# HANSARD

## NOVA SCOTIA HOUSE OF ASSEMBLY

## COMMITTEE

## ON

## RESOURCES

**Thursday, November 5, 2015**

**LEGISLATIVE COMMITTEES OFFICE**

**Shell Canada Limited / Canada-Nova Scotia Offshore Petroleum Board**
**Re: Capping of Offshore Exploratory Wells**

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# Resources Committee

Mr. Gordon Wilson (Chairman)
Mr. Terry Farrell (Vice-Chairman)
Mr. Stephen Gough
Mr. Bill Horne
Mr. Derek Mombourquette
Hon. Pat Dunn
Mr. John Lohr
Hon. Sterling Belliveau
Ms. Lenore Zann

[Mr. Stephen Gough was replaced by Mr. Ben Jessome]
[Ms. Lenore Zann was replaced by Hon. Denise Peterson-Rafuse]

In Attendance:

Ms. Monica Morrison
Legislative Committee Clerk

Mr. Gordon Hebb
Chief Legislative Counsel

Ms. Nicole Arsenault
Legislative Counsel

**WITNESSES**

**Shell Canada Limited**

Ms. Christine Pagan - Atlantic Canada Venture Manager
Ms. Tara Barnett - External Relations Manager
Mr. Rob Van Scherpenseel - Wells Operations Manager
Mr. Scott Jardine - Health, Safety and Environment Manager

**Canada-Nova Scotia Offshore Petroleum Board**

Mr. Stuart Pinks - Chief Executive Officer
Mr. Paul Taylor - Board Member (Provincial)
Mr. Eric Theriault - Advisor, Environmental Affairs
Ms. Kathleen Funke - Advisor, Communications

House of Assembly
*Nova Scotia*

**HALIFAX, THURSDAY, NOVEMBER 5, 2015**

**STANDING COMMITTEE ON RESOURCES**

**9:00 A.M.**

CHAIRMAN
Mr. Gordon Wilson

MR. CHAIRMAN: Welcome everybody, I'd like to call this meeting to order. This is the Standing Committee on Resources. I'd like to introduce myself, I'm Gordon Wilson, the chairman.

Today we'll be receiving presentations from both Shell Canada and the Canada-Nova Scotia Offshore Petroleum Board. We broke this meeting into two sessions, so two blocks that we're going to have. The first one will wrap up, hopefully, by 10:20 a.m., in the essence of giving each equal time. Then we'll have a quick break, we'll follow that with the Petroleum Board, and we'll try to wrap that one up at 11:50 a.m. We have a few housekeeping items to do at the end of the meeting.

We'll have a quick recess after the first presentation and then we'll switch places. Again, as in every meeting, I'd ask the members to introduce themselves.

[The committee members introduced themselves.]

MR. CHAIRMAN: Again, as usual, I'd ask everybody to have their phones either off or on vibrate. The washrooms and coffee are just outside here. The Granville Street entrance is going to be the place where we would ask people to proceed in the event of an emergency. I'd remind people if they could please, to wait until they are recognized, for the sake of Hansard purposes, when they are speaking.

Welcome Shell, it's nice to have you folks here today. I'd like to ask you to introduce yourselves and begin your presentation.

MS. CHRISTINE PAGAN: Good morning everyone, thank you for the invitation to appear here in front of the committee. Before we introduce ourselves, I'd just like to give a quick overview. We're really delighted to be here and to speak about the capping stack and answer some of the questions you may have about the project.

Capping stack is just one of multiple-faceted, complex, risk-management tools and it is subject to rigorous internal and external review. We'd like to share some of that information with you. I'd also like to walk you through some of the other risk-management tools that we use to ensure safe drilling operations this morning.

Let me introduce you to the Shell representatives. My name is Christine Pagan, I'm the Atlantic Canada Venture Manager for Shell Canada so I lead the exploration activity here in Nova Scotia. With me today is Tara Barnett. Tara is the External Relations Manager for the exploration project. Rob Van Scherpenseel, on my right, is our Wells Operations Manager, based in Halifax; and at the far end is Scott Jardine. Scott is our Health, Safety and Environment Manager, and he is also based here in Halifax.

For the next few minutes I'm going to give you an overview of the project that we are undertaking here in offshore Nova Scotia and discuss how Shell is going to take all reasonable measures to ensure that an emergency doesn't occur, and if it did occur, how we would respond to such an emergency.

The first thing I would like to do is share with you that everything we do in Shell is geared towards safety - the safety of people, safety of the environment. Safety is our top priority more than anything else. That means preventing accidents from happening.

One of the things we want to talk to you about this morning is prevention, how we actually work to prevent any kind of incident from taking place. If we have a safe operations campaign, even if we find no oil or gas, we'll have met our primary goal; our primary goal is safety, it's just good business for Shell. We believe that accidents and incidents can be avoided and that they are unacceptable. Everything we do has safety as our number-one priority.

If you look at the second slide, this is a cautionary note, and obviously the words are rather small to read. Basically it means don't go running out to buy Shell stock based on anything here this morning. This is really not a Shell public affairs session. The line that refers best is the line about six lines from the bottom that says, "Readers should not place undue reliance on forward looking statements." With that, I'll move on to the next slide.

Let's talk a little bit about the drilling campaign. You will recall that back in 2012 and 2013 Shell was awarded six exploration licences following a competitive bid process. That bid was underpinned by work that was done here in Nova Scotia by the province, the Play Fairway Analysis. That work was pioneered by the Nova Scotia Department of Energy, and was done in order to attract investment and industry back to Nova Scotia. It's

an excellent piece of work, and that has actually underpinned a great deal of the Shell technical work that we've used to come back into Nova Scotia.

We plan to invest about $1 billion in the first six years of the nine-year licence period, and obviously substantially more if the first exploration campaign is a success.

On this slide in yellow, you can see the six exploration licences with Shell painted on them where we're the operator. We're planning to drill two wells in those six licence blocks over the next 10 or so months. The first one actually spouted a couple of weeks ago. It's the Cheshire well in the right-most block of those six yellow blocks there. Once that well is finished, we'll drill a follow-up well - the Monterey Jack well - and that will take about the same length of time so that by this time next year we will have the well results and be able to plan the rest of our campaign.

Of course, we don't know if there are going to be hydrocarbons there or not. Even if there are hydrocarbons, it will take some time for us to assess what the volumes are and how commercially viable they are.

Also on the map, and it might be difficult to see in this light, you can see a lot of small dots along the pale blue and the dark blue area of the ocean there. Pale blue is the Scotian Shelf. The offshore is the Scotian deepwater. Those dots represent all of the wells drilled in the past in offshore Nova Scotia. There have been about 127 wells that have been drilled offshore to date, and only one in five of those wells have actually encountered hydrocarbons. Keep that in mind when we talk about exploration success.

Twelve of those 127 wells have been drilled in the deepwater, so we've already drilled deepwater wells off Nova Scotia. The well that we're drilling at this point, Cheshire, isn't the first deepwater well to be drilled. It's one of a series of deepwater wells. So there has been considerable experience so far in drilling in deepwater safely.

In addition to that, Shell is a world-class deepwater operator. We've got experience of drilling hundreds of wells globally - similar wells to the ones that we're drilling at the moment and in similar offshore locations.

Let's go to the next slide and talk a little bit about the Venture team itself. As I've mentioned, Shell has been given approval by the CNSOPB to start a drilling campaign and the first well has now begun. We have an excellent team - our Venture team - that is in charge and running this drilling campaign. It's a blend of Nova Scotians, workers from other parts of Canada and international workers who bring experience from elsewhere and bring the specific expertise that's required for this kind of operation.

You can see some of them here on this slide preparing for operations and carrying out some of our emergency response drills. Incidentally, all of our training is actually carried out here in Halifax. There are two locations here in Halifax where all of the offshore training takes place.

That brings me to the next point. Our commitment to full and fair opportunities for Nova Scotians and companies here is very strong. All of our contracting strategies are managed in such a way that provide opportunities for Nova Scotians and local companies to participate and either be given employment or have contracts awarded to them. We can talk about that a little bit more in the Q & A session.

On the project currently, on the IceMAX, the drill ship that is drilling the well, about half of those folks are Canadian and half of that number again are from Nova Scotia. We have four vessels that are supporting the operation: three platform supply vessels and one standby vessel. One hundred per cent of those staff are Canadian and roughly 90 per cent are Nova Scotian. So already we're bringing a lot of opportunities to Nova Scotia.

If we do find hydrocarbons and we have a second exploration campaign, and we go on to an appraisal campaign and then start finding producible hydrocarbons, the benefits for Nova Scotians are going to be much larger. Ms. Barnett is going to talk later about some of the work that we're putting in place here locally through our social investment programs to actually gear people up so that they can start to be ready for a development campaign, if that goes ahead.

So as you can see there, everybody is geared up in orange suits with protective clothing and hard hats, and really we just want to show you that our team is focused on working safely. Everyone is given the appropriate training that they require because safety is an integral part of our operations.

Let's move on to the next slide and talk about the operation itself. I'll just put the elephant out in the room; we're very conscious of the Deepwater Horizon event. We've considered the outcomes of that event and the findings from it, and we've applied the learnings to ensure that it doesn't happen again. It's really important for all of those learnings to have been absorbed, and Mr. Van Scherpenseel and Mr. Jardine will talk more about those learnings once we are in the Q & A session.

After the Deepwater Horizon event, Shell took immediate steps to reinforce the safety of all of our operations globally, including a review of all of our operating practices, testing frequencies for the equipment, all the training protocols, and the safety processes. As a result of that, when drilling commenced in the Gulf of Mexico after the Deepwater Horizon, Shell was actually the first offshore operator to be given permits to drill the next operations, to drill the next deepwater wells. We're very proud of the fact that we responded quickly to the learnings that came out of the Deepwater Horizon event and were able to be the first operator to get back into business in the Gulf of Mexico.

You can see there on that slide there are some photographs of the drill ship and one of our search and rescue helicopters. The drill ship is the Stena IceMAX, it's a world-class double-hulled drill ship. It was built specifically for these sorts of operations in the North Atlantic. It has been certified by the CNSOPB and the DNV, which is the certifying authority for Transport Canada. We've got three supply vessels which are also certified,

they are local Nova Scotian vessels. They will be supplying the drill ship with all the equipment, materials, and groceries - everything that it needs to carry out the operation. We have one platform standby vessel similarly certified.

We've complied with all the federal and provincial regulations. We've been very transparent with the communities about our plans and the risks and mitigations to those plans.

Some of the other best-in-class activities that we've carried out: trajectory modelling, which we'll describe to you later on this morning; the net environmental benefits analysis that was done; the certificate of fitness; and all of the other submissions that we've carried out with the government.

Let's move on now to talk a little bit about prevention. I want to focus on the blowout preventer. Safe drilling in these deepwater wells increasingly deeply below the ocean surface depends on very innovative technologies but it also demands strict safety procedures and rigorous design construction and maintenance standards. Everyone involved in drilling the well must be highly competent and trained to intervene and stop the job if they see anything that seems wrong. We have a culture of safety within Shell that embraces the principle of what we call prudent over-response: if anything goes wrong, we respond immediately. That is to avoid and prevent accidents.

The first part of that is the well design. Our well design standards require that all wells maintain at least two independent barriers to contain fluids or pressures within the well. Those independent barriers include a high-pressure wellhead; multiple casing strings, strings to be cemented in place; blowout preventers; and weighty drilling rods.

Rob is going to talk a lot more about blowout preventers in a minute but just let me uncover some of the high points. These barriers that we've talked about work together to keep hydrocarbons where they belong, and that is either in the reservoir or in the pipe or in the system. I won't go into the technical details of these barriers but I'm going to give you a very simplified overview of some of the features of the blowout preventer. You can see up there in yellow that huge piece of equipment - it is about the size of a bus - which is a series of valves and rams, and it prevents an uncontrolled release of liquids from occurring. It's a critical piece of equipment because it will stop the flow of oil and it will allow us to regain control of the well if there was ever to be an incident.

Successful operation of the BOP obviates the need for a capping stack because the BOP would effectively be the system that shuts the well in, if there was an emergency. We'd like to explain to you why the BOP is so important in the well design. However, if there was an incident, we would still begin the immediate mobilization of the capping stack from the location that it is stored in. We wouldn't do nothing, we would be working immediately to get things organized. All of these redundancies are built into our operations so that we can utilize whichever one of them is needed, if required.

Some of you may not be aware of this but the BOP is installed in the well at the sea floor and it is always present when drilling the well. The BOP isn't just put onto the well if there's an incident, the BOP is there at the time of drilling. We're currently running the BOP at the moment on the well that we're drilling. It is being tested and then it is being run.

How is the BOP used? In certain circumstances the BOP will be activated automatically so there are mechanisms in place to ascertain whether the well isn't behaving as it should. If that's the case, the BOP doesn't require human intervention, it will automatically be shut in. It includes three sets of cutting jaws or shear rams, and those shear rams slice through the drilling pipe and close the well immediately and effectively. That takes up to 45 seconds so that's how soon it can be before we can actually shut the well. It doesn't take that long to get the well safe.

BOPs are specific to both the drilling rig and the drill ship that they are being used on and also the well where it is being used, so BOPs aren't interchangeable all over the world, you have specific BOPs for specific tasks. They are tested before, during, and after each operation. In addition, on the drill ship that we have drilling this well, at the moment we have two BOP stacks. So one is there on the well the whole time; the other one is being tested and maintained. If one BOP goes out of commission for whatever reason, the second BOP is there to be utilized immediately.

As I said, the BOP can be activated within 45 seconds, if need be. It is also designed so that in any circumstance if communication between the drill ship and the BOP is lost, it is automatically activated. So there's human intervention, there's automatic intervention. If something was to go wrong and the BOP stack couldn't be operated by any of those two implementations, the ROVs are remotely-operated vehicles that can also perform the intervention. They would be lowered on the umbilicus and they would be utilized to push the various buttons on the BOP and shut it in immediately.

I've spent a bit of time labouring on the BOP, but really, the BOP is the critical piece of equipment to contain any kind of oil event.

If we go to the next slide, let's talk a little bit about some of the other aspects. Beyond the technology of the blowout preventer, there's a couple of other things we want to talk about. First, there are people, and I've mentioned the training that Shell staff go through. It's not just Shell staff, our Shell drilling staff have 35 years-plus of deepwater drilling exploration experience. We also put our contractors through the same kind of rigorous training. Everyone who has the privilege of working on a Shell well also has to go through very, very rigorous training to work on our Shell wells.

The second piece is the 24-hour monitoring. That's the photograph up there on the slide. It called the Real Time Operations Centre. It's very sophisticated, you can see a lot of computer technology up there, a lot of people in the room monitoring what is going on

on the computers. The RTO Centres, as they are called, are there to provide early identification of anything that might be going on in the well that might be untoward.

The well site is connected to the RTOC here in Halifax, and there are also RTOCs in Houston, New Orleans, and Calgary so that at any given time there is a great number of people looking at what is going on in the well. All of those people are empowered to intervene as soon as they see something that isn't right in the well.

Because of these preventive measures and all of the industry improvements that we've taken on since the Deepwater Horizon accident, we would like to hope that the risk of a major accident or spill is very, very low.

A couple of statistics for you; world-wide there have been about 50,000 offshore wells drilled, and the landings from all these wells that have been drilled are incorporated into our safety plans or procedures and our well designs so that we can drill the wells as safely as possible. We're continually improving our processes to make sure of that.

If we go to the next slide, let's now talk about oil spill response equipment. In that very low probability of an event taking place, we would mobilize oil spill response equipment. In the mean, oil spills are most likely to be very small incidents such as during a vessel off-loading fuel onto the rig - not the significant blow-out that everyone is familiar with from photographs of the Deepwater Horizon.

However, our emergency and spill response planning is deliberately designed so that we can respond quickly to any spill - whether it's a small spill or a large spill. We have the equipment there on hand to deal with it. We're not complacent.

So before going into all of the response options, let me just say one thing. We wouldn't be able to use many of the response techniques I'm going to describe to you unless there was consultation with the board and with the fishing communities and the local communities. We can't deploy many of these response options unilaterally. We're not allowed to do that. We would have to have open dialogue with the authorities and be given the approval and permission to use the spill response mechanisms. As I say, we engage with fisheries, with the First Nations communities, and any other parties that would be impacted.

There are several tools that we can use to respond to an oil spill, and having access to a number of these different tools is critical so that a response effort can be tailored to the particular incident. There are four main items in the tool kit and we would decide on which items to use based on the specific incident itself, the environmental conditions, the ocean conditions, and the environmental protection that we had to provide. Also, the safety mechanisms that we would have to provide to the first responders. If there was a spill, we would have to make sure that the people responding to the spill were safe.

So as I say, there are four main items in the tool kit. The first one is Mother Nature. Sometimes natural remediation is all you need to deal with a spill. Some cases, a small diesel spill from a vessel, for instance, offshore in high seas it is not safe to deploy recovery equipment there. It's best to let Mother Nature take its course and allow the spill to dissipate.

The second one is mechanical intervention. You can see a couple of the pictures up there. Vessels equipped with booms and skimmers - they can be used to mechanically collect the oil. This technique is most often used in calm seas on small spills. All of our platform supply vessels and the standby vessel are already equipped with all of this equipment so that they can respond immediately in any incident, if an incident were to occur, with their equipment.

The third technique after mechanical intervention is burning. Burning is actually quite an effective way to get rid of oil slicks. It's quite appropriate in some circumstances. But if any of those three circumstances can't be utilized for whatever reason, the fourth tool in our tool kit is dispersants. Dispersants can be applied from vessels or from aircraft to disperse the oil on the water's surface, but also into the water column, and that facilitates the natural biodegradation of the spill and also its natural dilution.

So as I said, dispersants can be used either on the surface or injected directly into the subsea, into the flow of oil at the wellhead, if there was any incident. That response technique would be very effective both day and night, in any sea states, 24/7. That would also be required to preserve the safety of the first responders. We would have to make sure, if they have to respond, that the environment around them is safe, and dispersants are the only way to do that.

I'll just reiterate, any use of burning or dispersants would have to be approved by the CNSOPB. We can't do that without the CNSOPB's approval.

Let's talk a little bit about the vessels. You can see the vessels up there. We have four vessels, as I said - all equipped with world-class remediation equipment for immediate response. In addition to that first response, there's also world-class equipment that's certified by the certifying authorities on standby in Dartmouth. That can augment the response capacity and the capability if we do have to react to a spill. Again, we'll describe this more fully in detail in the Q & A session because I do have a few things that I want to continue to show you in the presentation.

Before we move on to the next piece, I just want to say that the first- and second-level response equipment that we have staged on the vessels and in Dartmouth is more than any other wells that are currently or have been drilled in Atlantic Canada, so we're bringing a lot of what we hope will be redundant technology to this operation. We hope we don't have to use it but we have it there just in case we need to use it.

Let's move on to the capping stack now. This is a good time to address some of the concerns that we've seen raised in the press about two issues, the first one being capping stacks and the second one dispersants. We'll go into a little more detail on dispersants.

Something that you may not be aware of and I'd like to share with you this morning is that there was no such thing as a capping stack prior to the Deepwater Horizon event in the Gulf of Mexico. That technology didn't exist anywhere in the world. That technology was invented as an immediate response to cap that blowing well; since then the industry has grown up around it. Capping stacks have been designed and maintained since then, but not once since the Deepwater Horizon event has a capping stack been necessary anywhere in the world. So those capping stacks have been built and they're sitting in strategic locations, but not once have they been required. I just want to make sure everybody appreciates that because there has been quite a lot of attention to capping stacks.

If an accident was to happen and if there was a spill of any magnitude, Shell wouldn't allow the spill to continue unmitigated, untreated until the capping stack arrives. It's simply not true; we wouldn't sit doing nothing, waiting for the capping stack to arrive. We would start to deploy immediate techniques. The drilling organization would start to work on response well drilling; the safety and environment group would start to work on remediating the spill. There would be a lot of work started immediately after a spill happened. As I explained, the critical piece to stop that spill from happening is the blowout preventer.

So a capping stack would be mobilized immediately, no hesitation, we wouldn't wait for the capping stack, but it would be instigated as a backup plan because there would be other things being done in place. While the capping stack is in transit there are a lot of steps that would be taken at the well site to prepare for the capping stack's arrival, and Mr. Van Scherpenseel is going to go into those in some more details later.

The capping stack for the Shelburne project, as you know, is managed by a consortium called Oil Spill Response Limited. That's a consortium of which Shell is a global member. Most of the major oil and gas companies globally are members of Oil Spill Response Limited, that consortium. The capping stack in particular for Shelburne is located in Stavanger because it takes a lot of maintenance, a lot of care to make sure that capping stack is maintained in tip-top condition so that it's ready for deployment to wherever in the hemisphere that it's needed. It requires specialized facilities, equipment, and very specialized-trained personnel, none of which are located here in Atlantic Canada. That level of equipment and infrastructure just isn't here in Atlantic Canada, neither in Newfoundland and Labrador nor in Nova Scotia.

Developing that capability locally requires a substantial amount of time, more time than it would take to be able to be ready for this well. That's why Shell and the other offshore operators around the world rely on the consortium OSRL to support this capping stack. It's the largest industrial, internationally-funded co-operative. There's another one in the Gulf of Mexico but the capping stacks that belong to that consortium are only for

use in the Gulf of Mexico because that's such an active theatre of operations, so those capping stacks can't be taken out of that theatre.

The Oil Spill Response Limited consortium provides access to this very specialized global response equipment. The personnel are all highly trained, that capping stack is maintained on a daily basis. If we were to need it, it would be ready for loading onto a vessel as soon as we made that phone call.

I think we turn to the next slide now. This slide shows where the capping stack is equipment and it's located strategically around the world. You can see those locations: Stavanger, Brazil, South Africa, and Asia. The reason they're located in those four strategic areas is that that's where there is a high concentration of oil and gas activity. Those are the areas with a high volume of activity, where the equipment might be needed on a more regular basis. However, as you can see - and it's in very small lettering - the deployment time that it would take for a capping stack to come from Stavanger to Nova Scotia is about the same as it would take for a capping stack to go from Brazil to South Africa. So all of the capping stacks are located in places where they can be deployed relatively quickly.

So it's not true, as some have suggested, that we are operating at a lower standard in Nova Scotia than elsewhere. That is simply not the case. We're operating at the same standard here as we operate elsewhere globally.

It has also been suggested that in other jurisdictions such as the U.S. there is a requirement for operators to have a capping stack available within 24 hours. That is simply not true. That's a piece of information that has been taken and misrepresented. The only capping stack that was there immediately was in Alaska. That capping stack was maintained near the drilling location because it was custom built for the Alaska operations. Alaska is a very different situation from all of the other global deepwater areas in which we operate - very shallow water, sea ice there all the time, very different drilling techniques, very different capping stack. It's the only capping stack of its kind in the world and it can't be deployed elsewhere.

So the response plan that we've developed for Nova Scotia - and Mr. Jardine can talk about this later - is consistent with all of the other operations throughout Atlantic Canada and elsewhere in the world. I just want to make sure that everyone appreciates that. We're not operating under any different standards here than we are elsewhere.

Let's move to the final slide and talk a little bit more about dispersants. Again we're seeing a lot of concerns raised regarding the use of dispersants. Many of the reports we've seen contain a lot of misinformation, so I'd like to clarify some of the misinformation that has been bandied about.

Dispersants are an important part of the response tool kit. If Shell wishes to use dispersants, as I've said, we can't use them at will. We have to have authorization from the regulator, in consultation with the science table and Environment Canada, before we can utilize dispersants.

So Shell cares very much about the fishing communities and the First Nations communities and the local stakeholders. I have to say, we've been engageing with representatives from all of those communities since we started planning for the seismic program and the drilling program back in 2013. I think we've had something like 28 engagements with the fishing communities and 20 with First Nations - upwards of 20 and 28. So we do take very seriously people's livelihoods. We understand. We appreciate that. We're doing our best to make sure that we listen to what people have to say and we take their concerns on board.

One of the things that we've done is we've conducted an environmental benefit analysis. That looks at the benefits of using dispersants in the case of any kind of spill. As I said, we can't use dispersants at will - we'd have to have permission from the government, from the CNSOPB to do that.

Let's talk a little bit about dispersants. The use of dispersants is widely acknowledged as being one of the best ways to get rid of oil - whether it's on the surface or in the water column. There is a list up there on that slide. I think there are 75 countries worldwide where the use of dispersants is actually approved, and Canada will hopefully be on that list soon.

So the Government of Canada's regulatory impact analysis statement earlier this year - I think it was June 4, 2015 - indicated that Corexit had been the subject of significant domestic and international research and scientific testing, and it was shown to be highly effective and practically non-toxic, by international standards and aquatic toxicity tests. The use of Corexit is not something anomalous, we're not trying to do something in Nova Scotia that isn't done elsewhere. As I say, we wouldn't use Corexit unless it was absolutely necessary and we had permission to do so.

Let's talk a little bit about dispersants and why they are useful. If there was a spill - and there's a very, very low chance, an infinitesimally small chance of there being a spill or blowout - we would look at all the tools in our tool kit. If we had to use dispersants we would request and require permission to do so.

There's a number of reasons why they have been demonstrated to be useful: they can remove oil from the sea, from the surface of the sea, and from within the sea. They can remove oil from the surfaces of sea birds and marine mammals. They can make sure it doesn't reach the shoreline and they can also minimize the impact on people, whether it is people who live on the shoreline or fishermen who need that for their livelihood or for the first responders, to make sure that it is safe for first responders to get out there.

We can facilitate the natural biodegradation of the hydrocarbon spill and that utilizes the bacteria that actually naturally occur in the ocean and feed on the seeps that are occurring all the way along the ocean surface and the ocean seabed. One of the things that they are also very useful for is when they are injected into the water column they can stop or break up the flow of hydrocarbons, and if we had to use a capping stack - in the small possibility that we had to use a capping stack - dispersants would actually help break up that flow of hydrocarbons and allow the capping stack to be put in place.

Let's go to the last slide. I hope this gives you a clear overview of the exploration program, some of the risks that we are facing, some of the misconceptions that have been made about the program and about some of the activities that we're doing, but also to give you a better idea of what we're trying to do to prevent those accidents from happening because prevention is much, much better than mitigation. If we can stop something from going wrong, that's much better than dealing with it after it goes wrong.

I'd just like to underscore that we are a best-in-class operator, we are privileged to be here in Nova Scotia. We feel privileged that we've been allowed to drill exploration wells, look for hydrocarbons, and bring some benefits to Nova Scotia. We take our responsibilities extremely seriously and we're very focused on ensuring that a spill doesn't happen. As I said, we're privileged to be here, we're happy to be here. I'll close now and invite any questions. Thank you.

MR. CHAIRMAN: Thank you very much. For the sake of time - we've got a lot of information here - I'd ask that the questions be short and the answers, hopefully, the same. Mr. Belliveau, the privilege goes to you for the first question, sir.

HON. STERLING BELLIVEAU: First of all, Mr. Chairman, I'm actually a bit ahead of you because I'm going to make a motion that we extend the Q & A by 30 minutes - 15 minutes for each presenter. I know you went through the timetable, and it is important that we have an opportunity, so my motion is to extend each presenter's Q & A by 15 minutes.

MR. CHAIRMAN: I'd like to be able to entertain that but at this point in time I believe, for the sake of argument, I would say there's a lot of people - I myself have a commitment immediately following this and I would have to say that we would rule against that. We will have a vote on the motion.

Would all those in favour of the motion please say Aye. Contrary minded, Nay.

The motion is defeated.

Can you continue with your questions, for the sake of time, please?

MR. BELLIVEAU: For the sake of time, Mr. Chairman - Christine, I'll get right to it. If you can revert to Slide 3, the picture of Nova Scotia in the area there, first of all I want to say that our Party certainly is in support of offshore development and we're here to get some serious questions addressed, and I'll get right into it.

In your presentation you said you make every effort - I actually made note of this - that Shell will take all reasonable measures to protect the safety of the workers and the environment. Several times in your presentation you talked about preventing any spills or whatever, and three times you said you need to respond immediately. This is what I want to zero in on, the stacking, the mechanism you talked about, there's several of these deployed around Europe and there's not literally one on Canada's East Coast or on Canadian soil.

If you look at the map - my question is - and you look at Nova Scotia west of Halifax, that is Canada's most productive fishing industry; over 60 per cent of the landed value is in that general area of 300 kilometres from where you're talking about exploring. That is the concern.

My scenario is, because of time, we won't get into it, and I mentioned this earlier so my question is a simple question. If I was to have a situation arise, and you made reference to it, we need to respond immediately. Knowing the influence of the Bay of Fundy and the tides around Nova Scotia and the importance of that area - and I want to point out that we are neighbours with the United States and a lot of their values come from that immediate area, too - you're asking us to set the responsibility of any risks and having the infrastructure on another continent, it is like me having a scenario where I need a fire department or I need an ambulance and I'm asking that individual to wait for that response to come from another jurisdiction, that's how the fishing industry has framed this. So it's a simple question, why can't we have that stacking mechanism on Atlantic Canada, Nova Scotia soil to address as we move forward in this exploration? Thank you.

MS. PAGAN: Mr. Belliveau, I really appreciate your question. Shell fully empathizes with your situation. We understand the value of the fishing industry, we understand the concerns of the local communities.

What I was hoping would come out of my presentation was that before a capping stack is ever needed, we do everything we can to prevent the need for a capping stack. I would ask Mr. Jardine to talk a little bit about the preventive mechanisms we use so that a capping stack isn't required.

MR. SCOTT JARDINE: As you've heard, we have world-class oil spill response equipment in situ in the field that would be deployed within the first hour. Of course that is dependent on weather conditions, if it is safe to do so. We also have a very complex, sophisticated tool kit of equipment, techniques, and strategies that would be considered in the unlikely event that there was a loss of containment and a spill to water. Does that answer your question?

MR. BELLIVEAU: No, it doesn't because what I tried to explain here quickly, and again it's all about time, is that you are asking for the industry - we can clearly point out that this is a very valuable resource. The question is, as you made in your presentation, that you are going to have a response immediately. To me there is a lag time, the gap has been established between 21 days, the Canada-Nova Scotia Offshore Petroleum Board reduced that to 13 days, and it is a seven- or eight-day time frame to come from Europe with this technology to Canadian waters. That is the question here, why are we asking this industry to accept that risk and not have that infrastructure in place in this jurisdiction? It's like asking, if there's a fire or you need an ambulance, for that infrastructure to come from another jurisdiction. That's what I'm trying to . . .

MR. JARDINE: Let me try to build on my comment. You've mentioned that it's absolutely a risk-based decision and it's not felt that the risk warrants or justifies a capping stack for this operation. On a daily basis, for example, in the last five years there have been upwards of 75,000 medium-size oil tankers transiting the Atlantic Canadian waters where I would suggest is a significantly higher risk of an environmental incident. The probability, the scenario we're talking about is extremely low probability and there are multiple mechanisms and barriers in place to prevent it.

We also have that immediate response capability within the first hours, so again, I think you have to look at the residual risk that we're talking about is very, very low. Shell has the capability to deploy an immediate capability in the field in the first hours. I think we're probably ignoring - if the concern is with transportation of oil into these very environmentally sensitive areas, there's a much larger risk that I think also needs to be discussed and brought into this conversation.

MR. CHAIRMAN: Mr. Horne.

MR. BILL HORNE: Thank you for this presentation - very wisely written and spoken about. I have a little knowledge about the offshore as far as working with the Offshore Petroleum Board when I worked for Environment Canada. I realize you do have a tool kit and the tool kit has the value of using fire as a way of getting rid of oil. It has been demonstrated offshore in Nova Scotia that fire can work. So I'm glad to hear that you would be considering that at times of an emergency. I'm just wondering, how many holes in deepwater has Shell drilled in the last five years or so?

MS. PAGAN: Globally?

MR. HORNE: Globally.

MS. PAGAN: From an exploration perspective there are probably 50 to 60 in the last five years and once we've explored, we then drill appraisal wells as follow-up wells to the exploration wells and development wells. So there are probably 200 to 300 deepwater wells. We have a lot of experience in deepwater.

MR. HORNE: And the water here is not the deepest. I'm sure you've drilled . . .

MS. PAGAN: No, we've drilled in deeper water globally.

MR. HORNE: You are the oil spill response people in Nova Scotia. Are we providing you with Corexit or the right type of Corexit for the oils you might be finding?

MS. PAGAN: Yes, Mr. Jardine can talk a bit more about that. We have a company here in Nova Scotia that we're using as our second response organization.

MR. JARDINE: We have elected to stage our own local stockpile of dispersant here as a prudent response or over-response. We certainly don't want to wait for it to come from somewhere else should we need to use it. We also have a guaranteed supply chain thereafter. Basically we have about three days' worth of organic or in situ capability. Then for the next 10 days a continuous supply would be brought in by our global consortium, and then thereafter the manufacturer of that substance would be able to provide a continuous supply of Corexit should we need to use it in that very unlikely scenario.

MR. CHAIRMAN: Mr. Lohr.

MR. JOHN LOHR: Thank you for the excellent presentation. My question just goes to basic curiosity. I'm wondering if you could just say a bit more about this dispersant Corexit. What is it actually and what does it consist of and how does it work?

MS. PAGAN: I'll pass that question on to Ms. Barnett. She's our environmental specialist.

MS. TARA BARNETT: Corexit or any dispersant consists of basically two components. One is a surfactant. That breaks up your oil. The other is a solvent, which breaks down the oil. The way that works is that molecule attaches to oil and breaks it apart - sort of like that old Dawn dish soap commercial where you pour that in and the grease separates. What that does is it allows that oil to go into very small particles - smaller than a period on a page, which in turn gets eaten by the bacteria in the water.

MR. LOHR: So is there a component in the dispersant to directly encourage the microbiological breakdown or just by simply making it smaller it works that way?

MS. BARNETT: Exactly. By making it smaller, it makes it available to that naturally occurring bacteria, and they're able to colonize that oil within about four weeks so you've got it out of the environment in about four weeks.

MR. LOHR: What happens to the dispersant after it breaks down?

MS. BARNETT: It's also just taken in by that bacteria dilution over time - it's taken into the broader ocean environment.

MR. CHAIRMAN: Mr. Farrell.

MR. TERRY FARRELL: I know the fear that's fresh in all of our minds comes from the Deepwater Horizon disaster and what was seen there to be an inordinately long response time. I'm just wondering, are there specifics about the practices and the procedures and the equipment that will be in place for drilling in our neighbourhood that separate us from that and - maybe guarantee is too strong a word - can assure us that we won't be faced with that type of response time, whether or not the capping stack is available or that this is a safer operation and any mistakes that occur there won't be repeated?

MS. PAGAN: April 20, 2010, was a wake-up call for industry. It brought everyone to their knees. It essentially stopped drilling globally at that point because of what happened. Before I hand over to Mr. Van Scherpenseel, industry was called to a halt at that point because we didn't know if it would happen again. The learnings from the Deepwater Horizon incident have been taken on, they have been deeply analyzed. You can go to the public record and read the things that happened on that well, the learnings that have come from there. That has been taken on by all global deepwater operators.

I'd like Mr. Van Scherpenseel to go into some more detail on that but we took it very, very seriously.

MR. ROB VAN SCHERPENSEEL: Thank you very much. The response from Shell to that incident has been mainly towards finding solutions towards the left of the bow tie, and the bow tie, what we mean is the prevention of the incidents. Part of the response has been coming with a technical response like a capping stack, and so on, after the fact. Our company has chosen more to focus on the avoidance and what we mean by that.

We have folks on process safety. Process safety means we have been training our personnel and their contractors in recognizing the risks and exposures and to be very proactive on those. That involves certifying the equipment but also being trained to know how to respond. We have an important facet of this system, we have a safety culture in place in the company which means if in doubt, you will react and you will stop operations and you correct. So the key folks have been ensuring that all our barriers are in place.

We talked about a BOP and assurance because assurance that the BOP works is a critical aspect. In our operations every week we stop operations and we function test the BOP to make sure that all functions are functioning. Every two weeks we actually stop operations for a day to pressure-test the BOP to make sure everything works. All that information is documented and signed off and shared with the regulators, as well, for verification. So there's a lot of focus on our end on the assurance that those systems work and not on the response side of it. We have a response mechanism, it's all very well detailed in our submissions to the board, but once again, it's in the front end of our work. Even the

well designs have changed since Macondo; they are now all designed to be able to be capped and shut in. There have been various aspects of the well which have changed, as well, so this has been our focus.

MR. CHAIRMAN: Ms. Denise Peterson-Rafuse.

HON. DENISE PETERSON-RAFUSE: Thank you very much, Mr. Chairman, and thank you for your presentation. I want to go back to the dispersants and I have a couple of questions with respect to those. As you made mention, there is some contradictory evidence with respect to dispersants. For example, Dr. Terry Snell, who is the Chair of the School of Biology at Georgia Tech has stated that using these dispersants would be ". . . a disadvantage in trying to protect commercial fish stocks or shellfish species from the toxic impacts of hydrocarbon pollution."

I have two questions: (1) why do you believe that there is such controversy between the scientific evidence with regard to dispersants, and is it worth the risk if there is this controversy between scientific evidence; and (2) do the dispersants drive oil to the bottom of the seabed, which could create a risk to the bottom-feeding fisheries? Maybe there are three questions, sorry.

MS. PAGAN: The answer to the broader question - why are there disagreements in the scientific community? I think that will always be the case. You'll always have scientists who have a different interpretation of the facts. However, on balance, the well-respected scientific analyses that have been done and have been peer reviewed by independent scientific bodies would indicate that the uses of dispersants far out-weigh not using dispersants. With that, I'll hand you over to Ms. Barnett. She can deal with some of the more detailed questions.

MS. BARNETT: I'll actually start with your last question first because it's sort of the easier answer. With the question around sedimentation - do dispersants actually sink oil - they don't. What happens with oil that sinks is it attaches to sediment and the sediment sinks and it takes it down. So if you use dispersants, you don't get that attachment. What happens - where you would get sinking is if you had oil that was weathering - so it was in the ocean, it was untreated, all the light parts were evaporating, it was forming tar balls, that's when you get it sinking, attaching to sediment, getting into a near-shore area. That is not a good situation. That's why we would want to disperse offshore in the deepwater environment.

To the toxicity question - I am familiar with the paper that you reference. It's important to understand with a lot of those scientific studies how they did those studies. That was an eight-hour tank test using a 1-to-10 concentration. So that's one cup of dispersant for every 10 cups of oil. In a real-life field application we would use a ratio that was closer to 1-to-50 to 1-to-100, so already we're not looking at the same concentration.

The other factor there is the duration, so with toxicity there are two considerations. One is concentration - how much you're using; the other is the exposure - how long you're using it. That eight-hour tank test is in an enclosed space for a consistent eight hours of constant agitation. In a real-life environment you're going to - say you're using dispersants at the wellhead. You're going to spray that into the oil. It's going to immediately start to dilute, and so the only way you would get a species getting that kind of exposure would be if they were actually staying at that site in that high-pressure sort of spray environment for eight hours, which you're just simply not going to get. It doesn't translate to a real-world application.

So that toxicity is not - you may see that in a lab result, but you're not going to see it in the actual environmental conditions that we would use dispersants offshore.

MS. PETERSON-RAFUSE: Thank you very much, I appreciate it.

MR. CHAIRMAN: Mr. Jessome.

MR. BEN JESSOME: I certainly appreciate that there is a significant focus on the proactive side and preventive things and that certainly, based on your assessment of risk, different measures are warranted at different times. I just wanted to clarify - because I kind of got a mixed message here. We've discussed dispersants at length thus far, but Ms. Pagan, I thought I heard you say that they're not yet approved in Canada. Can you correct me or clarify what you said?

MS. PAGAN: I am going to let Ms. Barnett take that one.

MS. BARNETT: You'll notice that Canada was listed on that slide. There were changes made to the accord Act by the Energy Safety and Security Act this year. They took effect on July 1st and they do provide the board - the CNSOPB - with the decision-making authority to approve dispersant use in the event of an incident.

MR. JESSOME: Secondly, you talk about - and again, the proactive side of things, I guess numbers three and four of the preventive or reactive measures that are available require some consultation and approval from organizations and government external to your operations. I'm wondering, is there an opportunity - I guess at the risk of creating some added concern publicly - to have those consultations and create some form of, for lack of a better word, a "checklist," so that you have the pre-emptive ability to use those means, if required to, based on filling that criteria?

MS. BARNETT: I can actually address that as well. As part of our submissions to the Petroleum Board for operations authorization it included an oil spill response plan which outlined all those measures, as well as a net environmental benefit analysis for those various measures. That analysis already considers all the different options and the benefits or detractions - the trade-offs - associated with those.

At the time of the incident we would have to prepare an incident-specific net environmental benefit analysis and then consult with the board and the Environment Canada science table. We actually practised that process this year as part of our large-scale spill exercise. As part of preparation for that exercise, we consulted with those federal departments for about 18 months leading up to that, to ensure that they understood their roles in that decision-making and that they understood that in both that exercise and in real time, they need to make those decisions quickly. They need to be able to get the science table together quickly and process that information quickly.

MR. JESSOME: I appreciate that. A last one?

MR. CHAIRMAN: If you don't, please, hopefully we can get back. Mr. Dunn.

HON. PAT DUNN: Just two quick questions. In your initial statements, Christine, you mentioned the fact that you'll be drilling two wells. What is the distance between the wells? If the first well is unsuccessful as far as hydrocarbons, do you have the flexibility of maybe moving or changing where you're going to drill the second one?

MS. PAGAN: I'm a geologist by background so I'm really excited about answering that question. The distance between the two wells is about 250 kilometres so if you look up on the slide that's there at the moment, the well we are currently drilling is in the right hand, the northern - the top section of the right-hand yellow square, and that's Cheshire; 120 kilometres to the west in the second box from the left on the lower block of yellow is the second well, and that's Monterey Jack. So the first well is here, that's the one we are currently drilling, and the second well is going to be here in that block there.

They are a considerable distance apart geographically. Not only that, they're very different geologically from each other so we're testing different elements with both of those wells. Both of those wells have a different structure, they both have a different sediment input, they are both probably fed by a different kitchen, as we call it, the source rock which creates the oil or gas that fills the structure. So we're testing separate, independent structures. If the first well succeeds, that gives us confidence about that prospect but it doesn't condemn or boost the chances of the second well succeeding. They are both completely independent from each other so we would not need to move the second well location, based on the results of the first well.

MR. DUNN: Thank you.

MR. CHAIRMAN: Mr. Mombourquette. Thank you for your patience for waiting for your question.

MR. DEREK MOMBOURQUETTE: I appreciate it. Thank you, Mr. Chairman. Thank you for the presentation. I have two quick questions. You talked a bit in your presentation about the monitoring process and how many people are monitoring the project locally, nationally, and internationally, so if you could elaborate on that a little bit more.

My second question is - you talk about employment, how 100 per cent of it is Canadian - can you provide some numbers on what that is from a local employment standpoint and maybe beyond that as well? Those are my questions.

MS. PAGAN: I can start and then I'll hand off to Ms. Barnett and Mr. Van Scherpenseel for the second parts of those questions. We have three platform supply vessels and one standby vessel. They are all local, Nova Scotian vessels, they are all 100 per cent staffed with Canadians, 90 per cent of those are Nova Scotians. I think that equates to about 80-plus staff, 25 or so on each vessel.

We've also built the new facility at the airport for the helicopter base there. We have three helicopters: one for passengers, one for search and rescue, and one standby helicopter. Those are mostly all Canadian staff there.

Then on the IceMAX itself, on the drill rig, at any one time there are about 150 personnel there on the IceMAX, and as I say, about 25 per cent of those are Nova Scotian; 50 per cent of them are Canadian.

MS. BARNETT: I can also just mention that there are other contractings - local success stories that we have such as the supply vessels that are all locally contracted through Secunda, Mathers, and Atlantic Towing. As well, the catering contract aboard the rig was awarded to a Mi'kmaq joint venture company, so that was a very big success for local Nova Scotian contracting.

MR. VAN SCHERPENSEEL: Thank you. We have a couple of RTOCs in the world, but the one we rely on - and RTOC stands for Real Time Operations Centre - a real time operating centre is located in Houston and there are staff measuring and checking our real time data coming through. We have an arrangement in place with them for when we go outside established parameters that they will contact a drilling rig and make them aware of it, and at that point in time the expectation is that the drilling will discontinue and the issue is rectified.

So that is in Houston. Houston is quite strategic because it's also our centre of excellence of all our deepwater operations. At one point in time, we had eight deepwater rigs working in the Gulf of Mexico at the same point in time. All our engineering support is sitting there as well, so having the RTOC checking and monitoring our operations is an assist to us.

On top of that, here in Halifax locally, we also have an operating centre. We see all the data directly from the drilling rig coming in so we can check and follow the progress, and if we see anything out of the ordinary we will call the rig and ask them to discontinue operations - and this data interface we are having with each other on a continuous basis.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: I think it's very appropriate - I want to use my leading here and one of my favourite sayings is "Time and tide wait for no man." I think I was taught that as a very young man.

I want to talk about dispersants. Christine, you made reference to when you're using dispersants, first of all you want to make sure of the safety of your workers, that they were out of the way before that was applied. I want to draw your attention again to the map, and if you look up to the top left-hand portion of that, the Bay of Fundy and that general area, that is one of the fastest warming areas in the world now - water temperature - and the shellfish are literally moving on your doorstep where these drill sites are. So I think you can understand the importance of it.

I want to talk about dispersants. The first few months of shellfish life is spent in the top water column, in the larvae stage. My question is - to me there appears to be a gap in information coming from the fishing industry. They have concerns about dispersants. My question to you is - to me there appears to be two seats not filled now on the Petroleum Board, which this information should be coming from the fishing industry - do you feel confident that the fishing industry is in communication with you as I speak? And this question has been addressed and we haven't gotten the information, or does that gap need to be filled?

MS. PAGAN: From Shell's perspective we are in constant communication with the representatives of the fishing community. Ms. Barnett can talk more about the engagements that we've had with the fishing community. We listen to the concerns, we altered our seismic campaign based on the concerns that they had, so we feel we're getting the information from the people we speak to. I can't talk to the communications that are taking place between the fisheries communication and the board.

MS. BARNETT: I'll go back to one thing that Christine mentioned earlier, but we have had over 20 meetings with fisheries representatives in the past three years. We engaged consistently with the Fisheries Advisory Committee at the CNSOPB; we've done some special presentations with that committee as well. One has been with our global dispersants expert from Shell - we've brought her in to present and answer many of the questions that you've brought up.

The other person who has been there has been our trajectory modelling expert to answer questions you brought up about the tides and what we see resulting from the trajectory modelling. That session was last year in June 2014.

We also held an emergency response workshop with fisheries representatives on February 11th of this year and addressed many of the concerns we've heard today - so answer questions about the capping stack and dispersants and response techniques.

I personally feel like we have delivered a lot of information, but of course with engagement and consultation you never reach everybody. I would encourage if people continue to have questions to continue to reach out to us. We do have a website with a toll-free number and I have personnel standing by whose job is to call you back. We will continue to work with our communities to get those concerns in and to answer the questions that fisheries have.

MR. CHAIRMAN: Mr. Horne.

MR. HORNE: I'd like to touch on the offshore safety guidelines that are required to be working offshore. Are the people getting the training here in Nova Scotia or is it from some other area?

MS. PAGAN: The training is being delivered at two locations here in Halifax; in fact, there are two contracts that we awarded via Stena, our drilling contractor here in Halifax, and all of that training is taking place here.

MR. HORNE: The other question is a little bit different, I guess. I could talk a little bit about the blowout preventers. Do you have a fair amount of knowledge on the pressure that might be in the geology formation, the geological formation, and what about the problem of maybe if you did have a blowout and there might be $H_2S$ gas?

MS. PAGAN: I'll go to the second question first. $H_2S$ is more typically found in carbonate reservoirs, carbonates and dolomites. All of the work we've done internally in Shell, all of the work from the Play Fairway Analysis work that was done and all of the academic studies and all of the wells that have been drilled on the Scotian Shelf and Slope would indicate that we are more in a sandstone environment, a clastic environment. So the chances of finding $H_2S$ are very, very small - but they're not zero.

We build the well to take care of that, and as Rob would like to speak more to that, I'll hand over to him.

MR. VAN SCHERPENSEEL: On this matter indeed the expectation for $H_2S$ is very low, and even if it is there it will be a very low concentration, not even impacting personal safety. However, not knowing with certainty in our wells, we have an $H_2S$ contingency plan in place, so when we get in too close to the reservoir we will activate that plan and we will measure and see what we have and have all the plans in place in case we encounter.

MS. PAGAN: Your first question was on reservoir pressure as well. We have no idea what the reservoir pressure will be, but we design the wells to be capable of coping with the highest pressures that you would find at those depths. We go in with the expectation of high pressures, we over-design the well - again, prudent over-response - we over-design the well to be able to take care of high pressures. If we don't need that response, we have it there ahead of time. We have 15,000 psi blowout preventers on the

drill ship. That's the highest globally required, so we're ready for that. We may not find that circumstance.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: Clearly you're drilling in a very challenging environment and I'm just wondering in terms of the current low cost of hydrocarbons around the globe, how does that jibe with the high expense of drilling there, just on the economics of it for your company?

MS. PAGAN: Okay, so exploration is a long game. We typically look at the far future when we're looking at exploration. The way we do our exploration economics is by using a range of oil prices - does a prospect or does a location screen a range of oil prices? We take a lower price, a higher price, and then a medium oil price. Currently these prospects are still what we would call "economic."

In today's price, which is half of what the oil price was when we got these licences, is beginning to be challenged. There will be careful scrutiny of every exploration we drill globally in Shell, whether it is in Nova Scotia or Australia or the North Sea or the Gulf of Mexico, we continually screen all our prospects annually, globally, to make sure they are still economic.

I can tell you we are not going to walk away from Nova Scotia next week because of the current low oil price. We've got this program budgeted for and funded for two wells to be drilled over the next 10 to 11 months or so.

MR. CHAIRMAN: I have five minutes left - okay, go ahead, Mr. Lohr.

MR. LOHR: I'm just wondering about the onshore versus offshore. As you know, we have an onshore moratorium on natural gas and oil drilling. Can you comment on the relative safety and challenges and expenses of drilling onshore versus deepwater offshore?

MS. PAGAN: Onshore drilling is a completely different beast from offshore. Onshore development is totally different; wells cost much less but you need many, many more so there really is no comparison. Shell chose deliberately not to attempt onshore exploration or development in the Atlantic Provinces. We have acreage in Alberta and British Columbia and elsewhere in the U.S. that we are exploiting at the moment.

MR. CHAIRMAN: Thank you. We now have four minutes. I have two speakers on the list and probably a few more who want to be, but to save the time, one question each. Mr. Jessome - you'll waive? Ms. Peterson-Rafuse.

MS. PETERSON-RAFUSE: Thank you, Mr. Jessome. I just want to get a better concept of the actual safety operations on a daily basis because you've talked about how significant that is to Shell. I'm wondering, because of the risk in the industry, everybody

as part of your team has to be safety-conscious and trained. What is the minimal situation that would constitute a recording of an incident? Like what's the lowest level that would occur during the operation that Shell would say we want that recorded, so we have an opportunity to analyze it and how it affects operations?

The second part of the question is, who do those reports go to? Are they available publicly to see what is happening during the operation to make it more transparent?

MS. PAGAN: We have a number of different levels that we go through. I think the best thing to do is to hand this over to Mr. Jardine, he is health, safety and environment. This is his bailiwick.

MR. JARDINE: As you've heard, safety is an absolute core fundamental value, it's a requirement to work with Shell; it's not up for negotiation. We have very high expectations of our people and we relentlessly pursue the highest standards of safety and building that safety culture. Our performance globally is a testament to that and is the proof.

We expect our front-line workers to understand process-safety risk, escalate when safeguarding limits are exceeded at all times. We encourage that. We have a blame-free, open reporting culture where we want to know if their workers have consent. If something doesn't look right, we reward those individuals who report those things.

We expect our front-line workers to fulfill the requirements for maintaining those barriers and safety-critical equipment that we've heard so much about today. We expect to follow procedures and to stop work to assess. If a procedure can't be followed or doesn't safeguard against a loss of containment, we'd rather they didn't continue with that work. Our philosophy is there is always time to do something right and nothing is worth having an accident or injuring someone. We emphasize that daily in our daily safety meetings with the workers when they start work. We incorporate then to our on-board messages with the workers that are our contractors, our subcontractors, our partners, temporary workers, and short-service employees. Everyone basically gets the same message and my expectations of everyone are the same, whether you work for Shell or you're a contractor.

Every single person, I expect them to obtain authorization when overriding or disabling any safety equipment. We have 12 golden rules - we have the 12 lifesaving rules and we emphasize those every single day in every single discussion. We verify that the barriers are in place that we've identified and the risk assessments before we've even commenced operations.

We have a very rigorous and continuous process of inspection and audit at the front line by our front-line barrier safety technicians and representatives who are absolutely prepared to stop the job - no single individual would be disciplined. If they had a genuine safety concern, they'll absolutely report that. That would be taken very seriously and then we would support the suspension of operations until all doubt is removed.

The second question I think you asked was the lowest threshold for reporting. The CNSOPB guidelines are very specific. They tell us exactly what we have to report externally. We would report minor incidents internally at a slightly lesser threshold because it helps us understand trends and we can then identify potential incidents even before they probably happen, but externally would report in accordance with CNSOPB guidelines. Those are available to the public on the website. I think they publish a quarterly summary.

MS. PETERSON-RAFUSE: Thank you very much, appreciate it.

MR. CHAIRMAN: Just one minute for a wrap-up summation, if you'd like, Ms. Pagan.

MS. PAGAN: I don't need a minute. I can say very quickly, I'm really privileged on behalf of Shell for our team to have come here today and present to you. It has been a wonderful opportunity to talk about our project and hopefully answer some of your questions - leave some of your fears to rest - so thank you for having us. We're free to discuss further with you. If any of you want to get in touch with us, we have an office on Hollis Street. Please call and we'll make time either to come visit with you or for you to come to us.

MR. CHAIRMAN: Thank you very much for coming. We'll take a short recess and be back here no later than 10:30 a.m.

[10:22 a.m. The committee recessed.]

[10:30 a.m. The committee reconvened.]

MR. CHAIRMAN: I'd like to call the meeting back to order. I'd like to thank the Canada-Nova Scotia Offshore Petroleum Board for appearing. I would ask that they introduce themselves and start their presentation.

[The committee witnesses introduced themselves.]

MR. CHAIRMAN: Mr. Pinks, the floor is yours.

MR. STUART PINKS: First of all, I just want to thank you for inviting us this morning and allowing us some time to give a presentation. I've met a number of the people around the table and I'm sure through the morning I'll get to know more of those who are here.

What I want to do is give a brief presentation on the CNSOPB, talk a little bit about the project that is, of course, front and centre here, which is the Shell drilling program, a little bit about the application review process, public engagement that has been done and will continue to be done, concentrate on incident prevention and response, and then obviously some time for questions.

So very quickly about the CNSOPB - most people are probably familiar with us - we are an independent joint agency of both the federal and provincial governments. We've been in existence since 1990, established under federal-provincial legislation that's referred to as the Accord Acts. The board, when it has its full complement can have up to seven members. The Chair is jointly appointed by the federal and provincial governments, and recently we have had a new Chair join us, a fellow by the name of Keith MacLeod, who very much wanted to be here today but had other commitments.

So then each government can appoint two full and one alternate member. Paul is a full member from the Province of Nova Scotia. So if we have a full complement, that's up to seven members. The organization that I manage - I report directly to the board - we have an organization of about 40 professionals.

We have a wide mandate. The CNSOPB was really set up as sort of one-stop shopping for the regulatory oversight, so to focus all regulatory oversight through one organization. First and foremost, our mandate assures the protection of the health and safety of offshore workers and environmental protection. We have structured our decision making so that decision making in this regard is paramount and overrides decision making in other areas of our mandate.

We are also responsible for overseeing employment and local benefits. Our organization does also issue licences for exploration and development; we're really the resource stewards for the resource management and conservation of the offshore resources. We also have a facility over in Dartmouth that collects and then disperses, once confidentiality periods have expired, all the data that's collected from the offshore.

You've already had Shell here so they've talked about their program. It's about 250 kilometres offshore. The initial phase is for two exploratory wells. The first one is currently being drilled. The schedule that we have seen shows that drilling could go on as long as 11 to 12 months - that's two back-to-back wells. They're using the Stena IceMAX drilling unit and they have four offshore supply vessels and helicopters, and they have an onshore facility as well.

I'm not sure - I wasn't here for the Shell presentation. These are the licence blocks; unfortunately the screen looks a little washed out at the back. These are to the south of Shelburne. The current well, Cheshire, which is shown with a blue dot, is about 250 kilometres offshore and about 260 kilometres away from Georges Bank. So it's on the east side of their licence blocks. They have six licence blocks in that area.

It's important to know what is exploration drilling. Obviously Shell has completed a seismic program. They're optimistic that there are some hydrocarbons to be found, but when you look at the historical success in Nova Scotia and when you look at it worldwide, certainly not every exploratory well successfully finds hydrocarbons.

If you look at offshore Nova Scotia, we've had 127 exploratory wells drilled to date, and 23 of those were declared a success. That's about one in five, and that's pretty consistent with what happens internationally.

There have been 12 deepwater wells drilled offshore Nova Scotia, and they found natural gas in some of them, but not oil. There have actually been two wells previously drilled on the Shell licence area without discoveries.

I'll talk a bit more about our application review process, but one of the key sections of the drilling and production regulations, which have been jointly promulgated both federally and provincially - they came into force on December 31, 2009 - requires that all operators have to take all reasonable precautions to ensure safety and environmental protection. Then we provide guidance for that particular section of the regulations. Really, it says that operators have to reduce the risk associated with a worker activity to a level that is as low as is reasonably practicable, and they have to demonstrate that to the board. This is an important consideration in our review.

The application review process is exhaustive. Firstly, it went through the Canadian Environmental Assessment Agency, from an environmental assessment perspective. That took about 18 months or more to complete. The application process at our board began in earnest probably in about January of this year, and we had probably 10 or 12 of our staff members intimately involved in reviewing all the documentation. There are a number of them listed on the screen here. First and foremost is protection of safety and the environment. So there are a number of documents that had to be submitted in that regard, and they went through exhaustive review with the team.

The board has to be satisfied that an activity can proceed safety without polluting the environment before it will issue a worker activity authorization. We have now issued the authorization for the drilling program, and we have also issued the approval to drill the first well.

It is important to know that there is also a certificate of fitness that is required for the drilling unit. That is issued by DNV. They are one of the world's largest classification societies, so they also have to do a full evaluation of the drilling unit and its equipment and the way it carries out its work, and assure themselves that it can proceed safely without polluting the environment. We cannot issue an authorization until we get that certificate in place.

There has been significant public engagement on this project. It started with the environmental assessment. There was a lot of public engagement done both by Shell and by the Canadian Environmental Assessment Agency. We have reached out to and continue to have an ongoing dialogue with local municipalities. We've reached out to the various caucuses within the provincial government system here. We have a dialogue going on with the First Nations groups, the fisheries organizations, and also some of the environmental NGOs.

We know there has been ongoing concern around this particular project. We believe there's probably quite a bit of misinformation out in the general public, and we want to go down and try to talk to some of those concerns. We are going to hold public information sessions in the near future, I think in Lunenburg, Shelburne, and Yarmouth.

Fisheries Advisory Committee: under the legislation, we need to have a Fisheries Advisory Committee. This has been a long-standing committee. It has been going on for many, many years. There are about 30 different representatives coming from First Nations organizations, Fisheries and Oceans Canada, the Nova Scotia Department of Fisheries and Aquaculture, and about 20 of the local fisheries organizations. This committee meets quarterly, and they are provided periodic updates in between. The agenda is set by the committee members, and it includes presentations from operators, from our staff, and other topical experts. There's a lot of information that is shared and a lot of discussion that goes on. Eric is actually the Chair of that committee.

You can see there's a number of - the membership on the bottom of the screen here. I won't read them all out, but there are a number of interests that represent fishing associations and fishing interests on the South Shore.

I think the main focus from us when we're reviewing applications and overseeing offshore activity is really around incident prevention. When we're talking about things like capping stacks and dispersants, those are measures you use to recover from a nasty incident. The primary focus has to be on making sure that nasty incident doesn't occur in the first place.

Just to put things into perspective, if you do encounter hydrocarbons, or if an operator does encounter hydrocarbons when drilling a well - it could be natural gas, and that has minimal environmental impact, if you were to have an escape of natural gas. It could be light oil. The experience in this province - the CoPan project was a very light oil, and from a clean-up perspective and a response perspective, certainly not as difficult to deal with as if it was to be a medium- or a heavy-grade oil. Of course, we don't exactly know what Shell may or may not find on this particular project.

Going back to the work that was done for the environmental assessment, again to put things into context here, there have been about 50,000 exploratory wells drilled worldwide, and there have been two major blowouts. Both of them have been in the Gulf of Mexico. Of course, the one that's on everybody's minds was the one from 2010 when the Macondo accident occurred. The previous one was also in the Gulf of Mexico, but on the Mexican side of the border, and that was back in 1979.

Only 41 per cent of blowouts actually result in a release of oil, and most of those would be resolved within the first five days. So the work that was done for this project, looking at all of the incident prevention techniques that are in place, estimated the probability for a blowout with an extremely large spill - and "extremely large spill" was listed as 1.5 million barrels. Macondo was about 5 million barrels. You would have to drill

the well constantly for 18,392 years. So the probability of having a blowout like that is 0.000055 per cent. I don't want to diminish the consequences that could occur, but we need to take into account what the probability of it occurring in the first place is.

Also coming out of the environmental assessment was very significant trajectory modelling. That is to evaluate what would happen if you had a spill, and about 480 different models were run. They took the worst expected case scenario, which could be a 30-day period with no response measures at all in place - and I'll talk a little bit about what those are. It was found that based on the currents - and remember, this well is about 250 kilometres offshore - oil generally travels to the east and northeast of the spill sites. The likelihood of oil actually reaching the shoreline is somewhere around 1 per cent. It's between 0.83 and 1.88 per cent.

I'll skip by this slide quite quickly. This is what's called a "bowtie." It talks about how you manage hazards. The left is around prevention and controls to stop an untoward incident from occurring. The recovery side is on the right side. Our focus is making sure that Shell takes all reasonable precautions to prevent an accident or an incident from occurring. So you really need to focus strongly on the left side of that diagram. However, never say never. So we do concentrate to make sure that adequate recovery measures are in place as well.

I didn't attend the presentation, but I imagine Shell spent some time talking about the blowout preventer, because this is really your primary defence if you were to have a loss of well control event. It stands about three storeys high. It's sophisticated piping and valves and instruments, et cetera. It is really - when people use the term "capping stack," this is really your primary capping stack. This sits on the ocean floor above the well and can be activated from the drilling unit.

Since the Macondo incident, from a regulatory perspective both here in Canada and internationally, the expectations on incident prevention have escalated dramatically since Macondo. One of the primary areas is on the blowout preventer. So there are a number of things that are in place now that were not in place when the Macondo well had its incident.

So the blowout preventer - that's what BOP stands for - gets re-certified now every five years. It goes back to the manufacturer and gets re-certified.

Within that blowout preventer is a system for cutting pipe. If there's pipe inside the hole, if you have a blowout, there was one set of shear rams, one on Macondo, and this project now has three. Also there's a remote-operated vehicle, an ROV, so if the drilling unit was no longer able to communicate with the blowout preventer and you had a loss of well control, the remote-operating vehicle could be launched. There's two of them on this drilling unit that could be launched to perform all the same requirements and to bring the well back under control.

There's also an acoustic backup system which is like a remote control that you have for your TV, in real simplistic terms, so the BOP could also be operated from a ship. All these things are over and above what was in place during Macondo.

We've put in place a requirement for an independent well examiner, so the project team that would have designed the well, this now has to be reviewed by technical experts who are extraneous to the project team, to make sure all the technical requirements have been met and it has been designed safely. That report from the independent well examiner comes to us, we run our own checks, we have drilling people on staff and the software that is required so we can challenge, where necessary. Any changes to the well program during the execution of the program have to go through that same process. That's one of the things that went wrong on the Macondo well - they were making changes on the fly on the drilling unit and they weren't being checked by anybody. So we have a very stringent checking program in place.

Real time monitoring is another requirement which is in place. All the data they see on the drilling unit is now brought to shore. It is actually brought to shore here in Halifax; also at Shell's drilling centre in Houston. It is monitored 24/7 by drilling experts who can pick up the phone and say look, are you seeing the same things we are? You need to shut down; we're concerned. So it is an extra set of eyes. We also have access to that here in Halifax.

Training and competencies have been ratcheted up since Macondo, and Lloyd's Register, another one of these classification societies, has evaluated our requirements here in Canada and found them to be some of the most robust in the world.

We've also put in place our own oversight plan for deepwater wells, which means that we're doing a lot more checking of the program along the way. We're looking at some of the critical tests that are run offshore, some of the critical time-sensitive items, and increasing compliance audits and inspections. We're looking really at those areas of higher risk to make sure they are properly under control.

On the recovery side, the operator, Shell, was required to provide an oil spill response plan as to how they would deal with a spill. It is supported by what is called a net environmental benefit analysis, so it would guide the selection of the spill response tool. It would look and say, from an environmental perspective, what is the best tool to use to respond to a spill.

We also have a well containment plan which talks about the capping stack - and I'll come to that in just a minute - and we have our own emergency oversight plan where we imbed our people in the operators incident command system should anything untoward happen, and we have the ability to issue orders and directives.

From an oil spill response perspective there are a number of tools that can be used: natural dispersion, so oil will break down on its own; there are booms; there's in situ burning; there's mechanical recovery - that is like skimmer-type systems; and there's also the potential use of a spill treating agent or a dispersant.

When you look at the well containment plan this is where you get into the capping stack, so there is a picture of the capping stack; it weighs about 100 tons. This has to come internationally - I'll show you the map in a minute - it's OSRL. The company that provides these has four locations around the world and they keep these at a constant state of readiness.

In order to deploy a capping stack - I said it's about 100 tons - there's a picture of the type of vessel that would be used to deploy it. It's a heavy-lift construction vessel that is in use in a few places around the world on major offshore construction projects. So that vessel would have to actually be acquired and brought in to deploy a capping stack.

When you look at what would happen if you ever had a blowout or a loss of well control, numbers of things will happen in parallel. So you would mobilize - you would call up, and you would get the mobilization of the capping stack going. You'd call up and get the relief well operations going because you'd have to drill another well potentially, but first and foremost would be the immediate attempts to close the blowout preventer. That blowout preventer has so many more safeguards and redundancies than it had before, if you were unable to close it from the rig you can send down one of these ROVs, these remote-operated vehicles that can actually operate it on the ocean floor, you can use the acoustic system. That should, really should, be able to close the well and your well would be shut in. Then you could call back and say you no longer need to continue with the capping stack, the well has been brought under control.

At the same time you would put out all your spill response equipment and start to clean up. If, for some reason, all those redundancies and safeguards failed, something has probably gone wrong on the ocean floor, you are now into having to do debris clearance and get the well ready to be able to receive a capping stack, and that all takes time. The objective is that the capping stack would be here and ready to deploy when all that other work has been completed. You can see they all happen in parallel and they don't happen overnight, they take some days to complete.

Capping stacks from OSRL are deployed in four centres around the world, strategically located to service the worldwide oil and gas industry. These are transit times, you can see transit times can range up to 16 days; for Nova Scotia it's about 8¾ days of transit time. That would be if you look at what the worldwide response time to actually deploy, when we talk to other regulators around the world it's typically between 10 and 30 days in order to be able to actually deploy a capping stack.

Alaska, people are often comparing this jurisdiction to Alaska. Alaska is very different, they have a very short drilling season. If they don't have a capping stack which was specifically designed for Arctic-type conditions, if you didn't have a capping stack located, it can take weeks for one to come from one of these areas and you could be into ice that would then negate the ability to be able to actually deploy the capping stack and you could have a blowout going on for six or eight months, which is obviously not acceptable.

I think this is my last slide, it is on dispersants. One thing that people need to be aware of, the authorizations that this board has granted to Shell do not give them authorization to use dispersants. They would only be considered on a case-specific basis and Shell would require an approval from our Chief Conservation Officer at the time. It would be based on a net environmental benefit analysis. We would call together Environment Canada's Emergency Science Table to deliberate and to determine if, in their view, it was a net environmental benefit to actually use a dispersant. If the answer is no, then obviously one would not be considered. That completes my presentation.

MR. CHAIRMAN: Thank you very much. I have a speakers list. Mr. Horne, you are first.

MR. HORNE: Thank you very much for coming back today and discussing these issues again. We enjoyed your discussions at the caucus and also enjoyed listening to you today.

I'm just wondering what kind of preventive - to prevent impacts from environmental issues at the drill site? What controls or what are your thoughts about the muds that are being used? How are these going to be collected - by the rig or are they going to be left at the bottom of the drill?

MR. PINKS: Do you want to talk about the drilling muds, Eric?

MR. ERIC THERIAULT: Certainly. What you're talking about really is drilling wastes, if you're referring to the drilling fluids, the drilling muds as they are known. We go through a process to evaluate the toxicity of the muds and the type of muds. We have guidelines which are called the Offshore Waste Treatment Guidelines, to joint guidelines between ourselves, the Newfoundland board and the National Energy Board that discusses our expectations for the discharge of drilling fluids.

In the case of water-based drilling fluids, they're allowed to discharge the drilling fluids whole; in the case of synthetic-based muds, just limitations on what they're allowed to discharge. They can't discharge a whole mud, they're allowed to discharge up to 6.9 per cent oil on cuttings. So on the cuttings that you take up from the well, a small percentage of oil is allowed to go overboard.

Even though those are expectations, it's reassessed and an operator is required to submit an environmental protection plan, which is basically a legislative requirement out of our regulations, which does specify the actual discharge of muds. I'm not sure if I answered your question.

MR. HORNE: Are you familiar with what they're planning to do, or what Shell is planning to do?

MR. THERIAULT: Certainly. The top-hole section is using a water-based mud, and as they get deeper into the well, they'll be using a synthetic-based mud.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: I wish we had the picture of Nova Scotia there, but you had a partial of where your proposed sites are. That's what I want to bring your attention to. First of all, my understanding is there is one vacancy on your board as we speak - there may be two - and one of those is a fisheries representative. So I have deep concerns, and maybe you can elaborate on that later.

My question is, if we had that map up there, roughly 250 kilometres between the proposed sites and Halifax Harbour - if I can take you back roughly 60 years, there was a tremendous use of the offshore as ammunition dump sites. My understanding is there are different suggestions that different types of mustard gas or shells may be out there. I'm concerned about that. I'm concerned about the vacancy on the board in not bringing in the local knowledge of some of the questions in the earlier presentations.

Given that we know there are some dump sites out there, can you explain to me and the public today how that process approval was granted and that particular topic was addressed?

MR. PINKS: When the drilling unit first arrived, before they were able to actually commence drilling operations, one of the items they had to do was send down a remotely operated vehicle to actually explore the area that they're going to be drilling in to ensure that there were no corals, no ordnances, et cetera. We're also aware of where the dump sites are, with some of the work that we have done previously.

MR. THERIAULT: UXOs - or unexploded ordnances - are certainly of concern. It's a good point that you have brought up. We assess it at the environmental assessment stage. The proponent goes to DND and does a review of their records well in advance of any activity occurring.

One of the conditions in regard to the environmental assessment for UXOs is the ROV survey, as Stuart had mentioned. That's done when the rig is actually on the site. Certainly documentation isn't the best. It was done, as you say, 60 years ago or more. Therefore, it is very important to confirm it with an ROV.

MR. CHAIRMAN: Mr. Farrell.

MR. FARRELL: I'm hoping that you folks can help me with this. It's a question I had left over from the last presentation. It's about the response consortium, I believe, and that was mentioned by the Shell people. It's a group that - I didn't get a full explanation of it, so I'm wondering how it's comprised and how it would work with the company in the event that there was a spill.

MR. PINKS: Probably Eric is going to be the best one to explain this, but depending on the type of incident, they would have a tiered response. So they have their own equipment and their own response tools for responding. If they need help on a local basis, there is the East Coast Response Corporation that they would call upon, and then if it became a major incident that requires international resources, they would turn to Oil Spill Response Ltd. Maybe I can let Eric explain a little bit better about the capabilities of those.

MR. FARRELL: If we could start with - who are they? Are they private companies, or are they somehow connected with your organization? That's my first question. Who are they?

MR. THERIAULT: They're not connected with our organization. They are private companies. In the case of ECRC, it was actually established under the Canada Shipping Act related to tankers and oil-handling facilities.

They have a number of depots. ECRC is seen to have to have a certain amount of capability to respond to spills of certain amounts under the Canada Shipping Act. They have acquired additional response capability than their legislated requirement in addition to that Shell has purchased a significant amount of spill response equipment which ECRC maintains. ECRC has a depot over in Woodside but they have five different depots similar to this across Canada, I'll say, except for the West Coast: one in St. John's and there's another in Quebec and others - it just doesn't come to mind.

So ECRC has local capability, we'll call it, and they can tier in from their other facilities and they have arrangements with other spill-response organizations to gather more equipment if necessary. OSRL is an international spill response corporation. It's actually funded by the oil and gas companies in a partnership between them. They would be used for a Tier 3 or very large spills where you have to bring in equipment from outside, a very capable organization. I've been to their facility in Southampton several times. They have their own aircraft, boats; they are world-class.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: Thank you for the presentation. One thing that caught my interest in your presentation was the mention of the independent well examiner. I'm just wondering - usually I know these types of examiners would come from some organizing body - who supplies this independent well examiner and how often are they on the well?

MR. PINKS: The independent well examiner is provided typically by the operating company through a separate section of their organization. What companies have done is to put together world-wide centres of excellence where they would keep their top tier drilling people. The project team would design a well based on the standards, the company standards, and the technical standards that are called upon from the regulatory system.

Once that well has been designed, it goes through an independent check within their organization. We then get that independent well examiner report along with the original design. We look to make sure that that independent examination has been done thoroughly. We then also will do our own review of the well program. We have the necessary software in place that we can run all the well data through it, the well design data, and it will tell us and help identify the areas that we need to challenge and go back and make sure we are satisfied that it has been designed correctly. That is the initial process.

Now if there is a change that occurs during the drilling program then it goes through that same cycle again. It would go to their independent centre of excellence where they have their top-notch drilling experts; it would then come back to us. That was one of the things that was missing on the Macondo well in that those changes were being made by the project team and they weren't being checked by anybody else.

MR. LOHR: So independent means within the Shell corporation?

MR. PINKS: Independent of the project.

MR. LOHR: Independent of the project but not independent of Shell?

MR. PINKS: No, we do the independent check.

MR. LOHR: How often do you check the wells?

MR. PINKS: We check every well. The well design that was done for this has gone through our own checks at our end. If there were changes that were made, they would come back through us again.

MR. CHAIRMAN: Thank you. Ms. Peterson-Rafuse.

MS. PETERSON-RAFUSE: I have two questions if that's okay. First, thank you for the presentation. I know you mentioned during the consultation process that you have consulted with the Mi'kmaq community but it is our understanding that they have lost faith in the drilling process, what is going on. Do you perceive it like that? Where did the breakdown take place with the Mi'kmaq community during the consultations?

MS. KATHLEEN FUNKE: As part of my role I oversee stakeholder relations, including that of Aboriginal consultation. We have not heard directly from any of these First Nation groups about any concerns they have had. We have relationships with these groups through the KMK and through the Shubenacadie Band. Those concerns would be absolutely new to us.

We have heard through - as part of the CEAA process, a lot of the Aboriginal consultation first went as a part of the CEAA process so outside of our office we have not heard concerns from these First Nation groups on that at all. If you have heard concerns, please feel free to pass those along to me and I will absolutely investigate them.

MR. PINKS: If I could just add, a few months ago I met personally with the KMKNO in Truro and we actually have another meeting coming up with them in the near future. We did reach out to them and the Shubenacadie Band once we were in our regulatory process and asked if they had any additional comments over and above the CEAA process and there was nothing submitted to us. If there are concerns, it may be with the CEAA process, I'm not sure.

MS. PETERSON-RAFUSE: My second question is with respect to the capping stack. Shell spoke about their dedication to the safety and prevention of a blowout. What I'm wondering is that because we are looking at the exploration now and in the future, wouldn't it be a good idea for us to be talking about how we would have a capping stack housed here in Atlantic Canada? Does your board have the authority to demand that if they're going to drill now and in the future, because the more activity that takes place, there's going to be an increase in the percentage of risk; therefore, it would make sense to have discussions now about how they could actually do this and house it, not after a disaster takes place? What are your comments on that?

MR. PINKS: I think that's an excellent question. Just to go back to this particular situation, though, when we received the application, on first blush one would look at it and if you look at that map, which I think was that map there, it looks like, well, why is there no capping stack in Canada? There's one in some of these other locations and isn't Stavanger a little far away? At first blush one would look at that and say maybe we should have a capping stack here in Canada.

However, when you look at doing that, a capping stack is $20 million to $30 million. You could set that up in a warehouse close to a port that could be loaded onto a vessel. The challenge is that once you need to deploy a capping stack, you have to have the vessel that can deploy it. So this is a picture of the vessel that would be called upon to deploy a capping stack. That capping stack weighs about 100 tons. Those vessels can cost upwards of $0.5 billion. The day rates, if you were to phone up and say I need one tomorrow, are about $200,000 a day.

There are none of these vessels in Nova Scotia or Atlantic Canada so we looked and said, well, where would Shell have to go to get one of these? It would be the North Sea or the Gulf of Mexico.

We sat down and looked at the deployment time and said that if you had the capping stack here, because of where the vessel has to come from, it doesn't really save you any time. In actual fact, it could add time because you would have to sail into port, load up and take it back out. When we looked at all the other work that would have to be done ahead of being able to deploy the capping stack, it did not seem unreasonable for the deployment strategy.

Now your question was, is there a point in time when the industry gets so large that the cumulative risk has gone up? Yes, but one well is not there.

MS. PETERSON-RAFUSE: Okay, thank you very much for that answer.

MR. CHAIRMAN: Mr. Mombourquette.

MR. MOMBOURQUETTE: Thank you, Mr. Chairman. In your presentation you talked about dispersants, and specific to this project they would need higher approvals before they would be allowed to use them. I'm curious about that timeline between if in the event that they did come looking to use dispersants and you need higher level approvals, how long does that process take?

MR. PINKS: Maybe I'll start and then Eric might want to chime in. We participated in an offshore emergency response exercise that was coordinated by Shell back in April. They had between 250 and 300 people for a major incident exercise. That included a scenario where dispersants needed to be considered. We contacted and convened the emergency science table and they were able to get an answer within a few hours, at the time. Now I'll pass it over to Eric.

MR. THERIAULT: It was a very large exercise - about 250 participants. The dispersants plan was submitted to the board, looking for approval. That was submitted late in the evening. The next morning Environment Canada convened the science table - about 10:00 a.m. So overnight everyone had an opportunity to review the plan and come to the table with their advice. They were able to provide their advice probably by noon the following day. So we're talking roughly a 24-hour period.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: They also have another saying in my industry - I thank you for taking the bait. I really appreciate your earlier comments, Mr. Pinks. You talked about the capping and the stacking processes, and I use your word as a primary defence that is used.

MR. PINKS: The blowout preventer is the primary defence.

MR. BELLIVEAU: What I want to talk about here is what my colleague earlier talked about - the capping mechanism. To me, if you put that slide back up on there, we simply do not have one on Canadian soil or the Atlantic seaboard. My question is, how would that - I make the reference to if you have a situation, a fire or an ambulance, usually that's pretty close to the jurisdictions that you're in. This is the fundamental question that we all have to address here. By having this infrastructure on the Atlantic seaboard, how would that speed up the capping stack to cap a potential major blowout? That's what I think we need to zero in on.

In that scenario, the minimum - not taking in Mother Nature - is at least eight days to cross the Atlantic Ocean. To me, we are talking about the cost. This is where I want to get down to because it's a Gordon Sinclair question of the world: it's all about money. To me, this is about money. We've got a $1 billion fishing industry - not to mention the U.S., not to mention our tourism industry that can be affected. You put down some numbers about having that mechanism here.

My question is, has there been any discussion on just what I'm trying to discuss right now on that topic of having that mechanism infrastructure here on the Atlantic seaboard, on Nova Scotia's soil with the Liberal Government and with Shell, the oil company that's doing this exploration?

MR. PINKS: If I could answer the first question that you had earlier on in your question around - does this speed things up? I'm going back to this slide here because your primary tool is the blowout preventer. If you had a loss-of-well-control event, the first actions - other things would be mobilized as back-up precautions - but your first actions would be around trying to close that blow-out preventer, and there are numerous mechanisms and numerous backup systems to do that. You really should be able to shut the well in and then you could turn the capping stack back away.

If all of those redundancies and safeguards have failed, it likely means that there has been damage down at the sea floor and there is going to be debris and the debris would have to be cleared away. So you have to send down equipment to clear away the debris and prepare the blowout preventer, or if the blowout preventer has been damaged, you have to remove the blowout preventer and you have to put the capping stack onto the wellhead. All of that takes some amount of time.

When we talked to other major jurisdictions around the world that have capping stacks located closer in proximity, geographically, they still say that to successfully cap a well can take between 10 and 30 days. It's because of all of that other preparatory work that has to be done.

So the objective is to have the capping stack - you talk about an ambulance - to have the ambulance there immediately is probably not going to do anything for you because all this other work has to go on first.

MR. CHAIRMAN: Mr. Jessome.

MR. JESSOME: I want to focus on the critical role that the fishing industry has in this province and our inclination or our necessity to protect it. The Shell group made several comments about the consultation that has taken place with the industry, representatives from the industry, and I'm wondering if you can take a moment and comment on your satisfaction with the consultations that have taken place, perhaps cite a couple of examples of some things that have been recognized as issues for the industry and how those have been addressed by Shell.

MR. PINKS: I think I'll ask Eric to talk about this a little bit because he is the Chair of our Fisheries Advisory Committee. I will go back to an earlier statement that I made in that we are aware that people are saying - we are hearing from people who are saying we don't know how to make sense of a lot of this information. We hear this information on this side, we hear this information on this side. We're a bit confused and we need some help understanding it.

We recognize that so we are planning to do some further outreach to the local communities. I can let Eric talk about the work we do with the fisheries representatives.

MR. THERIAULT: Your question was related to Shell. I'd like to start with our own Fisheries Advisory Committee and then build a little more into the general consultation, I'll call it in the stakeholder community; how will that be?

We have a Fisheries Advisory Committee. We have in the order of 30 representatives on it: some from government, and about 20 representatives from the fishing sector itself, eight or nine probably representing various groups in southwestern Nova Scotia. We meet about three times a year, and communicate and exchange information on a frequent basis. At the same time I take a lot of phone calls and discussions when there is clarity or anything like that that occurs.

It has been very interesting in the process in what I've been hearing. What I've been finding is the educated stakeholders - I'm not hearing a whole lot of questions or complaints or anything like that. The uneducated stakeholders, I'm getting calls and at times I've been spending a half-hour to an hour with - and by calls, I mean I could count them on my fingers, not even my thumb but on my fingers - discussions for clarity. So not a lot of complaints, I'll call it.

When I look at what Shell has been doing and how would I put it? I started off with a regulator back in 1982 for an offshore oil and gas industry up north in the Arctic. I've never seen a company do more stakeholder consultation than Shell, getting out there in the

public; it really surprised me. Times have changed. The expectations of the public have changed also and I realize that.

Shell is giving a lot of presentations, even their spill response exercise to have Aboriginal groups and fishing groups involved in spill response exercises. The training up to it, the preparation of the exercises, I was absolutely amazed at how far-reaching Shell has gone, investment continuing from notices to fishing groups and various correspondence that I'm copied on so it is quite surprising overall. I'm seeing they are doing a very good job in reaching out compared to what has occurred in the past.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: Could we go back to the slide of the map of the ocean and the blocks? If I look at that - I guess that's Sable Island up in the top right-hand corner and we know that offshore production is in decline off of Sable Island, but when I look at that I see relatively - and I realize the scale of this map is huge. These are big blocks of territory. The licences granted around Sable Island were for relatively small patches of the ocean. Why have you granted such big blocks of territory? Why has the scale changed in the way you offer licences?

MR. PINKS: Sable has been well-explored and is well understood. The geology is much better understood and so targets can be better identified, so you can offer up smaller parcels and attract interest. When you get into the relatively unexplored area or completely unexplored area, a lot less information is available. In order to make parcels attractive you need to grant a larger area to explore because there are so many unknowns.

MR. LOHR: I see that BP has an area. If I look at the map and see the pipelines that are existing, it would seem to me that the BP area would be more attractive because if there was something, it would be relatively easier to tap into an existing pipeline. Is BP doing anything or is there anything happening there?

MR. PINKS: BP has completed its seismic program. They are a couple of years behind Shell. They are targeting to drill for exploratory drill in 2017, and they've actually submitted their project description and had it approved by the Canadian Environmental Assessment Agency. So the environmental assessment process has started.

In terms of being able to tap into existing infrastructure, the existing infrastructure is all around natural gas. Both Shell and BP have indicated that their primary interest is more on the oil side than it is on the natural gas side. If it turned out to be natural gas and it was sufficient quantities and they were looking to produce, there is a possibility of going into the existing infrastructure, but they may just decide to produce it and look after the project themselves. I don't know. We've had no discussions on development.

MR. CHAIRMAN: Mr. Horne.

MR. HORNE: I just want to get your flavour on the CEAA process. Is it adequate enough to protect our environment and protect our workers on the offshore? Does it take a long time to get a CEAA program going or assessment of the project?

MR. THERIAULT: Under the Canadian Environmental Assessment Act in 2012, it was revised, rewritten. Some of the major differences that have occurred since that time are in regard to the stakeholder component and input, including Aboriginal groups, to environmental assessment.

It's a very comprehensive process with a lot of public input. It takes roughly 365 days, what they call government time. So the full process to do it very efficiently takes about a year and a half, and that would be a very quick environmental assessment at a year and a half. When we look at 25-year mining projects and things like that, it takes much longer.

Certainly the scope of environmental assessment in regard to the assessment of environmental impacts is very thorough. There is a lot of input from the public, environmental groups, Aboriginal groups, as well as many of the federal government departments and at times provincial departments. So it is a very thorough process.

MR. CHAIRMAN: Ms. Peterson-Rafuse.

MS. PETERSON-RAFUSE: Mr. Chairman, I have a couple of questions again; thank you for your patience. I would like to talk about the dispersants and the concern around that. I do know that the board has the ability to determine whether or not they can be used and that the accord implementation Act says if the spill treating agent meets the net environmental benefit - and what we're finding now, like anything in the scientific world, there are different opinions on the use and whether it has negative impact compared to the positive impact in using it.

I'm just wondering from the board's perspective, what is your definition of that net environmental benefit when there is a differing in opinion? Of course, a company like Shell is going to sway you towards the scientists that supported versus those that do not support the use of this material.

MR. PINKS: Maybe I'll start and then I'll let Eric follow up as well. I think I said earlier that in the science world there's going to be science that people will think is biased, one side, and there's going to be science that people believe is biased the other side. There's a lot of science out there but science is a bit like statistics: it depends how you design your test, it depends how you interpret the results, and it depends how you communicate the results.

We rely heavily on - so the dispersants and the use of dispersants and what type of dispersants can be used, as the Minister of Environment federally - and we rely very heavily on the expertise that Environment Canada has to sift through that science and figure out which is biased one way, which is biased another way, and what should we believe and act on.

I can maybe let Eric talk a little bit more about the relationship we have with Environment Canada and some of the work they do to ensure that the right decisions are made.

MR. THERIAULT: I'll focus a little bit on the environmental benefit analysis because I think I can answer your question - how do you determine that there is an environmental benefit? You have asked questions about what I think about what the board's opinion was on that, if I interpreted it correctly.

We really do depend very heavily on scientists from Environment Canada and DFO to do that review and provide us advice on that. In the case of Shell they did produce an environmental benefit analysis. In some cases you would see advantages to using dispersants and in others maybe not advantages. We went out to Environment Canada. They would share something called emergency science table where they bring in the scientists from all the government departments, as needed, to do that review.

That review was conducted, the net environmental benefit analysis was revised, based on the review. So that's the process but I really depend on the experts' advice for that. I have a feel for it, I have an understanding of it, but I depend on their advice.

In some areas you would not use dispersants, certainly in waters less than 10 metres you wouldn't even consider using dispersants. So it all depends on a situation. That's done well in advance, what was done with Shell.

If an incident were going to occur, that net environmental benefit analysis would be reviewed again. It would go through a very similar process with Environment Canada with the science table to have a review at an incident-specific type of analysis. So you can't pre-determine that, you do that review and look at the various tools and options you have and do what's best for the environment.

MS. PETERSON-RAFUSE: As a follow-up to that, is there consideration - I know that nobody has a crystal ball to look into but there are a couple of things. Years ago they used to encourage people to smoke. Scientists used to say there was no problem with smoking, right? We know it's totally different today.

I mean sometimes there are gaps in the science. The other part for consideration, it takes time for governments to get up and running, and as we know, we have a new federal government but there were a lot of major cuts in terms of the scientific resources that were available under the previous Harper Government. Is that not a concern when you are saying

you're relying heavily on Environment Canada, but we all know as Canadians that the scientific world was devastated? How are you ensuring that you're getting the full scope of scientific evidence?

MR. THERIAULT: Certainly you are correct that the science was diminished a little bit through the Harper Government. However, Environment Canada and DFO have continued the research on dispersants. They have a lot of experience. DFO participated in the Gulf of Mexico during Deepwater Horizon and they look at the international body of literature. It's not just within Canada. So I have a lot of confidence in individuals there based on individuals there and their expertise.

MR. CHAIRMAN: Mr. Farrell.

MR. FARRELL: I'd like to go to Slide 16, if we could, and just talk about some of the technical terms in there. I'm a history major so I might need some help with some of this. It seems that these points are crucial to me because we're all scared to death as a result of what happened with the Deepwater Horizon situation and just the potential that an accident like that could happen and then the barriers that were there to them responding in a timely way.

Is it possible that you could refer to each item here to give us some understanding of how - because these seem to be the things that are going to make the difference and how they're going to make a difference?

MR. PINKS: This is probably one of the most important slides in the presentation and I apologize if I went through it too quickly because really the emphasis should be on prevention. We want to make sure - and Shell wants to make sure - that you're never in the situation where you're having to respond. So we're continually trying to drive down that risk.

If you take the probability of finding hydrocarbons in the first place, the probability of having a blowout, the probability of that blowout containing oil, the probability that it can't be recovered within a few days or stopped within a few days, the probability is very small, as I demonstrated earlier.

One of the key areas is this primary well-controlled piece of equipment called a blowout preventer, and I showed a picture of that earlier. It's a sophisticated piece of equipment. It now has to be sent back to the manufacturer every five years and completely overhauled and re-certified. It's a bit like a jet engine, if you will. They are constantly overhauled and re-certified. That was not in place prior to Macondo.

One of the issues with the blowout preventer in Macondo is that it has some cutting rams. The blowout preventer had a cutting ram and the cutting ram tried to cut through the drill pipe that went through the middle of this blowout preventer and it was not able to shear through the pipe. The pipes are actually joined together by connectors, and the

connectors are much thicker than the pipe. So it actually caught up on one of the connectors and it was not able to cut through.

Now what with that, the shearing of the pipe, there are now three shearing rams within the blowout preventer whereas before there was one, and they have to be able to demonstrate to be able to work on the thickest materials that might be in the hole. So we've gone from one shearing ram, which was not capable of cutting, to three - so you've got a primary and two backups.

MR. FARRELL: But the standard is only two and Shell is . . .

MR. PINKS: The minimum regulatory requirement is actually two. The blowout preventer that the Stena IceMAX has that comes with the drilling unit, actually has three.

The blowout preventer is connected back up to the drilling unit - so the Stena IceMAX. If for some reason you had a major incident on the drilling unit - so if you take a look at the Macondo incident, it was actually a fire and explosion that caused the problem. What happened is it pushed the drilling unit off of location. It's connected with pipe. It broke the pipe and the pipe was lying down over top of the blowout preventer, and they were not able to communicate with that blowout preventer from the drilling unit any longer because they'd been pushed off.

So now there are a couple of backup systems. I'll start with the easier one. There's an acoustic backup system, which is a bit like this thing. You could operate it from a supply boat or a standby vessel. So if the drilling unit is no longer able to communicate to the blowout preventer because of the incident, then you could do it acoustically.

MR. FARRELL: Just like turning on the TV.

MR. PINKS: A bit, yes. If that fails, now you've got onboard the drilling unit two remote-operated vehicles - ROVs, they are like mini-submarines - that can go down and they are fitted with the right tools to be able to latch onto the blowout preventer and operate it manually. So all of the systems that are built in, all the safeguards that are built into the blowout preventer, including all of the redundancies and safeguards, are able to be operated by one of these ROVs, remote-operated vehicles.

One of the checks that has to be done prior to drilling out, we call it the 22-inch casing shoe, right now Shell is just getting ready to - I think they've actually put the blowout preventer in the water, they have finished the top hole section and they are now putting the blowout preventer because they are way away from the target zone at this point in time. Once they have put that BOP on the ocean floor, before they can actually drill ahead they have to launch one of these remote-operated vehicles down to the ocean floor and demonstrate that it can be operated manually and that will be witnessed.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: Earlier one of your spokespersons spoke about the information - or to me, if you see this unfold in the last several months there is certainly a gap that I have acknowledged, information that has been flowing from the fishing community through this whole process.

Environmentalists such as John Davis with the Clean Ocean Action Committee has called on your board - the Canada-Nova Scotia Offshore Petroleum Board - to insist the leaseholders work with the communities in the fishing industry to create a Scotia-Shell response organization. To me I think it's clear here that we recognize that there's a vacancy on your board that supposedly would recognize the fishing industry. Can you respond to that, what your thoughts are on that idea, that concept?

MR. PINKS: I think if I listened to your colleague and the questions that she asked earlier in this regard, I'm assuming you're talking if you went into a production scenario that has a more established presence in the Shelburne area that would certainly be something that would be looked at in a production scenario. For a single well, I think all reasonable measures have already been demonstrated for this program.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: I want to go back to the blowout preventers. One of the things we heard Shell tell us was that there were two blowout preventers onboard the Stena IceMAX and it's hard for me to imagine that they would - and I probably should have asked them this - that they would take one off and put the other one on. If they had some issue it seems to me that would be highly risky too. Can you comment on why there are two blowout preventers and in what circumstances that would happen?

MR. PINKS: Having two blowout preventers onboard is for redundancy. It is also to allow maintenance to be done on the existing blowout preventer. They would only take a blowout preventer off in a situation where the well is fully under control, they are not into any hydrocarbons, and there are no pressures that are being built up or anything.

Then they would pause the drilling program and they can pull one BOP and actually replace it with another. So having two BOPs is a good thing because if you have only one and you had some maintenance issues or some concerns with the BOP, you have no backup. So having a backup unit in our minds is essential.

MR. LOHR: I mean what I thought when they said that was that they could drill another well but presumably when the well is drilled they take the blowout preventer off and go to the next well then, right?

MR. PINKS: Yes, the blowout preventer would be recovered from the ocean floor.

MR. LOHR: It would no longer be necessary on a well that was stable.

MR. PINKS: When they finished drilling the well then the BOP would be recovered. The well would be properly abandoned so there would be cement plugs that would be poured into the well to prevent any egress of the reservoir, if they were to discover such. So the well would be properly abandoned. Once the well had been properly abandoned and sealed, then the blowout preventer is removed.

MR. CHAIRMAN: Ms. Peterson-Rafuse.

MS. PETERSON-RAFUSE: There have been some recent changes within legislation, in particular Bill No. 18; it is Nova Scotia legislation that has amended the accord implementation Act. It has affected your regulatory role of the board in terms of environmental assessments and your capacity to do those assessments.

My question is, now that those changes have been made through legislation, what capacity have you undertaken when it comes to environmental assessments? Do you as a board independently call for an assessment and go through the whole process with the company, or whoever you have put together as a team to do the assessment, or are you presently borrowing from assessments that have already been done in Canada or throughout the world, as a base for your information?

MR. PINKS: Again, I'll start and I'll probably turn it over to Eric. I'm not sure exactly which provisions in that bill you are referring to. Is it with regard to the board becoming a responsible authority under the Canadian Environmental Assessment Act?

MS. PETERSON-RAFUSE: Has it affected the regulatory role of the board in undertaking environmental assessments?

MR. PINKS: We have a health, safety, and environment group at the board that is about nine people. We have two people on staff full-time who are specialists in environmental assessment; Eric is one of them and Elizabeth MacDonald is the other. We have very recently hired a third specialist who comes to us with about 18 or 20 years of experience - Janice Ray, I think, has joined - so we are now up to a complement of three. This is in anticipation of becoming a responsible authority under the Canadian Environmental Assessment Act so we are well-resourced in that regard.

In terms of how we rely on other work that is being done, maybe I can let Eric talk a little bit about how we actually undertake that work.

MR. THERIAULT: With each project, we do a project-specific environmental assessment so it's all unique to the project. We certainly rely on international science and local science also in regard to the environmental assessment.

The changes in the legislation, I believe, were primarily related to the board becoming a responsible authority under the Canadian Environmental Assessment Act. At the present time for some types of environmental assessments, the Canadian Environmental Assessment Agency actually leads the preparation of the environmental assessment, which they want the board to lead in the future, primarily that we have the expertise in-house to do that. We've added one staff in that regard.

Again, we've always done environmental assessments, it's not something new. The process has changed slightly but we've staffed up with an individual who has a lot of experience in environmental assessments from the consulting industry.

We've also geared up in regard to Aboriginal consultation and we've done a lot of work on how to process funding for stakeholder groups also. So the capacity is built and we've updated our processes in anticipation of becoming a responsible authority.

MS. PETERSON-RAFUSE: Thank you very much for your answer and I want to thank all of you for the dedication and the work you're doing, I appreciate it.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: Newfoundland and Labrador is currently doing a review of offshore royalties, is this something that your board is doing or planning to do?

MR. PINKS: The royalties have nothing to do with the board, the royalties would be the responsibility of the governments. We have no role whatsoever in royalties.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: Mr. Pinks, you have said, "The regulatory system in place is continually reviewed and updated to ensure that internationally recognized best standards and practices are used here."

To me, there has been a lot of discussion around here about the capping stack mechanism, and isn't that being recognized as one of the best standards? If it is, then my belief is we have recognized, or today we have established that there are two standards. There is a standard for countries that have been developed and we see the map - the time lag between that infrastructure getting on our Canadian borders here, there is a time lag.

So just reviewing your quote, is that not having a best standard, having one of those capping mechanisms on the Atlantic seaboard?

MR. PINKS: Again, I'll go back to some of my earlier comments. When we talk to our colleagues at other regulators in other jurisdictions around the world, and in the major jurisdictions around world, including the U.K., Norway, Australia, the U.S., and others,

what we are told is that the typical time frame that one can expect, regardless of location of a capping stack, is to successfully deploy somewhere within a 10- to 30-day period.

So it would appear that the actual location of the capping stack does not have a significant impact on the deployment time for a capping stack, with one exception that I will go back to - and it has been raised - Alaska. When they looked to drilling in Alaska, it is very geographically remote and they have the added complication that they have a short drilling season with ice that moves in, and if you're unable to deploy a capping stack - if you had to wait several weeks for a capping stack to arrive, it could very well be that the ice has moved back in and you're now several months before you'd be able to . . .

MR. BELLIVEAU: But quickly, your board reduced the Ottawa decision from 21 days to 13 - explain why you did that.

MR. PINKS: Legislation and the regulations that we work under say that all reasonable precautions need to be taken to protect safety and the environment. When we looked at the timeline that was presented by Shell in its environmental impact statement, it had a range of 12 to 21 days, I believe. So people had concentrated on the 21-day timeline. We sat down with Shell and said you need to explain this 21 days to us - how did you arrive at the 21 days? It was our opinion that they had not optimized the actual preparation of the capping stack at its location in Norway, nor had they optimized the time to get a vessel to be able to pick it up.

I showed the picture of the vessel that they would have to obtain. We actually have put a condition on the authorization to Shell that they must be able to demonstrate to us that they will be able to meet that optimized timeline in terms of getting the capping stack ready and getting the vessel to location to pick it up. When we went through all of that we said 21 days, we know you said that's the outside, but we don't believe you've made best efforts and they've come back with what they believe to be best efforts and we're holding them to that.

MR. CHAIRMAN: Ms. Peterson-Rafuse, we have two minutes.

MS. PETERSON-RAFUSE: I want to bring your attention to Page 8 of the presentation, under Drilling Regulations, the second paragraph where it explains, ". . . in Section 19 Operators must reduce the risk associated with a work or activity to a level that is as low as is reasonably practicable . . . and demonstrate this to the Board."

My two quick questions are: what bar is set in order to determine the reasonably practicable - what is as low as and how do they demonstrate that to you, to the board?

MR. CHAIRMAN: I hope you can answer that in one quick minute.

MR. PINKS: It is a complicated question. As low as reasonably practicable means that if there is a risk identified and there is a way of further reducing that risk, you should

further reduce that risk as long as - and I'll use the word "sacrifice," is not grossly disproportionate to the reduction in the risk.

I'll use a very simple example; the UKHSE uses this. If you go to a manufacturing plant and find that for $2 million you could reduce the risk of somebody injuring their knee, you may say that's not worth $2 million. But if you could reduce the risk of a fire and explosion that could kill 40 people, $2 million is worth spending.

So it is a judgment, and one should be continually driving to reduce risk. But the sacrifice, which is cost, time, and effort, does come into it. The regulation says "all reasonable precautions." It doesn't say "any and all."

MS. PETERSON-RAFUSE: Thank you.

MR. CHAIRMAN: A minute to wrap up. Are there any final comments? Mr. Taylor.

MR. PAUL TAYLOR: I have to earn my keep here somehow.

MR. CHAIRMAN: We knew you could talk.

MR. TAYLOR: First of all, I'd like to thank the committee for the opportunity to appear today. All opportunities for the board to explain its role and explain the operations in the offshore are helpful in getting the messages out in the operations of offshore Nova Scotia.

We certainly feel, by the authorization that has been granted to Shell, that they have met the tests, that they have lowered the risk of operations in the offshore to as low as is reasonably practicable, and that's why they have been authorized to operate offshore.

There are numerous examples around the planet of basins where the fishing industry and the oil and gas industry are both prospering. We think that with proper oversight by the organization that we represent, Nova Scotia can be no different. Thank you.

MR. CHAIRMAN: Thank you very much. I'd just like to close by thanking the committee and especially our clerk's office for pulling this meeting together. The extended time, the extra presenters - it's greatly appreciated. This was extremely informative, and hopefully answers all the questions we have out there in the public.

Thank you. We'll recess for just a couple of minutes. We can reconvene with committee business. Thank you.

[11:52 a.m. The committee recessed.]

[11:55 a.m. The committee reconvened.]

MR. CHAIRMAN: I'd like to call the meeting back to order. We did have some correspondence, I believe it was circulated. We didn't print off copies of it, for the sake of killing 20 trees. (Interruptions) If we could have order in the room, please. Thank you. We did circulate some correspondence but again, not to kill 20 trees, we decided just to leave it electronically. It was from the Medway Community Forest Co-operative. I believe everybody got that so no action out of that.

Due to the fact that we're not sure whether the House is going to be sitting on December 17th when our next regularly scheduled meeting is, I would assume again we're going to defer to the rule that we had that we won't sit while the House is sitting. So if that's the case, we'll push that witness back to the next available date, which might possibly be January.

Barring that, we have agenda-setting here. I believe we had two topics left just to approve that had to be submitted, one by the Liberals and one by the Progressive Conservatives. Could I have motions for those two topics? Mr. Lohr.

MR. LOHR: I move that the Mining Association of Nova Scotia be added as a witness.

MR. CHAIRMAN: Would all those in favour of the motion please say Aye. Contrary minded, Nay.

Mr. Horne.

MR. HORNE: I'd like to submit for the third topic for the Liberals the topic of Cape Breton private land partnership, witness the Department of Natural Resources.

MR. CHAIRMAN: Thank you, and for the sake of that previous motion, the motion is carried. Sorry, I was a little bit behind on that one.

Mr. Horne's motion: would all those in favour of the motion please say Aye. Contrary minded, Nay.

The motion is carried.

So barring no other items, I thank everybody. We got this in on time. I think the questions were thoroughly sourced out from everybody and I appreciate everybody's patience. Again, I really appreciate the work of the clerk's team to put this together.

[The committee adjourned at 11:57 a.m.]