in St. John's that are part of creating this center of expertise in St. John's. A number of institutions and companies and agencies are all here. So there is a very active community in ocean engineering, and Hebron is a great thing that's another world-class offshore engineering project.

As far as my presentation goes, I want to touch on three points. I want to talk about students. We have quite a few students, undergraduates and graduate institutes and they're very interested in projects like Hebron. And I will comment a bit about how I see their lives and careers being impacted by this in a good way.

Memorial does a lot of Applied Research as an Engineering Faculty. The Faculty Members are engaged in not only teaching about ocean engineering but helping to push ocean Engineering forward, and projects like Hebron are an application of engineering knowledge. We are working in the area as applied researchers and sometimes consultants and interested specialists, and there is a lot of mutual interest in Applied Engineering Research that I'm sure we share with the Hebron proponents.

The third point I'll make is that we're at a point in our life where we are growing and we need to grow more, and I see projects like Hebron as being ideal to help us grow. I want to raise some points about our growth in collaboration with the Hebron Project.

So a bit of an overview of the Faculty of Engineering. Before I get into this, I should say, just so it's very clear who I'm speaking for. While I am from Memorial as a university, I can't say that speak for the university. I speak for me. Anything I say, good or bad, it's basically just me speaking. I'm not officially representing the Faculty of Engineering, and definitely not the university as a whole. All academics pride themselves on having their own opinion. You always get six opinions when you get five of them together, so.

Anyway, that said I'm probably --

COMMISSIONER (Miller Ayre): There is a transcript of all this, by the way, so that will get back to the people that need to know. (Laughter all around).

CLAUDE DALEY: Well, I don't want any of them to say I committed them to something or suggested something they didn't agree with but. Anyway, what I'll talk about is the Faculty of Engineering and specifically the program and research that I'm connected with; but I'd suggest you take it as simply representative of activities underway at the university rather than trying to be comprehensive.

The Engineering Faculty at Memorial has six undergraduate engineering programs. They all have graduate programs associated with them as well. I'm the Chair of the Ocean and Naval Architectural Engineering Program, and I will talk specifically about that, but I'd also say that, broadly, I see and I think it is fair to think of Memorial as an oceans university and the Faculty of Engineering is a strongly oceans Faculty of Engineering. All of the different groups civil engineering, computer, electrical, mechanical process and ocean and naval, we all do work related to the oceans. The oceans is a big part of what's happening in Newfoundland. Projects like Hebron require a very, very wide range of expertise, well beyond engineering, of course, but it draws on all the disciplines within engineering. And so while I'll be speaking about ocean and naval architectural engineering specifically, I think a similar presentation could be made for any of the disciplines at Memorial.

Okay. In terms of overall undergraduate engineering numbers, my friend, Steve, Professor Steve Bruneau, put most of this slide together and then I added to it a bit. The Faculty has been growing from its early days in the '70s. We've been growing steadily. We've been almost bursting at the seams. We now have graduating classes starting to exceed 150, and we can tell by who's registered in Term 1 and 2 now, we can tell that our graduating classes are going to be well in excess of 150; in fact, we're predicting graduating classes already over the 200 mark and we're coping with that. So, we've been growing significantly when it comes to undergraduate numbers. And, as I say, we are almost bursting at the seams. I joined the Faculty in '95 and there's been quite a bit of growth since then. I've noticed that where there used to be always a room available for a meeting, there was always another spot available in the lab in '95 to do another project, now there is no other room for a meeting. There is no spot in the lab for a new project. We are full up and enjoying it.

We officially have a plan to grow substantially which is my red line on here with a star, and we expect to have graduating classes of over 250 by 2020.

The Ocean Naval Architectural Engineering program specifically, I think it is fair to say that we are highly regarded. We are accredited by the Canadian Engineering Education Board. We just have received a new six-year accreditation. We are internationally linked and internationally recognized. The nature of ocean engineering, it is very much a global industry. I don't need to tell folks from Exxon that. It is a truly global industry and we certainly recognize that.

We're the only ocean and naval architectural undergraduate engineering program in the country of Canada. We're *it*. Now there is interest in ocean engineering at other universities but none of them have a fully accredited undergraduate program leading to a professional designation. We are the only one in the country. We are not the only one in the world. These are very common programs in Asia and Europe and all around the world. There is six in the US but we are it in Canada. One of the things that's special for us, though, is that ours is a fully co-op program. That means all of our undergraduate students get up to six different four-month internships in industry, and we are the only, to my knowledge, we are the only ocean and naval architectural engineering program in the world that is fully co-op. It is very much a Canadian thing; although, there are some in the world. I think it is hands down the best thing about our program; the maturing effects of these work-term experiences. My daughter is working for an energy company now in Calgary. She's on her work term. She's a business student, not an engineering student. But you can see the beneficial effects when you, when you see the changes in young people when they get chance to work in real projects with real industry.

Right now, our Ocean and Naval Architectural Program, the current class size is around 30. We've capped it at 30. We've turned away people. There are six regular faculty in the program, depending; there is eight, if you count in other ways. There is one on leave and there is one on contract, but there's six normal regular faculty members. That's not very many. We try to cover the whole range of ocean engineering and naval architectural topic areas. We have to for teaching.

In our research, we're particularly strong in Arctic areas. My own work is in Arctic, Arctic ships and offshore structures, ice loads and the like. We're quite strong in a small craft, as you would imagine in a province with heavily dependent on the fishing industry. We are also very strong in safety and submersibles. And these tend to be the result of the individual focus of individual faculty members who become specialized in those areas. And I'm quite sure that all of our faculty members are playing at a world-class level. It is just the nature of our industry that if you want to play you have to play globally and our faculty members are connected internationally in these areas and are well regarded.

At the graduate level, we have about 70 students working in graduate studies and research; people like masters students, PhD students, post docs. These are funded positions. People are earning a living with these positions. Typical incomes are in the 20 to \$50,000 a year range. That's tax-free money. So there is quite a few livelihoods depending on what we do.

In terms of research, we're extremely active in research. Right now, the six of us are going through about five million a year in research funding. We have about 25 million in assigned project value. Compared to a project like Hebron, I know that's small change. In the academic world, those are big numbers. Big numbers for a faculty at big universities. Average numbers would be in the 200,000 a year in research funding for a Faculty Member.

So our small group is five-fold of that. So we're extremely active in terms of our Applied Research programs.

And these are some of the people involved. Not all of these are in my group. I've listed a few names there that are in Process Engineering and Civil Engineering as well. We're non-departmentalized which means we don't have silos between us. We all work for the same faculty, and while we have groups, from an administrative point of view we all have the same boss. We all report to the Dean. And that, actually, is a good thing. It lets a lot of collaboration occur across the Faculty among disciplines. Myself and my colleague Bruce Colbourne, we work on Arctic ships and platforms; Shawn Kenny is an Arctic pipeline specialist. And there is a list of names there. Lesley James is a new Faculty Member working in, I believe, in enhanced oil recovery and, I believe, she has some connections with the Proponent in this case. There is certainly work that is sponsored by Exxon in the Faculty.

In terms of growth in research and graduate studies, it's quite surprising how fast and how high the numbers have grown to. When I joined the Faculty the total research budget was about one-fifth of what the operating budget was. The operating budget covers salary, other expenses to just keep the program going. At the time I joined in '95, as I say, the research budget was about a fifth over and above the operating budget; not very much. Now we're more like five times. Our research expenditures are significantly higher than our operating budget, and over \$20 million this year and we've grown. We're easily the fastest growing Faculty of Engineering in the country in terms of research funding. And graduate student enrollment has also followed this. A lot of this has to do with the offshore. It's the strong growth in the offshore and strong growth in program funding opportunities here in the province that support growth in oceans and energy that has led to this. So, it's, for us, it's a very good news story, and the Hebron Project is in our minds just the next step of that good news story and that growth picture.

A few projects, the projects I've listed here, probably each one of them, these are moderately large projects. The first one is called; the step square project is the one that I'm the principal investigator of. It's a project that's looking at the design of platforms; that's both ship platforms, ships and offshore structures for Arctic environments. We're looking at the fundamental design criteria for platforms. So we're not, for instance, focusing on, say, subsea issues. We're focusing on the integrity of the platform at the waterline; issues like ice loads and structural capacity. That project involves, currently, about 35 people at Memorial. Thirty-five, I mean, 35 people are getting a livelihood out of that project; mostly graduate students but also Faculty and staff. And it is a five-year project with six-million-dollar funding envelope for over five years.

The next one is autonomous oceans systems lab. This is Dr. Ralf Bachamyer's lab. He's a Canada Research Chair holder, a CRC Chair holder, and he has quite a nice a lab with a lot of graduate students that work with him, and his focus is on ocean gliders and autonomous

underwater vehicles. And those are used for monitoring a variety of interests offshore. His little glider that's in front of him there, it's actually a very intriguing little device. It's capable of moving by one of two engines. It has a buoyancy engine which is to say that it can make itself slightly heavier than water and glide down, and then make itself slightly lighter than water and glide up. It can cross the Atlantic by gliding down and up and down and up and down and up, and it's only, it is that thing right in front of him, and will go across the Atlantic Ocean. It has enough range to do that. It doesn't go very fast but it's extremely efficient at long-range monitoring.

Ralf's added to it a very efficient little propulsion device with a little foldable propeller that turns out to be just as efficient as the buoyancy engine. And it can go ... the problem with the buoyancy engine is that you follow a glide path that's down and up and down and up. You don't stay at a constant draft, and you may, for some survey reason, want to stay at a fixed depth in the water. He's now got the capability of having it go completely horizontally on a propeller, and, again, it is just as efficient. There is enough batteries onboard that the thing could cross the Atlantic, and it is just a little device. Anyway, he's been very successful with that and he's involved in a lot of very interesting projects.

The third item I'm showing here is Dr. Brian Veitch, who is our Associate Dean for Research in the Faculty, but his own research career was extremely active and he's involved, he was involved with establishing a new business in town called Virtual Marine Technology, and they develop simulators for vessel simulation, but a very unique class of vessel simulation which vessels involved in evacuation and safety; essentially, lifeboat simulators. And the picture on the right there is a lifeboat operating in ice but the whole thing is done virtually. We have a full motion platform at Memorial that's part of our research activities that are sort now of becoming parallel and collaborative with the company Virtual Marine Technology.

The fourth slide is a project by Dr. Steve Butt. He's got a drilling project underway and they're looking at vibration-assisted rotary drilling or, basically, where it's a not a simple turning drill but an impact in turning drill, and they're doing experiments down in our labs drilling through artificial rock which is called concrete. Anyway, again, a project heavily supported by the oil and gas sector. This is just four projects in a range of activities in the Faculty. These projects together probably amount something like three million dollars of activity out of the \$25 million of activity that we're doing. So these are only a small subset, just to give you a flavor.

Now, on to my comments and recommendations. This first slide is an overview of my sort of thoughts and recommendations, and then I have a slide on, three slides sort of delve into these a bit more.

So, as I've said before, we certainly welcome the Hebron Project. On research, we looked forward to opportunities for collaborative research. Our research is all meant to be very

applied research, and it can work without partners but it works far, far better with industrial partners, and most of our research has industrial partners.

Our educational programs, we certainly encourage input on our programs. We do have a lot of industry input into our programs. I think one of the, as I was saying before, one of the best things about our programs is that our students interact with industry. On every second term, they are out in industry. But that's just one aspect, the Faculty as a whole is very psychologically engaged with industry. We see industry as a fundamental partner in what we do and we encourage the collaboration. Specifically on work terms and internships, our students, they are doing engineering because they well understand that this is a profession that they want to work in for their lives, and they want to get started on it with work terms and internships, and they are, of course, looking for permanent employment.

Anyway, let me go into these a little bit more. Let's talk first about work terms. Every one of our students requires work terms throughout their program; minimum of four, maximum of six. That's in a sense every second term that they're in university. And we have a lot of students and that means a lot of work terms. We have quite high placement rates. We've just come off a period where it was virtually 100 percent for several years; although, we've come off that in the last couple of years. We're no longer at a 100 percent placement, but we're very close. We are over 90, 95 percent placement.

This coming winter is going to be a big, big change for us. There is going to be 520 undergraduate students looking for a work term coming this January, and that's 100 more than we've ever had before. We're optimistic that we're going to place the vast majority of them but it is a big challenge. And I wanted to highlight a few things just to put it on the record, just to tell you from my point of view, I've been watching our students get work terms over the years. I hire a lot of them myself. My project hires as many as six and seven each term. The younger students are the ones that are obviously struggling sometimes to get their first work term. The senior students have four or five job offers. You don't have to worry about them. They know what they're doing and they've got employers competing to get them back. It's the young ones that have never done this before and it's all new to them. They don't interview as smoothly as the older ones. They just don't have the experience. They don't have the track record. They are trying to get started. They're the ones that it's a particular challenge to get them started. A lot of our undergraduate students travel the world on their work terms. Lots of them are in Houston. At times, there's been as many as 30 and 40 MUN students in Houston on one work term, 30 and 40 engineering students. But they're not allowing to use the NAFTA requirements to go to Houston for their first one. They have to have a bit of experience under their belt before they're allowed to go. A project like Hebron, although I well understand that you'd want to hire best you can get, I would also ask you to at least consider that you do represent an opportunity to bring some of the younger students along to create opportunities here in town where they wouldn't be allowed their first work term to go to Houston and they might want to be able to go to Houston or Stavanger or

Oslo later, but that first work term they really need to get a start. And it's the whole business of providing entry level opportunities. It's something that projects like Hebron can do; whereas, a lot of small firms can't. Houston provides all kinds of entry level opportunities for new grads because there is so much going on, but in St. John's there is typically less opportunity for entry level positions, and I ask that you guys maybe try, I don't know what you can do, but if there is something you can do to provide more entry level positions I'd certainly think that would be wise for all of us.

The other thing I'd say is that our students, we have a wide range of talent at Memorial. I've said to people. Memorial is the university of the province - and while we have some fantastically academically capable students, we have students that have turned down full scholarships to MIT to come and go to Memorial - we also have students that are maybe not as academically as strong, but they are all very talented in their own ways. I would put our students up against, as a group, any group of students from anywhere, and sometimes you find the sea students that maybe can't solve the calculus problems but maybe they're very, very good at presentations or designs or they have a wider, you know, they have another set of skills. And again, it is something that we need place all our students, and I see our role as creating opportunity for every single student that we have in our program.

Another thing that's happening recently is we have a growing number of international students. Memorial's getting to be known globally, particularly in ocean engineering, and we're attracting students from around the world; lots of Asian students, although also from, some from the states and some from Europe. International students, particularly from Asia, have a special problem when they start. Right. They are facing multiple changes in their life. I mean, they're starting to maybe work in a new language. It is definitely a new culture. They come here and they don't have the network, the personal contacts that maybe some other students do. And in the case of trying to travel internationally, they don't have the legal status in some cases. So we find that our international undergraduates have a particular challenge. And again, it's something that a project like Hebron could really help us address. Once these international undergraduate students, once they get a few work terms under their belt they're off to the races. They're flying, like all the rest of the students we have, but they face a hurdle to get that first job and to get going. So, again, it's something that a project like Hebron might be able to help us with and we'd certainly appreciate that.

Now, on to research issues. We have a lot of research money. The reason we have all the research money we have is because we've partnered with industry. This is not money from granting councils. This isn't money from NSERC; although, we have a lot of NSERC money, we have a lot of granting council money. The big research money we have is because of the support of industry. And we can provide significant leverage with industry backing. We can attract significant money from federal sources, from programs that demand that we have industry input and backing, and but it provides strong leverage on private sector. I say four to one on private sector is common. That's four to one for all the private sector partners. If

there is actually a group of private sector partners, the individual leverage for the individual member or the individual company could be 20 or 30 to one. My own project, as I say, it's a five-million-dollar project, the industry partners are putting in 200,000. So it is a very high leverage on getting research done in collaboration with multiple industry partners.

The research, of course, with industry partners, it gains a level of realism that you just don't get without industry partners. The academics, we can all sit around and kind of muse about the state of the world but when working with industry all of a sudden the rigor of the real world problems, the problems that you simply can't talk away come to the table. And those are the problems that are fun to work on. Those are the problems where you really can make a difference. So the fun involved in research that involves industry is much greater than ones that doesn't.

Our graduate students, one of the things I like about these industry-sponsored projects is that it gives the graduate students a start at developing their own career as specialists. It gives them links in industry. It starts them building a network of friends and colleagues in the industry. And these days, many of the specific funding projects that specifically fund graduate student payments require that there's some level of internship in industry. Both the NSERC CREATE project that we have, we have a three-million-dollar project with funding, ocean engineering graduate students, it requires at least one four-month term in industry. And some of the students come already with industry links and they already know where they might be able to get an internship, but other ones we're looking for industry links and a place to have a student go for a four-month internship; which is not necessarily on the actual research but it has to be sort of in a relevant area, and, certainly, any of our students would find that any work on the Hebron Project would be relevant area, and it would be ideal for them to get some industrial connections. Of course, it satisfies the requirement of these funding agencies but it's a very good thing.

And then, finally, of course, we like to see our research results applied in industry and we also like to see the industry practice come back into our next stage of research activities.

Okay. The last point I'd like to make is that - this is more of a plea than a recommendation - we really need to grow. The ocean and naval architectural group, as I say, there is six of us. Six of us delivering this program. The whole Faculty of Engineering is in the range, I think there is 60 people but they are not all regular continuing, so it's something like 65 Faculty Members that do all of engineering at Memorial. This is quite a small Faculty of Engineering on any kind of national or international level. And we are, I think, very successful but we're bursting at the seams. We are turning students away and, more specifically, we are turning away research opportunities. We've had many companies come to us recently asking if they could get us involved in things we're doing and we simply have no more hours in the day. And the faculty has a plan to double in size. That's been endorsed by the university and has been presented to government. I think it is understood by

everyone that the Government of Newfoundland is simply not going to write a check and simply double the size the Faculty of Engineering. The growth is going to happen by partners with organizations like the Hebron partners, with Exxon and with the other partners and the other oil and gas companies. It is going to happen by building in stages, and growing the faculty. But it is important that projects like Hebron, which are important big, very big public projects, I think it would be very helpful for projects like Hebron to support the growth of the Faculty of Engineering and help make it happen in the ways they do it.

As I've said here, the most standard way that companies help us grow is things like sponsoring research. They sponsor chairs and they sponsor scholarships and these things are all very, very useful; but within the way a university operates, which is a public sector organization, most of those don't result in any permanent growth in the size of the Faculty. If we get a chair that's sponsored for five years, we have to, then, fight hard to hire a permanent Faculty Member because our administration is saying, well, how are we going to pay for this position after that runs out. And so for us to really grow, we have to figure out a way to grow permanently, and that, I'm hoping, will be understood by Hebron group and help us figure out a way to make this thing permanent.

Okay. I guess that's enough said. I don't know if I've gone over time, but I appreciate your attention today. Thank you.

COMMISSIONER (Miller Ayre): Thank you, Claude. We have a few questions, I think, briefly anyway. Could you just, you mentioned that all your students are in a co-op program. Now have you switched from a full, are you switching from a full five-year program to a four-year program, and how does the co-op aspect fit into that?

CLAUDE DALEY: Well, we are now in what's called the new program, and the last graduating class of the old system will graduate this coming May. The old program was a five-academic year, six-calendar year program. So, that was one more year than a standard engineering program across the country. Students used to come in to a pre-engineering year, we call it Term A/B, and do some first year university sort of preparatory courses, and then they would apply to get into the Faculty of Engineering, and then once they were in the Faculty of Engineering they would do four academic years but that took five calendar years because of the interspersing of the work terms. The work terms, like six work terms end up the equivalent of adding an additional three terms compared to the standard three summers off that most universities would have, most university students. So we had a six-year program and we cut it back to five years. We did that by doing a little bit of reorganization. One of the things we didn't cut out was the work term side. Students that have all their ducks in a row can still do six co-op work terms starting with their first summer after the first year in engineering. So, but now we're taking students directly out of high school, from across the province and around the world, and our entry group of students, they are more variable than we used to have. We used to have this first year which kind of get everybody lined up so that

they would all start the same. Now we're taking them out of high school and some of them need the summer after their Engineering 1 program to finish off a course here and there so they can get into Term 3 that fall. And so some of them aren't eligible to do their first work term, but many of them are; about half of them are approximately. So we are expecting something, like, in coming years, about half of our students will graduate with six work terms and half with five work terms. Something like, I don't know if that answers your question?

COMMISSIONER (Miller Ayre): Yes, that's fine. So specifically with regard to ocean engineering, what percentage of the class would be involved in ocean engineering?

CLAUDE DALEY: I'm not sure I follow your question.

COMMISSIONER (Miller Ayre): Okay. You got so many engineering students, 520.

CLAUDE DALEY: Right.

COMMISSIONER (Miller Ayre): What percentage of them would be studying in the discipline that you're involved with, which I'm calling ocean engineering.

CLAUDE DALEY: Okay. Well of that 520 there is something like that, there is 520 leaving all the disciplines. They are writing exams next week and 520 will be looking for work term in January. Of those, something like 70 are in my group.

Now, as I said, our discipline is ocean and naval architectural engineering. We're not the only ones that do ocean engineering. The term "Ocean Engineering", in my view, is an extremely broad term, and it includes the application of all the branches of engineering in the oceans. So while what we do is very specifically dealing with ships and offshore structures, a civil engineer might also work in ocean engineering. There are civil engineers that are interested in the behavior of the concrete in the Hebron platform. They would then be ocean engineers.

So, in terms of the focus of the undergraduate students that would be looking for work terms, many more than 70 would have jobs related to the offshore. In fact, maybe, again, I would only be guessing, but I would think maybe more than half would actually have jobs that would be related to the offshore one way or another.

COMMISSIONER (Miller Ayre): I did have a question. Geoff, perhaps you could explain to us how ExxonMobil usually involves itself with university activities and so on? What kind of approach you usually take.

GEOFF PARKER: We'll continue to support the research and development, education and training, and the students of the province. Particularly, we're talking about the students, I

mentioned some of the scholarships that we've been awarding to students at both Memorial and The College of North Atlantic. And we also have a very active co-op program. Typically this year we've had around co-op students between ExxonMobil and our prime contractors, and those students would be both engineering and business students because, as was mentioned, the project provides opportunities for all sorts of disciplines within engineering but also the business side.

We, also, in selecting the students for the co-op students, we consider both academics but also leadership skills from the students. So I think that way we can pick up wide a broad range of people from the various classes. And then, also, Dr. Daley mentioned the challenges that international students can have, and one of the programs that we've been sponsoring, and, in fact, piloting, initially, at The Association for New Canadians is a language program specifically aimed at the language associated with the oil and gas industry. So, helping them overcome some of those barriers that were mentioned by really specifically addressing those language skills. So from our point of view, I think will continue to work with the educational institutions in the province.

COMMISSIONER (Miller Ayre): Just on another topic, quickly, Claude. You mentioned you have an expertise in platform design and so on. Do you have any personal views on lessons learned from Hibernia that you'd like to see instituted in the new GBS that's being built here?

CLAUDE DALEY: I have no direct comments at this forum about the technical requirements. I'm extremely interested and learning more about what's been done on the project. I know that projects like this, there is a significant amount of work that happens. A lot of engineering time goes into these and there is a lot of discussions. I haven't been directly involved in this work but all I could say is I'm very interested to see how this develops so as they finalize the design.

COMMISSIONER (Miller Ayre): But the university would be involved in vessel design, you said, fishing vessels or whatever, but I assume there is people there working on things that have to do with tankers and subsea installations and all that and so on. Is that normal practice?

CLAUDE DALEY: I mean, we're engaged in a great deal of research in the topics that relate to how designs like Hebron are done, but through the university itself directly, we don't get involved in actual commercial design.

COMMISSIONER (Miller Ayre): No, okay.

CLAUDE DALEY: We don't compete with engineering companies or that. Many faculty members, and myself included, we do consulting on a commercial basis but that's me wearing a different hat than the hat I'm wearing here today.

COMMISSIONER (Miller Ayre): Yes. One last question then. I'm just curious as to, there's a lot more deepwater occurring and that's where a growth area occurs. So, we have obviously developed the ocean engineering experiences here, at Memorial, certainly specific work in harsh climate, cold water and so on. Is there an emphasis being put by your department, and so on, at the university on the deepwater drilling activities and the problems associated with deepwater activities?

CLAUDE DALEY: I wouldn't say that deepwater is specially highlighted. It's an area of interest of some of our faculty members. It's one of the things that we are interested in. As I said in my list, we're quite strong in structures, ice mechanics, ice loads, under water vehicles, autonomous underwater vehicles, environmental monitoring, safety, evacuation, human factors, dynamics. We are, the faculty as a whole, is moving towards more work in petroleum engineering and process engineering. That's growth area but it's not inside the ocean in naval architectural group. It is a separate discipline. Memorial is well-known globally for our work in ocean engineering, but there is many parts of the overall field of ocean engineering that we are not doing much work in. As I said, there may be about, if, depending on if you count everybody, there may be 25 people in the Faculty who are doing something to do with some branch of ocean engineering. That's not many people in the world. I think we sort of, we have a reputation bigger than our size.

COMMISSIONER (Miller Ayre): Well, that's good, ain't it?

CLAUDE DALEY: Yes.

COMMISSIONER (Miller Ayre): All right. Well, look, thank you very much. I think it's truly relevant for us to hear the thoughts from people who, to some extent, are living the legacy component of what the resource development activity of this province has been going through for the last 20 years and so on, and it's encouraging to see. Thank you very much. Claude, we'll have a two- or three-minute euphemistically called a bio break, not a nutrition break, so that Rob can get his things ready and we can move into our next presentation. Okay, thanks. Thanks very much.

(Nutrition Break)

ED FORAN: If we're able to resume now please. Our next presenter is Mr. Rob Strong, and again, Rob's presentation is on our website. We received it yesterday. Thanks, Rob. And so, if everybody is seated and all that stuff, then we'll let Rob proceed.

ROB STRONG: Good morning, Mr. Commissioner, Mr. Foran, distinguished members of the ExxonMobil team, ladies and gentlemen. I feel like I'm making a political speech.

I have entitled my presentation today in two parts. One is called "Questions," and the other is called "Suggestions." For those who know me, know me that I'm full of questions, so I've really tried to handle the question part on a specific part of the Hebron Project, that being Pool 3. My suggestions are in the area of communications and how to enhance opportunities for Newfoundland companies. So, that's my, I'll try to stay within the 15 minutes, I guess, I have. Just a little background on myself. I guess I'm the senior citizen in the oil industry, with the exception of when I look around. And of course, Luc is there, yeah, and you've got to be old when you know 75 percent of the people in the audience, which I do.

My very pleasant career in the oil and gas industry started during the exploration stage in 1979 when I started off with Crosbie Offshore, and I was one of several girls and guys who started then who knew nothing about the industry. So, it was a hectic time from '79 to, say, '85 watching the exploration programs go under way. I remember four drill ships on the Labrador coast and three or four semis on the Grand Banks. So, I guess I've been involved in all four projects to date in one way, shape or form: Either at the exploration stage, the development stage and now the production stage.

My experience specifically has ranged from a variety of areas of shuttle tankers. I, luckily enough, was involved in the early formation of the Pennecon Ugland and the three shuttle tankers. We also did the offshore loading systems for Hibernia. I've been involved in moving modules, or at least helping organize the movement of modules for the Terra Nova platform. I've been involved in some heavy-lift operations: Lifting modules on top of FPSOs and, in recent times, in what we used to call "glory holes" which are now known as excavator drilling centers, and I struggle with that.

And a quick sidebar, Mr. Commissioner, is the new language, and there are three issues: One used to be a glory hole, which is now an excavated drilling center; the other used to be a mating, but you don't mate anymore, you do float overs; and the third one was that we used to do rock dumping, but it's not rock dumping anymore, it's subsea rock installation. So, during the early days of my career, I had, with the support of government, like many Newfoundlanders, the opportunity to travel to the North Sea and watch several GBSs during the construction stage. I think the highlight of those many trips we did was to see four under construction at the same time. I think they were probably Gullfaks A, Gullfaks B, Oseberg and Troll. So, I throw an overdue complement to our government who, in the early days, did a wonderful job of taking some of the Newfoundland, or the Newfoundland business community to the North Sea so we could learn all about it.

I have been a member of NOIA for 30 years, and a Past President, President, and Vice-President, and Chair of this and Chair of that, but I certainly want it understood that although I concur with everything that NOIA has said in its presentation, that my comments are those of Rob Strong and not NOIA. Although, as I say, they mirror, I think, in most cases. On the communication side, I remember Hibernia, in particular, in their communication

strategy vis-à-vis getting a message out to the supply community and getting the early message out. And, of course, Hareesh Pillai, who we all remember, used this great quote, which I use all the time, "if one wants to get a boat ride, one must be near the river." And you must know what you're talking about to get near that river before you get on the boat.

So, the second part of my presentation is going to be based around communications, and I've come up with some suggestions for you, Mr. Commissioner, which I hope you might consider in the writing of a report and, obviously to Mr. Parker and Mr. McCurdy. My questions, as I say, there's so many things of the Hebron Project that we'd all like to understand. It's difficult to focus in on one in particular. So, for the sake of the day's program, I've taken Pool 3 for a couple of reasons. It represents some 29/30 wells, as I recall, in total.

The first one, EDC1, has got six producers, two water injectors, two gas injectors and EDC2 has got four producers and three water injectors. And that, of course, represents a significant opportunity for the supply community if you assume three to four months to drill a well, depending upon whether you're deviating or whether it's a work-over and so on. The drilling of 20 wells represents, to my mind, about four or five years of rig activity. And, of course, with rig activity comes a real flow-down of other opportunities: Supply boats, helicopters, supply base, tubular companies, mud companies, diving companies, cement companies, catering companies.

So, I'm really curious about the development of Pool 3. I've looked at both schedules from the Development Plan, and the major schedule for the overall project shows first oil 2017, which is well known and been well communicated to the community and to the business community. However, the following slide, 110-2 shows EDC, excavated drilling center design and excavation, first oil minus five years and that would be 2012. I raise that because you need a lot, and particularly the subsea companies who are going to supply the ... backwards/forwards. Yeah, these, the well-heads, the manifolds, the jumpers, and the excavation of drilling centers, the subsea tieback to the platform; these are activities that require significant advance notice, and so, if indeed the schedule, as presented, or at least seeking clarification, my question to ExxonMobil is, can they at some stage, probably verbally at the termination of my presentation or written, can they clarify the situation with respect to Pool 3 development because of the huge amount of opportunities that it presents?

Now, my second part relates to suggestions, and my next two slides offer my suggestions as to how to improve communication or the flow of information from Hebron to business people such as myself and the overall business community.

Having been around in the Hibernia days, I remember how HMDC communicated their information to the business community and, with due respect, Hebron doesn't appear to be giving the same amount of information at the early stages. Of course, I'm on one side of the table and Exxon is on the other, but I think my suggestions are good, and I respectfully ask of

you, Mr. Ayre, to consider them and perhaps Mr. Parker and Mr. McCurdy might comment on some of my thoughts and ideas.

This is a typical contract award notification that we see on either KKC's website or on WorleyParsons' website and on the NOIA website, and it talks about the award of a contract for electrical services to Newfoundland Power, I guess it is, or, yeah, Newfoundland Power. I'm sorry. I've got to get my pointers right. But it tells the potential subcontractors or the sub-subcontractors. It doesn't tell them what this is all about, and I'm saying here, this example above provides little information with respect to the scope of work. There's a need, although it may have been covered in the EOI, a more extensive scope work, but even on contract award, there's a need to provide more information on the scope, so smaller companies can identify subcontract opportunities and go to Newfoundland Power and say, look, do you need wire rope for guy towers or do you need concrete for footings or do you need someone to dig the holes to stick your poles in and so on, or do you need provision of safety training. So, my suggestion on contract award is basically get out as much information as possible so that the subcontractors can go after Newfoundland Power with it in form rather than just call up the phone, call up Newfoundland Power and say, hey, I hear you've got a contract. I want to be a contractor. If that contractor called up and said, oh, I understand you need guide wires. Well, look, how do I get on your bid list? What do you need to know from me? What do you need to know **about my QA and QC and so on?**

Further examples, and I haven't added my own comments here, but the further examples of how I think communications can be improved, and these are three contracts that have been recently posted and awarded. And again, Accent Engineering Consultants have a contract for engineering services for the topside. Well, if I'm the supplier of engineering supplies, if I'm a supplier of drafting equipment, if I have drafts people on my payroll and I'm further down the feed chain, I'd like to be able to go to Accent Engineering and say, look, you need subcontractors, but at this time I don't know what engineering services are. So again, and temporary office at Bull Arm, same sort of an issue, issued to Can-Am Platforms. What does that involve? Is there some trucking opportunities that I can -- or is the temporary office at Bull Arm, the electrical services. So again, a further clarification of scope of work and finally, the third one is another example.

My final slide, and this is what I think I'd love to see, whether or not it fits into the Hebron communication process, but it relates to the utilities or the process. Is it utilities and process or process and utilities?

GEOFF PARKER: Utilities and process.

ROB STRONG: It relates to the utilities and process module which, as we know, will be sourced internationally and, as we know from the diagrams and the presentations provided by Exxon in the past, very large and, of course, it's being sourced internationally. So, what

follows is my suggestion for the contract notification for the utilities and process module, and I'd like to walk you through it for a minute, if I may.

ExxonMobil or Hebron Project wishes to announce that the following companies have been prequalified and have been issued a bid document for the fabrication of the utilities and process Module for the Hebron Project. They are: ABC, DEF, GHI. The scope of this contract includes, and that's where I, again, call for an expanded definition or an expansion of the scope of work and I've listed subcontractors may be supply of toilet paper, testing services, customers brokerage services, transportation services. This type of information is critical, particularly because this module will not be built in Newfoundland.

And then I go on to say, as a condition of bidding, and I think this happened on the Hibernia Project when they were prequalifying the topside module contractors, as a condition of bidding this contract, the contractors prequalified are requested to attend a seminar, call it a seminar, a workshop, in St. John's to provide the Newfoundland business community with an overview of their subcontract philosophy which will specifically identify realistic subcontract potential for Newfoundland and Labrador contractors and suppliers.

Are there things that we, in Newfoundland, can do to support the fabrication of that utility and process? But until we get a chance to meet with those contractors, we don't know. And then, of course, furthermore, the successful contractor/fabricator will be required to establish an office in St. John's staffed by, I said English, just as an English-speaking person whose function will be an interface between the fabrication facilities in Ming's Bite and the local supply community. Such a person should have senior responsibility.

The office should be established at the very early stages of the contract and will provide the Newfoundland and Labrador business community/service community with the names and contact information of not only the people within their own company, but their major subcontractors.

I think of turbines. If I'm selling filters to turbines, I'd like to know who is supplying the -- the red light is flashing. Does that mean I got to shut up? Anyway, perfect timing.

I just thank you very much for the opportunity of expressing, as I say, my opinion. In conclusion, I'd say that I do strongly concur with the NOIA suggestion that the DPA for Pool 3 be a separate one because there's an awful lot of activity there, and thank you very much.

COMMISSIONER (Miller Ayre): Thank you, Rob. But there are some specific questions, I know, arising from your presentation. I was interested in Anchee Ming's comment at the beginning. Bernard Baruch said much the same thing but a little more pointedly. He said, "It's no good sitting on the wharf waiting for your boat to come in when you haven't sent one out."

ROB STRONG: That's not up to me, Mr. Commissioner, to get the boat ...

COMMISSIONER (Miller Ayre): I know. Like, whatever, yes.

ROB STRONG: They're the guys that are driving the boat.

COMMISSIONER (Miller Ayre): Rob, are you saying that Pool 3 is already under way in more detail or we should more information and more detail?

ROB STRONG: I'm seeking that clarification. The schedules as presented seem to indicate that the excavation, the excavated drilling center will be done the first oil minus five years. Now, I know there's words to a concept and so on, but that's the information I'm seeking; what is the actual program for Pool 3? Because, as I say, twenty wells, three supply boats, two helicopters, catering companies and we'll all go down the list, and so it's critical that the supply community understand the timing.

COMMISSIONER (Miller Ayre): Okay. Perhaps, Geoff, you'd like to just say something with regard to that issue, and then we'll, I think we'll follow up with some questions surrounding the whole, some of the technical aspects of what, not just Pool 3, but other issues. And, Rob, we are all welcome to be here for this process, of course, because I think you're leading into a number of serious issues. So, if we can just get some comment on Pool 3.

GEOFF PARKER: Yeah. On the specific question around the schedules, the two schedules that Rob showed there, they're independent schedules. I think the confusion comes that both of them show a first oil date, and so, if you line that up, it can cause confusion. But one of the schedules shows a stand-alone Pool 3 first oil, and a notional schedule around that because, and we'll talk more about that, and the other one is the platform first oil. So, you just have to treat those two schedules separately.

As far as Pool 3 goes, it is a very challenging resource, and we've got a lot more work to do before we can put in any definition around timing, around what even the concept is. We know there's oil there. We just don't know how we'd be able to produce it at this stage.

COMMISSIONER (Miller Ayre): All right. I guess there's a follow-up, a little bit of a follow-up here anyway. When additional information was sought with regard to Pool 3, the response was that the Benefits Plan covers the development of Pool 3. The Benefits Plan commitment supply to all potential development within Hebron's SDL. And then, additionally regarding employment percentages, the Commission asked, do these estimates include Pool 3, and the response was that these estimates do not include Pool 3. And regarding expenditure, the response was the estimate indicated the total estimate project expenditure to be in the order of 6 Billion, the aforementioned 6 Billion CAPX does not include Pool 3. I

was wondering if that was still correct, and does ExxonMobil or can ExxonMobil provide a breakdown of CAPX labour and local benefits specific, we'll say, to Pool 3?

GEOFF PARKER: I mean, all the statements there are still correct. The Benefits Plan does include Pool 3, and remember, as we've been talking about for the last week, the Benefits Plan is to outline more of a process in many ways. And so, that's what it does, and that process also covers Pool 3. The challenge we have is because the Board asked us to include Pool 3 in the Development Application because it is part of the overall field, but we don't, yet, have any definition around the concept or the timing, we're not able to put those specifics around CAPX or employment numbers there.

COMMISSIONER (Miller Ayre): So, and I guess this applies to all the, to a lot of the questions that we've asked and, in particular, I'm thinking of the situation in which there's a lot of information we don't have because there are a lot of unknowns, yet there seems to be a high degree of certainty around the five year first oil concept, maybe sixth or seventh year for Pool 3. I mean, I'm just saying, in general, you've expressed confidence about being able to meet the dates with regard to first oil, but there still are a lot of uncertainties. I mean, this seems a bit, there's a bit of an inconsistency in my mind on the certainty of one with regard to the uncertainty on the other side.

GEOFF PARKER: So, the first oil is defined around a date is not Pool 3. The Pool 3 would be a notional schedule from when you decided to go ahead with Pool 3.

COMMISSIONER (Miller Ayre): I understand that.

GEOFF PARKER: So, that's sliding, but perhaps, Dave, you want to say a bit more about that.

DAVID McCURDY: That schedule that's in there is a very preliminary schedule and it looks at a full-field development type of concept for Pool 3. I'd like to point out that this thing is really complex, and we're working hard on it and working on it for some time and trying to sort out what is the best approach to Pool 3. So, in the Development Application, we've said we could do additional appraisal type of well. We really need to see flowing data to get our hands around this one. We also looked at an approach would be to do a pilot program. That pilot could be drilled from the GBS or a subsea pilot. So, it could be an initial kind of phase or something done from the GBS. Or we can step into, say, a phased subsea development to, as an approach to try and get the data. And that schedule that's in there really kind of relates to that subsea development type of approach.

COMMISSIONER (Miller Ayre): Okay then. I think that there are a couple of other questions that we'd like to pursue at this stage. GBS has a 50-year life span, and, nevertheless, with regard to the topsides, we talk more in terms of 30 years, and the question we really had was, is it possible to design topsides that meet the same kind of 50-year

requirement? I mean, potentially a large structure like this could be a legacy of the project period. I mean, there are ways where that could be the case. There's also the issue, therefore, whether any expenditures now to extend the life of topsides may be relatively insignificant compared to having to do something about that in 30 years' time.

GEOFF PARKER: I think it's very typical in industry to do the type of thing we're doing where the GBS, which is the piece that's underwater that's very, extremely difficult to do anything to in the future, is designed for a longer life. The topsides being designed for, still, a very long life of 30 years, I haven't seen any offshore topsides designed for longer than that.

What is typically done is there's an ongoing inspection program throughout the life of that topsides, and any pieces of that topsides that need maintenance to continue operating reliably, that that maintenance is done. And so, it's more around relying on your ongoing inspection program to say what is needed to further increase the life of this topsides. And so there's many examples all around the world of topsides that are operating well beyond their initial design life.

So, the inspection will show you that this particular pipe needs replacing because it has some corrosion, for example. But trying to predict that during the design phase, it is not a very exact science, and so it's actually a better risk decision to say, let's continue the ongoing inspection, and then when we get to 30 years' time, if there's more resources that need us to keep that topsides going longer, we do whatever needs to be done because it is above-water work that can be done quite effectively.

COMMISSIONER (Miller Ayre): There's also a question we had with regard to the steel skirt. In the case of Hibernia, it's concrete, and I think it's more normal for it to be concrete, but in terms of longevity and also verification and knowing which situation exists with regard to the condition of that steel skirt, can you just comment about this which is a little bit of a different design than might have been anticipated?

GEOFF PARKER: Yes. I could comment on that, but I think the premise of the question is the steel is something different to what's normally done. Yes, it's different to Hibernia, but there's many GBSs with steel skirts. In fact, all the GBSs I've worked on have had steel skirts. They are protected against corrosion by the anode system and so they do, they have that protection, but also, because they are down in that deeper water, there's less oxygen that would cause them to corrode in the first place.

COMMISSIONER (Miller Ayre): I noticed that myself.

GEOFF PARKER: So, yeah, the steel skirts are designed for the same design life as the rest of the platform. And the other important thing to note for the Hebron platform is that the design of it is that the skirts are quite shallow and so it's not relying on them to the same

extent as perhaps other, some other GBS designs that have deeper skirts because of the particular foundation in that particular part of the world.

COMMISSIONER (Miller Ayre): So, it has to do both with the bottom, the nature of the sea floor as well?

GEOFF PARKER: Yes. Because, for example, if you had thick concrete skirts in some parts, they wouldn't be able to penetrate the seabed. If you can imagine it's a big thick skirt as opposed to a piece of steel, more like a cookie cutter, you're trying to penetrate the seabed with that.

COMMISSIONER (Miller Ayre): One of the things that was stated in the responses, I think, with regard to benefits did say that while all the benefits are noted, with regard to they refer to Pool 3, that you say that you would, the mere fact that there was more activity would increase the benefits. So, that's a function of your estimates of the extra expenditure and the extra activity explicitly directed to the building of the project as opposed to any kind of outreach activities. It's just straightforward. Here's more construction. Here's more jobs so, therefore, that's where we're getting to.

DAVID McCURDY: That's correct. As Rob mentioned, there's drilling associated with it, too. So, it's the work associated with it, and it would bring more benefits. It's the general product of being more work.

COMMISSIONER (Miller Ayre): Just a couple of more questions on this, so that I have it straight in my mind. Right now, then, the first oil, and we take a position with regard to non Pool 3 aspects, that's fixed, and with regard to Pool 3 you expect that will, that target is quite a movable target then?

GEOFF PARKER: Yes. That'll depend on the scoping activities that we're starting to do and then, as Dave mentioned, the range of possibilities, perhaps a pilot before you could even get to the full-field type development. So, there is really a lot of technical work and perhaps some flowing data, as Dave said, before we could decide on a full-field development for all three.

COMMISSIONER (Miller Ayre): The Board hasn't dealt with this particularly. There is a difference between the statement made in the Benefits Agreement and the way the Board deals with the issue on benefits in which Pool 3 it says is exclusively eliminated from consideration in the Benefits Agreement.

Would you say that the explicit benefits in the agreement did exclude Pool 3 but the nature of the size of those benefits is sufficiently different from the calculated and the most likely benefits that your statement and what the agreement is saying are still consistent; namely,

that even if the Benefits Agreement with the government meets all its standards and Pool 3 is excluded there, that your estimate of the benefits in your answers you gave to us is something that is still going to exceed any anticipated Pool 3 benefits?

GEOFF PARKER: The Benefits Agreement does not cover Pool 3, and so, we need to continue to work with the province to come up with a Benefits Agreement or something equivalent to satisfy everybody around the Pool 3 piece of that. Whether the current Benefits Plan piece covers that or not, that is something that we do need to work out with the province.

COMMISSIONER (Miller Ayre): Yes. So, what I'm saying is then that we can treat the benefits the sort of size we apply to the benefits in our analysis is as including Pool 3, and that's not inconsistent.

GEOFF PARKER: Well, really, it depends on this range of potential concepts for Pool 3. For example, if we drilled wells from the platform to Pool 3, then the Benefits Agreement, the current Benefits Agreement would cover that. The piece that if you decided to go for a subsea tieback, the Benefits Agreement would not cover that. So, there's a different answer depending on which of the potential concepts for Pool 3 you go to.

COMMISSIONER (Miller Ayre): Okay. Well, at least there's room for confusion.

GEOFF PARKER: Yes. We need to tell it to the dinosaurs that made the oil resource.

COMMISSIONER (Miller Ayre): Rob, I don't know if you would want to respond, but, you've made verbal suggestions as to what the contract responses would look like when put in place when you go to the website and so on. So, excluding that possibility where you might be quite, you might have some specific ideas you'd like to see incorporated and so on, how do you feel about some of those points? I mean, this is not something that just Rob has said. It's a little bit of a theme that we've heard, trying to force, smaller subcontractors trying to follow what's happening. Did you want to make a comment on that because I think we ...

GEOFF PARKER: I think what I liked about Rob's is some specific suggestions around what we could do to enhance the website. So, I think that's the sort of thing that helps us to take onboard and say, here's a specific suggestion. Let's look at the feasibility of doing that. So, I appreciate that feedback.

COMMISSIONER (Miller Ayre): I don't think -- sorry.

ROB STRONG: Mr. Commissioner, yeah, I have a bit of a confusing role here, but I am on the Board of Directors of NOIA, and as Geoff and Dave both know, that we're always open to solicit our memberships' opinions of what they want to see, and, therefore, then get that message back to ExxonMobil.

Suggestions were mine, but having been around for 30-odd years, I know a lot of the supply community who often come up to me and say, Rob, I saw a posting for such and such, what's that all about? So, I think that there is an opportunity for ExxonMobil or Hebron team to work closely with NOIA because NOIA has 565 members globally and is looked at as being the source of offshore oil and information, particularly for those small companies, Mr. Commissioner, that it is fine for the Schlumbergers and the Halliburtons and the Rob Strongs who can devote their full-time attention to this project. But you take a small company out in Donovan's where oil and gas may just represent 10 percent of his business, but, so if he gets a \$50,000.00 order out of the Hebron Project, that's a big deal for him. So, how do we get that information, as detailed as possible from Exxon through NOIA to the small supplier. And that's the challenge that we have, or at least -- and again, I can't

COMMISSIONER (Miller Ayre): No, that's fine.

ROB STRONG: I shouldn't be speaking as a director. I'm not authorized. Obviously, any organization can only have one spokesperson; that's Bob Cadigan, who presented last week and will be presenting again tomorrow, but they're my thoughts and ...

COMMISSIONER (Miller Ayre): We'll get Bob tomorrow, I guess, or Wednesday when he's presenting.

ROB STRONG: But I, -

COMMISSIONER (Miller Ayre): Are there any...

ROB STRONG: Sorry. I recall the Hibernia days, Commissioner, when, in those days it was fax or was it telex, I'm not quite sure. I'm that old I can remember what a telex was. But we used to get faxes saying that HMDC wishes to announce that they have - and I can almost read it verbatim - HMDC wishes that they have prequalified the following companies for the supply of widgets. Widgets are -- well, the project will require 1,700 widgets and companies that can support that bid, are invited to contact the suppliers directly. And they would give a scope of work. A widget needs to be painted or a widget needs to be shop blasted or it needs to be serviced. And that's the type of information that I would like to see both at the EOI stage, at the bid stage, and at the contract award stage; because a lot of our, a lot of the smaller companies in Newfoundland don't have the time to track this Project from EOI to bid stage to Project awards.

So, all that comprehensive information, as much as you can get out there at all three stages because it is also very important during the bid stage. Because if I'm going to bid to a major contractor, I want to talk to him before he submits his bid because after he submits his bid, it may be too late. He may have found another widget supplier. So, communication,

communication, and you, of course, having a newspaper background fully can understand what I'm saying about the importance of communication.

COMMISSIONER (Miller Ayre): I got the drift.

ROB STRONG: Okay.

COMMISSIONER (Miller Ayre): If there are no more questions - Geoff, I don't know if you have any comments. If there are no more questions, then we can, I think, close this session and we adjourn until one o'clock.

(Nutrition Break)

COMMISSIONER (Miller Ayre): We'll get started and if, I think, Ed, if you can do the introductions of our next presenter.

ED FORAN: Yes.

COMMISSIONER (Miller Ayre): Thank you.

ED FORAN: Thank you, Mr. Commissioner. So, we have the Professional Engineers and Geoscientists of Newfoundland and Labrador, and Geoff Emberley, who is their CEO and Registrar, will address us. And Leo White is with him and may also respond to some questions. So, Geoff, if you would proceed.

GEOFF EMBERLEY: Thank you, Mr. Commissioner, for providing Professional Engineers and Geoscientists Newfoundland and Labrador with the opportunity to address you today. I will refer to Professional Engineers and Geoscientists Newfoundland and Labrador as PEGNL. To continue saying that mouthful would, I think, add probably ten minutes to the process.

Again, I'm Geoff Emberley. I'm CEO and Registrar with PEGNL and with me is Leo White, who is PEGNL's Professional Standards Director. We are both professional engineers. We have made a written submission to you, which I note is posted to your website, and I think it's available here. This presentation will be a synopsis of that. The presentation will include a description of what PEGNL is and, as some who are here may not understand our role and how we relate to the Project, it will also include our recommendations.

PEGNL is one of a number of self-regulating professions in the province. Similar would be, for example, for the nurses, the Association of Registered Nurses of Newfoundland and Labrador; for the doctors, the College of Physicians and Surgeons; the architects, the Architects Licensing Board. The professions are a provincial responsibility in Canada, and PEGNL administers the Provincial Engineers and Geosciences Act.

PEGNL is mandated to regulate in the public interest. PEGNL's governing board is composed of people who are elected from those who are registered, but also those who are appointed by government.

PEGNL is not an interest group or a member advocacy group. PEGNL issues licenses based on academics, work experience, references and professional practice exams. Members are subject to discipline and are required to do professional development each year. The same framework exists in each Canadian Province.

As of December 31st, PEGNL had 3,257 members and has seen significant growth since that time. Approximately 90 percent of our members are engineers and 10 percent are geoscientists. Seventy-five percent reside in the province and 25 percent reside out of the province.

PEGNL has three primary goals. First is the competent practice of engineering and geoscientists, engineering and geoscience. Competence practice means that practice done in or for the province is done by competent professionals.

Ethical practice of engineering and geoscience is another one of our goals. Ethical practice means that these professionals adhere to PEGNL's Code of Ethics, a code of practice that is a responsibility to the public above all other responsibilities. For me, being a professional encompasses these two elements of competent and ethical practice. To practice as a professional, one must be both requirements.

Within PEGNL, we indicate to our members that the highest levels of competent and ethical professional practice is what is required.

A third goal is sustainability. This sustainability refers to having competent and available professionals to meet the province's needs with respect to engineering and geoscience. Applicants are admitted through a registration committee, as required under the Act, and the members on that committee give significant scrutiny to the applications.

As part of being a professional organization and as part of the Act, PEGNL has a complaints committee and disciplinary panel to deal with complaints from the public and members. As well, PEGNL has mandatory professional development for each member. This framework exists for engineers and geoscientists across Canada.

Mobility is addressed on an inter-provincial basis through the Agreement on Internal Trade between the provinces, providing three to five day transfers for those who are in good standing in other provinces.

Mobility outside Canada is more involved. There is significant mobility with respect to academics but not the same for other matters, so transferring people from outside Canada can take quite a bit of time.

Code of Ethics. As noted earlier, PEGNL has a Code of Ethics to which members are required to adhere. Our Code of Ethics is attached, in its complete form, to our written submission.

Primarily on the list is that licensees are required to hold paramount the safety, health and welfare of the public and the protection of the environment and promote health and safety within the workplace. That's their primary thing.

What does PEGNL regulate? Engineering and geoscience, but the practice of engineering means reporting on, advising on, evaluating, designing, preparing plans and specifications for or directing the construction, technical inspection, maintenance or operation of a structure, work or process.

The practice of geoscience means reporting on, advising on, evaluating, interpreting, processing, geological and geophysical surveying, exploring, classifying reserves or examining activities related to the earth sciences or engineering geology.

You can see from these definitions from the Engineering and Geoscientist Act that the definitions of engineering and geoscience are quite broad.

One misconception that exists among some, is that engineers are only required at the design stage. This is clearly not true. A similar misconception is that only sealed or stamped drawings constitute the practice of engineering.

The Hebron Project. PEGNL has been active in all four offshore oil projects. This is the fourth presentation that we have made in this type of a forum. Each project has responded to the requirements of the Engineers and Geoscientists Act.

PEGNL's role under the Act is to license engineers and geoscientists wherever they may choose to do the engineering or geoscience work.

In each project, significant components of the professional work has been done elsewhere by those licensed to practice by PEGNL. As others have said, we learn more with each project and adapt as we learn more of how the industry works.

Working with the Proponent. We work with the proponent to implement a framework in which engineering drawings are to be stamped by a professional license to practice in Newfoundland and Labrador. And we've met with, on the same matters with WorleyParsons and Kiewit Aker.

Further, recognizing that significant components of the design will be done in Houston, we have worked with WorleyParsons to register a number of engineers who will reside there while doing Hebron work. Part of that was delivering professional practice and ethics course and exams in Houston, in order that those applicants meet part of PEGNL's registration criteria.

PEGNL will continue to work with the proponent regarding licensing required for the construction phase as well as the operation and maintenance phases.

Mr. Commissioner, I will now go over the major points we wish to make here today, and the points that we ask that you raise in your report.

First of all, it's in the interest of the public that all engineering and geoscience work that is undertaken by this project be the responsibility of properly qualified engineers and geoscientists. This makes the point whether the work is regulated by PEGNL or not, that all the engineering and geoscience work be undertaken by properly qualified professionals. That those so qualified to be licensed to practice in their specialty in Newfoundland and Labrador, as is required by the Engineers and Geoscientists Act. This point notes that if they are subject to the Engineers and Geoscientists Act, that they be licensed to practice under the Act with PEGNL.

Further, it's in the interest of the public that engineers and geoscientists at the management level must also indicate their professional responsibility through their personal registration and encouragement of their peers and subordinates to seek professional registration. This commitment to professionalism is required from all levels of engineers and geoscientists within the organization, but especially from the management engineers and geoscientists who indicate, through their registration, and their encouragement of the professionalism and registration of other engineers and geoscientists throughout the Project.

That such professional responsibility is taken by those who are closest to the work from an organizational perspective whether or not a professional seal is required to indicate that responsibility. This point establishes that in many cases, the actual professional work is done by the people closest to the work. For example, in the case of design drawings, those who work at that level should take professional responsibility through sealing the drawings. Wherever in the organizational structure of the Hebron Project, the professional engineering and geosciences judgments are made; those making the judgments should be properly qualified and licensed. This point recognizes that there are significant professional judgments made at various levels of management that, for example, may not involve detailed design, but these are also professional practice.

That the companies involved in the project are required to keep a specific record of those

professionally responsible for such work and that it is available to regulatory agencies. Record keeping is an important part of knowing who is in responsible charge professionally. It is also important that regulatory organizations have such a record as part of their quality assurance programs. This involves not only the design portion of the project, but also the construction, operation and maintenance portions.

Again, this point ensures that the focus is not only on the design phase, but also on the construction, operation and maintenance portions which extend over much longer timeframes. Further, that the companies involved in the project should inform those with professional responsibility for the work that is, for the work that is responsibly, this responsibility applies to; the company for which they work, their profession, and, most importantly, the public.

This would be a commitment by the companies to both reaffirm their support for their responsibilities of professional people and to inform their employees of this expectation. Mr. Commissioner, that concludes PEGNL's presentation and thank you for the opportunity to present here today.

COMMISSIONER (Miller Ayre): Well, thank you. And I must say, some people follow the rules and some don't, and you followed the rules. You took your presentation. You made highlights and spoke to the highlights. That speaks well of your organization, I'd say.

GEOFF EMBERLEY: Competent and ethical, hopefully.

COMMISSIONER (Miller Ayre): That's it. That's it. I think there are a couple of things but it's mostly for my edification, I guess, just in how you operation.

If people are practicing engineering in the province, they can choose to register or not. Is that correct?

GEOFF EMBERLEY: That is not correct. The Act requires people who practice engineering in the province to be registered. It also requires people who call themselves engineers to be registered.

COMMISSIONER (Miller Ayre): Okay. So, all right, they can do things, but they can't use the word "engineer". Is that it? I mean, I'm just, I mean it just for my I mean, the difference between a witch doctor and a rich doctor. No, I didn't say that. Sorry.

GEOFF EMBERLEY: PEGNL, I guess, is very similar to other professions. There's the actual practice of engineering and geoscience, and those are regulated things. If you practice engineering or geoscience in the province, you are supposed to be registered with PEGNL. Along with the right to practice, is the exclusive right to title, and that's also covered in the

PEGNL Act but the other acts within the province similarly. Other professions...

COMMISSIONER (Miller Ayre): For doctors and so on.

GEOFF EMBERLEY: Doctors. Like, you can't call yourself a medical doctor; you can't call yourself an architect; you can't call yourself a registered nurse unless you're registered with those particular regulating agencies. I hope I've answered your question.

COMMISSIONER (Miller Ayre): Yeah. That's fine. Yeah. So, what happens, then, is that people register so they can use the proper title. And, in addition to that, when you register people, what do you, or do you have the responsibility to vet those people at all or I mean, would you follow up to see if they actually had a degree or anything like that or?

GEOFF EMBERLEY: Yes, that's correct. That is a major responsibility that we have. We check a number of things. We check to see, for example, have they graduated from a recognized engineering or geoscience program. Claude Daley, earlier here this morning, referenced the fact that the Ocean and Naval Architecture Program at Memorial was accredited for the next six years. Well, we're part of a national organization that accredits the Canadian universities. So, that was part -- we would check to see, for example, if a graduate came to us that they had graduated from an accredited university, an accredited program.

We also check to see whether they have four years of qualifying experience. We would also check which one was at least one year of Canadian experience or equivalent. We would also get character references. And also, we would check to see if they had done what we call the Professional Practice and Ethics Exam, which is required of people in Canada to enter the profession.

COMMISSIONER (Miller Ayre): I mean, the public takes for granted, I think, a lot of things that behind the scenes require extra work. I mean, most people would just assume that engineers and doctors are qualified, but that doesn't happen by accident; it happens because there are organizations such as yours that police the process, right to the stage where, as I understand it from what you've said, you can actually, I mean, it's possible for you to de-register someone, if that's the right language. And that could have a major impact on their ability to earn money because they couldn't use any appropriate appellations for what they're doing.

So, your organization then has to police, and part of policing the process is to make sure that if engineers are functioning in the province, that they are registered, period. So, you have an obligation to talk to ExxonMobil about registering their people. So, I presume that it's possible for companies to have in-house people carry out engineering activities of some kind that may not be full engineers or something. Is that possible? I mean, that can happen, no

doubt?

LEO WHITE: Yeah. Just the same as in a, if you go to a hospital of course there would be all kinds of technicians and technologists operating equipment, making measurements, collecting data. And it's the same with large engineering projects, there would be all kinds of people at the level of technologists and technicians. But what happens is, the work that they're doing is being supervised and reviewed by a properly registered engineer.

COMMISSIONER (Miller Ayre): So, in the case of Newfoundland, the only way you can become an engineer in context of here, that is, you go to Memorial and you get an engineering degree there, for example. Right? Are there engineers who come out of CONA or if someone calls himself an engineer in that context, are they just not putting words in front of, you know, -- you can get a technical certificate in which you say you're an engineer, but you're not an engineer in the sense that we're talking about now?

LEO WHITE: No, that's right. Well, you know, the word "engineering" and the word "engineer" have currency outside of professional practice, so people use the word "engineer" to create something or to carry something out. You know, you can even think of instances where the word "engineer" is used to do something like engineer a crime, for example. And there's all kinds of other occupations in society that use the word "engineer," like people who operate the power plants on ships. We used to call the person who ran the train, an engineer, and, you know, there's all kinds of other...

COMMISSIONER (Miller Ayre): Stationary engineers. We had stationary engineers looking after boilers.

LEO WHITE: Yeah. A stationary engineer, power plant and so on but...

COMMISSIONER (Miller Ayre): There was a stationary carpenter too, but that was something entirely different.

GEOFF EMBERLEY: You were in the same place.

COMMISSIONER (Miller Ayre): You just didn't get going very good.

LEO WHITE: So, we're talking about people who are professional engineers, just the same as people who are medical doctors, you know, by virtue of their education, their experience and their commitment to protect the public interest, and I think that's the key feature that Geoff was eluding to in his presentation, that the role of professional engineers is guided by the fact that their Code of Ethics requires them to protect the public interest. So, public safety is one of the cornerstones that our profession goes by.

COMMISSIONER (Miller Ayre): So Geoff, is it common practice -- wherever you go, you have this issue of jurisdiction and so on. So, it would be fairly normal then for major companies like yours to simply get people registered or?

GEOFF PARKER: Some jurisdictions are more rigorous than others regarding the actual licensing. I think the intent is the same everywhere you work, and it's just all by the Code of Ethics, very aligned with the principles we've been outlining around safety, health and environmental protection. So, this is a more structured licensing approach being undertaken here.

COMMISSIONER (Miller Ayre): I hope you're registered, Luc. Is he registered before you ding me on something?

GEOFF EMBERLEY: We have his application.

COMMISSIONER (Miller Ayre): Oh, you do. Okay. (Laughter all around). That's good. You've got to check him out. I'll be interested in the results.

GEOFF EMBERLEY: He's registered in Alberta.

COMMISSIONER (Miller Ayre): Okay.

GEOFF EMBERLEY: And we mentioned that in our presentation that the Agreement on Internal Trade between provinces, applies to professionals, and if you're in good standing in one professional association across Canada that, within three to five business days, you can become registered in the equivalent association in another jurisdiction in Canada. So, engineers generally had good mobility before the Agreement on Internal Trade, but the Agreement on Internal Trade, as it applies to labour mobility within the country, has really facilitated these quick transfers, where necessary.

COMMISSIONER (Miller Ayre): Well, I mean, just as a member of the public, there are things that we assume are happening, and it's always good to hear about the process that you have to go through to make it happen. Go ahead, Leo.

LEO WHITE: Yes. I just wanted to make one additional point. There's a good comparison for professional responsibility and practice between engineers and, say, medical doctors and lawyers and nurses and so on, but one area where the comparison doesn't hold up, is that, in addition to individual engineers having to be licensed and registered, firms that practice engineering and that offer engineering services to the public, they also have to be registered. They have to have a permit, which we also issue that permit and vet those firms, you know, before they are allowed to offer engineering services to the public.

COMMISSIONER (Miller Ayre): Yes. Well, I mean, it's clearly a valuable process and just one that I didn't know the details behind your organization. One tends to hear more about issues in the medical registry or something like that because somehow or other it's more direct or there are patients affected. But if bridges were falling down, and so on, around the province, we'd soon be hearing about whether you were doing the proper job or something, I expect.

LEO WHITE: Yes. Certainly would.

COMMISSIONER (Miller Ayre): Yes, exactly. Okay. I don't have any more questions. Geoff, I don't know -- comments? No one vaulting, leaping, bounding to their feet.

GEOFF PARKER: I was just going to mention, I hope Geoff waives the language test requirement that's in the Code.

COMMISSIONER (Miller Ayre): he's a bit worried about this.

GEOFF EMBERLEY: No problem.

COMMISSIONER (Miller Ayre): No, problem. Okay. The French accent will fool us every time. You think you're pretty sophisticated. Yes, I know what you're talking. I think I got it. (Laughter). Okay. If there are no other questions, then we've come to a grinding halt for the moment. Worried timely. Some engineering trick was just pulled on us. (Laughter). Okay. Thank you, everybody, and we're on at nine o'clock tomorrow?

ED FORAN: Yes.

COMMISSIONER (Miller Ayre): Okay. Thank you.

-END OF DAY 5-