PUBLIC HEARING

WHITES POINT QUARRY AND MARINE TERMINAL PROJECT

JOINT REVIEW PANEL

V O L U M E 4

HELD BEFORE: Dr. Robert Fournier (Chair)
Dr. Jill Grant (Member)
Dr. Gunter Muecke (Member)

PLACE HEARD: Digby, Nova Scotia

DATE HEARD: Wednesday, June 20, 2007

PRESENTERS:
-Bilcon of Nova Scotia
Mr. Paul Buxton
-Transport Cda and Atlantic Pilotage Authority
Jim Cormier/John Prentiss/Gary MacCaull/Steve Bone/Patrick Gates/Mike Freeman/Alan Milne
-Fisheries and Oceans Canada
Mike Murphy/Dave Bishara/Ian Marshall/David Millar/John Tremblay/Ted Potter/Kent Smedbol Tana Worcester/Tony Henderson/Norman Cochrane
-Dalhousie University
Mr. Chris Taggart
-Jerry Ackerman
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Per: Hélène Boudreau-Laforge, CCR

Digby, Nova Scotia

--- Upon resuming on Wednesday, June 20, 2007, at 9:00 a.m.

THE CHAIRPERSON: Ladies and gentlemen, I would like to get underway please.

Let me begin by introducing the Panel. Some of you are new to this Panel event. On my left is Jill Grant, who is a professional planner by training; on my right is Gunter Muecke, who is an earth scientist by training; and my name is Robert Fournier, and I am an oceanographer.

A couple of housekeeping things I would like to bring to your attention. There are headsets available for everybody in the audience if you chose to use it.

People are using them for two reasons. One is because of translation. Presentations can be made in French or English, so we have simultaneous translation services.

Other are using them simply as a way of augmenting the sound, because the acoustics in the room are not so good. So if anybody feels they cannot hear very well, then putting a set of headphones on makes it a lot clearer.

I should also remind you once again that every day, the schedule is revised, so the Secretariat has

the revised schedule for today available for you, and I believe there are some changes that have been made from yesterday to today.

I have been asked by the Secretariat to tell you the fact that the microphone is a little bit unusual. You have to keep a six to eight-inch distance to it.

If you get too close, it pops and it disconnects, and if you get too far away, it doesn't carry. The other thing is that if you're at a microphone, please turn it off when you're not speaking. They seem to conflict with each other.

Finally, I'd like to mention the subject of undertakings. We have accumulated a few more undertakings, which I will read for you.

Number 19, which is due on the 20th, and that's today, is to convert a 140-mesh size referred to during the June 18th hearings to millimetres. So 140 mesh of course is the mesh used to separate out the material which would be used in the quarry, and we need a conversion to millimetres. That is due today.

Number 20, which is due on the 29th of June, is to provide a drawing of the quarry property coastal zone illustrating the forested areas and the areas of coastal barrence.

Number 21, which is due on the last day, which is the 30th, is to provide, if possible, air photos, preferably from the 1940s, illustrating the location of the Whites Cove Road, with an emphasis of the west portion approaching the Fundy shore.

Number 22, also due on the 30th, will advise if shipping related noises were included in the evaluation conducted by the Department. And I believe that is in reference to Health Canada. Health Canada is the party being asked to produce that.

Number 23, Bilcon is being asked to provide calculations behind Bilcon's emission estimates, and these are carbon dioxide estimates of 80,000 tonnes. That is due on the 28th.

Number 24, the Nova Scotia Department of Natural Resources has been asked to provide on the 22nd information of buffers, buffer requirements for coastal areas in other jurisdictions.

And finally, number 25, the Mining Association of Nova Scotia has been asked to produce on the 29th a comparison of job intensity figures in the mining, fishing, forestry and tourism industries based on contributions to the GDP.

One final point is that some of the previous undertakings are due today.

Mr. Buxton, number one, which was to provide a drawing of a cross-section of the marine terminal with the observation post identified.

Number 11. This one, the date on my sheet says the 21st, but as I understand it we agreed that this would be provided when your blaster was here, and this was to provide references for the levels of residual ammonia resulting from modern blasting techniques.

I believe there was one more undertaking, yes. Number 19, this was to convert... Oh yes, to convert the 140-mesh size.

So there were three undertakings, two which are officially for today and that third for the 21st I think is actually due for today, so...

Mr. PAUL BUXTON: Thank you Mr. Chair. I believe some of them have already gone across and are on record.

THE CHAIRPERSON: We'll check by the break. I'll check with the Secretariat.

Mr. PAUL BUXTON: Thank you.

THE CHAIRPERSON: Have they been received? We don't know yet, so we'll check at the break then.

Mr. PAUL BUXTON: Thank you.

THE CHAIRPERSON: Okay. The agenda for

today is... I should backtrack a moment and say that this morning is a marine morning, that is marine-related issues will be dealt with this morning, and there will be three presentations.

There will be a presentation by Bilcon of Nova Scotia, there will be a presentation by Transport Canada, and then there will be a presentation by Fisheries & Oceans Canada.

DFO will actually extend into the afternoon, I believe the questioning will anyway.

So we will commence this morning with a presentation by Bilcon.

PRESENTATION BY BILCON OF NOVA SCOTIA - Mr. PAUL BUXTON

Mr. PAUL BUXTON: Thank you Mr. Chair. Can everybody hear at this level? Thank you.

Today's presentation as the Chair pointed out from Bilcon is on the marine environment, and this is an extensive subject.

We tried to keep it as brief as possible, and I think that we may be just a few moments over 30 minutes, but I will do my best to get through in that time.

The outline first. We will be giving background. We will characterize the existing marine environment, its physical environment and the biological

environment.

We will briefly touch on the effects assessment for marine animals, fish, other biota and the effects of the environment on the Project, and then we will reach some conclusions.

The Project team, the consultation firms are AMEC Earth and Environmental, Atlantic Marine Geological Consulting Ltd, Canadian Seabed Research, JASCO Research, LGL Ltd.

And there are a significant number of project-team individuals, most of whom are here today. Today, we have a significant number of experts in attendance, and there they are: Michael Brylinsky, marine biology; Patrick Campbell, physical oceanography; Scott Carr, marine acoustics; Gordon Fader, marine geology; Glenn Gilbert...

Actually, I think that is being covered by Patrick Campbell.

We have David Kern, environmental planning; John Melick for blasting; James Ross, fisheries habitat compensation and Uwe Wittkugel on environmental assessment.

So we look at existing marine environment first.

We have carried out 17 marine biological

surveys and studies: Intertidal habitat and communities; Plankton/zoopolankton communities; Near-shore macroflora and fauna; Waterbirds; Migratory birds; Marine mammals; the IboF Salmon and invasive species.

For marine physical investigations, we have looked sediments (quality, transport and the bedrock); the water quality (suspended solids, and the chemistry of the water); physiography and bathymetry (sidescan sonar); and the contaminants in the water.

The results generally are that the conditions off the site are generally speaking pristine. The concentration are below interim sediment quality guidelines and probable effect levels.

Only copper concentrations are near the guidelines limits due to high background levels.

With respect to physical oceanography, in physiography and bathymetry, we have determined that where the marine terminal is, we are on exposed rock basalt, and we have water depths of the berthing dolphins of approximately 16 metres.

We have carried out a preliminary review for conceptual design of tides, currents, winds, waves, storm surges and ice.

This is a representation of what was scanned by the sidescan sonar, which was carried out by

Canadian Seabed Research.

The area of the marine terminal... This is the marine terminal here, and this area with the squared hatching, is in fact bedrock.

In this area, there is a very thin layer of sand overlaying the bedroom. Here and here are the marine sediments. In this specific area again, we are on bedrock.

This is the cross-section we've seen before in other presentations of the marine terminal, and you can see it on the pipe piles allowing the currents to flow between the piles and create a minimum disturbance for currents flows and minimum disturbance to the marine habitat.

The existing fish habitat, we have looked at intertidal communities, benthic habitats and communities, pelagic habitats and their communities, the plankton community, the nekton community and benthic-pelagic interactions.

The Bay of Fundy marine biota with Federal Conservation Status. For marine mammals, we have the whales, the North Atlantic Right Whale, Blue Whale (which is occasional in the Bay of Fundy), the Harbour Porpoise and the Fin Whale.

Marine fish, we have a significant

number, and these were added to quite recently, after the EIS was presented, and we have updated the EIS to reflect the new additions. Waterbirds and other species, like the leatherback turtle.

It should be remembered that this list is a movable list if you would like. It gets added to, possibly even deleted from, but it is not a static list. It will change throughout the Project.

This is just the generalized jotted marine resources, developed partly from information from DFO and partly by a local organization, the Western Valley Development Authority.

So there's a significant amount of traditional knowledge in here combined with more specific knowledge from DFO.

Right Whale sightings, and again we did look at this chart earlier on. The North Atlantic Right Whale Conservation Area here, with a heavy concentration of whale sightings within this Conservation Area.

The terminal is here, the shipping lanes as you can see, and these are the new shipping lanes, and the track of the ship into the marine terminal back, out again into the shipping lanes, without going into the Conservation Area.

Two different whales, the Finback Whale

and the Humpback Whale.

These are 30-year sightings, and again these are slightly different, in slightly different areas than the North Atlantic Right Whale.

The heavier lines, the heavier blocks, are an increased number of sightings and the smaller blocks are a few number of sightings, and there is the Whites Point Quarry in each of those drawings.

The in-shore Bay of Fundy Salmon now. Now this is I'm afraid a little difficult to see, but the cross which is shown here and show extensively on this mapping is exactly zero fish, and when we get into the circles, that is fish identified.

The dotted little centres quantify fish. There's a couple here, and now again, here is the marine terminal and these are generally speaking crosses in this area.

Quickly getting into an effects assessment.

The valued environmental components established now. For the habitat, the intertidal and near-shore. The American Lobster, invasive species, marine waterbirds.

Now the marine species at risk, there are fish, mammals, waterfowl, reptiles.

The physical oceanography, the water quality, tides and currents and the marine geology.

The works and activities that will be carried out on site now.

Obviously, there will be a construction phase, then an extended operations phase and a decommission/ abandonment phase.

For the construction of the marine terminal, no dredging and no fill. This was specifically designed to create the least amount of effect to the marine habitat.

The operations phase now. There will be blasting on land. There will be the use and the processing of water. We will use it in our process operation. We have marine transport continuously through the operation. Then, we go into the site reclamation phase.

Site decommissioning. As noted, not in this report but in previous reports, the reclamation on the site will be incremental. It will continue throughout the 50-year life and monitoring throughout the process.

A plan view of the marine terminal, for those who haven't seen it before, we are approximately 200 metres off shore. Three berthing dolphins, mooring buoys. This is a quadrant ship loader and the typical Panamax-size vessel is here.

And again, the cross-section showing the pipe pile supports; the ship loader which you can see can be extended as it goes around on its quadrant so it can load the ship without the ship having to move.

The proposed shipping route, and again the shipping lanes here, the new shipping lanes. This is where ships would go off to Saint John.

Many of these ships actually clip the corner of the North Atlantic Right Whale Conservation Area, but Bilcon's ships will come into the marine terminal and back out precisely the same route, into the outbound lane, and so out to sea.

Again for those of you that were not here for previous presentations, this is a typical Panamax-size vessel with one hatch open.

This particular ship has seven hatches and will be loaded by the quadrant loader.

What are the key concerns? Well, we have effects on marine mammals which can be identified from on-land blasting, from noise and from potential ship/whale collisions.

The effects on other marine biota are on-land blasting, habitat alteration and destruction and introduction of invasive species.

Then we have the effects of the marine

environment on the Project. We have the navigational safety and the integrity of the site infrastructure.

Potentially affected mammal species with Federal Conservation Status.

Again, we have the North Atlantic Right Whale, the Blue Whale, the Harbour Porpoise and the Fin Whale.

What are the potential effects of blasting and noise? We have the blasting effects, auditory effects, behaviour effects and masking effects.

Also, we have the potential effects of whale/ship collisions, injuries and mortal effects.

For marine fish, and again a more extensive list on the left-hand side which may be added to in the future and which we would then have to take into account, but the potential effects are habitat destruction or alteration and the possible lethal and sub-lethal effects of blasting on-land. There will be no blasting in the water.

And other species with Federal Conservation Status are waterbirds and waterfowls, which includes the Harlequin Duck (winters in the area), and other species include the leatherback turtle.

The potential effects are blasting effects and possible behaviour changes.

Let's deal with blasting first. The regulatory requirements, okay. There are guidelines for the use of explosives in or near Canadian Fisheries Waters produced by DFO in 1998.

For marine mammals, no explosives will be knowingly detonated within 500 metres of any marine mammal.

For fish, no explosive is to be detonated in or near fish habitat that produces or is likely to produce an instantaneous pressure change, that is an over pressure, greater than 100 kPa, equivalent to 14.5 psi in the swim bladder of a fish.

No explosive is to be detonated that produces or is likely to produce a peak particle velocity greater than 13 millimetres per second in a spawning bed during the period of incubation.

So those are the thresholds set out by DFO.

For marine birds and for leatherback turtles, we have been unable to identify any specific guidelines.

Provincially, under the Pit and Quarry Guidelines from the Nova Scotia Department of Environment and Labour (1999), there are no regulations or guidelines specific to marine environments.

A blasting model was produced to model the shockwave propagation from the blast site to the marine water column.

This model considered the worst case scenario on the precautionary principle. It involved the topography, the bedrock composition, the bathymetry and the weight and type of explosives. All these things affect the result.

The results of the model with respect to marine mammals now. Pressure level for whales is 100 dB RMS achieved at 500-metre setback, which is the significance threshold we just dealt with.

DFO has commented on this, on the blasting protocol and model in that:

> "...it is unlikely the blasting would result in physical effects on marine mammals, endangered or otherwise, beyond 500 metres."

With respect to fish, the model indicated that 25 kPa would not be exceeded in the nearest marine water column.

As we pointed out, the guideline for fish is an over pressure of 100 kPa, and that is the significance threshold.

The Department of Fisheries and Oceans

has commented on this as follows:

> "100 kPa criterion pertains to lethal or obvious sub-lethal injury to fish and not to more subtle behavioural effects which, if they do exist, are likely to be transitory considering the frequency of quarry blasting. Based on physical modelling, there seems to be minimal cause for concern in terms of lethal effects on fish."

So what can we do to mitigate? We can take into account weather conditions, fog for example. We can blast infrequently (weekly during construction and biweekly generally during production). And we can also establish the setbacks in compliance with the guidelines for blasting.

But we can also go further than that. We can be precautionary, and we intend to do so. With respect to the IboF Salmon, we intend to use a three times-designated setback during the migration period of the IboS through the Bay of Fundy, which is from May through September.

With respect to marine mammals with Federal Conservation Status, again we intend to be precautionary and use a 2,500-metre setback rather than the

500-metre setback set out in the guidelines.

We noted a little earlier that we were unable to find guidelines with respect to waterbirds, however, again on a precautionary principle, we will establish a 170-metre setback for waterbirds.

With respect to fish habitat compensation, and there will be some damage, some destruction in fact of the habitat when the pipe piles go in, we will be required to provide compensation in a manner acceptable to the Department of Fisheries and Oceans, and that is an area three times the area which is being destroyed.

Other mitigation measures. There's detection, deterring devices, ongoing consultation with the Department of Fisheries and Oceans.

And I can say at this point that we have had a significant number of meetings with the Department of Fisheries and Oceans and their experts, and they have been very helpful throughout this process.

We'll train marine observants and we will consult with DFO on model verification and finalization of those safety zones.

Again blasting and model verification monitoring. We will verify the model. After all, it is only a model, even though we use worst-case scenarios.

We will verify the model in the tidal zone at 73 metres, 118 metres and 164 metres from the point of detonation and that the margin of the North Atlantic Right Whale Conservation Area, which as you have seen on the plan is significantly off shore.

Ongoing, we will continue to monitor underwater noise levels at 500 metres, 1,000 metres, 2,500 metres and at the perimeter of the North Atlantic Right Whale Conservation Area, as a precautionary measure that is.

We will do the same thing with underwater background noise and underwater vessel noise.

There will be ongoing monitoring with respect to marine mammals with Federal Conservation Status, like the leatherback turtle.

We will observe a 2,500-metre radius by work boat prior to a blast event if endangered mammals are being reported in the area.

During ship arrival and departures and low visibility, again we will send our marine observers out by boat.

We will record weather parameters (fog, cloud cover, ceiling and visibility), and the predictions for inversion.

We will continue to test the

effectiveness of observation methods and we will observe the behaviour of the nearby seal colony when blasting takes place.

As to noise monitoring now. Well, as we just mentioned, 500 metres, 2,500 metres and right out at the margin of the North Atlantic Right Whale Conservation Area.

So what are the results of our studies and our modelling? We believe that the adverse effects of blasting activity on marine biota is not expected to be significant.

Why do we say that? Because sound levels are within regulatory guidelines. The potential for physical effects on marine mammals is limited to 500 metres and mitigating by no blasting if marine mammals are sighted within the 500-metre zone. The frequency of blasting is limited, weekly or biweekly events.

We will carry out extensive monitoring. There are mechanisms for corrective action in place, and we have adopted to precautionary principle for marine biota with Federal Conservation Status.

Now we deal with another issue, and this is the potential for collisions between ships and whale. We looked at whale occurrences, transport routes, vessel frequency, vessel operation and potential mitigation

methods.

And again, here we are, the North Atlantic Right Whale Conservation Area. So one of the primary mitigation methods is to make sure that our shipping route does not approach the North Atlantic Right Whale Conservation Area.

That is not to say that there are not Right Whales outside, but the primary concentration is in this area.

This one is a little bit more difficult to see, but this is a better measure of the whale density measured as a measure of effort if you would like, sightings per unit effort, which is a little bit different from mere observations.

The darker colour here indicates an increased density. This very light mauve colour here actually identifies zero observations per unit effort.

But again, you can see the concentration tending to be in this area, which is the North Atlantic Right Whale Conservation Area.

So let's look at the factors with respect to potential collisions. North Atlantic Right Whale sightings are concentrated within the North Atlantic Right Whale Conservation Area.

Our transportation routes will be in the

shipping lanes and we will stay outside the North Atlantic Right Whale Conservation Area.

There are currently 800 rule vessels per year using the Bay of Fundy. This does not include fishing vessels, ferries and other ships which are using the water, and we believe that there are probably 2,200, 2,300 other vessels using the water.

We will have one vessel per week, which is an increase of 6 percent of the current rule vessels occupying the water.

With respect to speed, we will ensure that our approach and departure speed is less than 12 knots. This is a precautionary approach because we believe from all the literature that model collisions typically occur at speeds greater than 14 knots.

So mitigation. Well the route, our shipping route is outside the North Atlantic Right Whale Conservation Area. The vessel speed is less than 12 knots during approach and departure, and further speed reduction if whales are sighted.

There is a change of course in case of whale sighting within approach or departure. And we have the cooperation with the North Atlantic Right Whale Recovery Team.

We will monitor the presence of whales

through the Fundy Traffic regular advisories, and certainly our own observations from the ship loader, from the work boat, certainly if they're reported in the area and visibility is poor.

We conclude that the effects are not significant. There is a small increase in vessel traffic, and that vessel transit in infrequent and it's a short duration, and collision is highly unlikely.

DFO have commented as follows:

"The conclusions provided in the EIS regarding collision risk with Right Whales are generally correct. The increased ship traffic due to the proposed activity and the proposed route for these vessels will result in an increase in the probability of vessel/whale interaction along the proposed route, but the increase will not be substantial. The likelihood of collision will still be low in the immediate vicinity of the marine terminal relative to other regions in the Bay of Fundy such as the vicinity of the Conservation Zone."

Another important concern which has been

raised throughout our consultation process is the issue of invasive species by ballast water.

When we started this process, there were guidelines in place for the exchange of ballast water, but they were simply guidelines.

Effective 2006, ballast water management will be in accordance with the Canadian Ballast Water Control and Management Water Regulations, under the **Canadian Shipping Act**.

The vessel operator is required to implement ballast water management plans.

Monitoring. There will be compliance monitoring, and this will be carried out by Transport Canada.

However, we have carried out baseline monitoring for Phyto- and zooplankton at the Whites Point and the New Jersey Port for future reference and decision making for now and ongoing.

Our operation is in compliance with the regulatory framework, will be kept in compliance with the regulatory framework, and we believe that no significant adverse effects are likely to occur.

The effects of the marine environment; currents, tides, winds, waves, fog, existing traffic, navigational safety; they are all issues. The integrity of

our structure is certainly of significant issue.

Marine terminals are extremely expensive to build. We will be required to look for a detailed design, storm surges, waves, water level changes, global warming and using the precautionary approach.

Mitigation. The vessel will operate in compliance with Transport Canada and Atlantic Pilotage. We will carry out a detailed design based on extensive additional data collection and modelling.

We will need to collect specific data on off-shore and near-shore wave height; operational wave height at the berth; extreme wave analysis, extreme water level assessment; marine environmental load assessment; compliance with all applicable engineering standards, best practices and safety margins.

That is a very expensive marine terminal, and it must be built to the highest safety standards.

So monitoring, this will require site-specific oceanographic conditions, site-specific climatic parameters.

The effects assessment we have identified was not significant. The adverse residual effects were unlikely to occur.

An overhead view of the site for those

of you that have not been to previous presentations. A little coastal bog coming in, the coast line, the marine terminal off here at this point, Whites Cove and here.

So conclusions now. The adverse residual effects: Where applicable, all effects are within regulatory standards or guidelines.

Overall, the effects are localized, small scale, infrequent and highly unlikely. No significant residual effects are likely to occur.

Mitigation and monitoring now: There will be an environmental management plan, a comprehensive monitoring plan, an emergency response plan and continued ongoing training of all personnel.

The marine effects assessment: We carried out a comprehensive analysis of all relevant marine components.

This is a typical marine terminal operation. It has no special or unusual features. We have looked at malfunctions and accidents.

We have looked at and will continue to look at the effects of the environment on the Project, and we have looked at cumulative effects.

Our determination is that no significant residual adverse effects are likely to occur.

Implementation and commitment: We will

have a very detailed work program for the detailed oceanographic study which will be required for the detailed design of the marine terminal and other waterfront activities.

We will have mitigation and environmental management. We will have monitoring and an adaptive management approach. We will have compliance monitoring and audits.

There will be transparency of that monitoring and of the audits.

We will continue to involve the public through the Community Liaison Committee, and we will continue to cooperate with recovery teams, the research community and the Department of Fisheries and Oceans.

Thank you very much Mr. Chair.

THE CHAIRPERSON: Thank you Mr. Buxton. Okay.

PRESENTATION BY BILCON OF NOVA SCOTIA - QUESTIONS BY THE PANEL

THE CHAIRPERSON: We will commence with some questions, and my colleague, Dr. Muecke, will begin now.

Mr. GUNTER MUECKE: Since this particular session involves a lot of questions about blasting, we tried to initiate discussions on blasting one of the previous

sessions, and we differed until today. So perhaps I can start out with that?

Mr. PAUL BUXTON: Yes.

Mr. GUNTER MUECKE: Because we have concerns about both the frequency and the magnitude of the proposed blast during the operational phase.

So, I'll start out my questions as I did before, before we decided that we were going to differ the discussion.

My first inquiry was: For the purpose of the test blast, you thought that 2.5 tonnes of explosives would be used from the test blast, and I asked is that figure correct.

Mr. PAUL BUXTON: I'm not sure this microphone is on. Can people here hear with this microphone? Thank you, I've still got this one on. Is this acceptable to the recorder?

Yes, the test blast has a long history. And I think I mentioned the other day that the objective of work on the permitted 4-hectare quarry was to look at the test blast or blasts to gather empirical data.

Modelling is all very well, but we wanted to gather empirical data.

We looked to carry out test blasts and made applications to do so in September of 2002.

To date, we have not carried out test blasts, but we certainly intend to do so to verify the model.

What is most significant, and when we get into technical details, I am not a blasting expert, we have one here, so when we get into details, I will pass the question.

Mr. GUNTER MUECKE: Yes.

Mr. PAUL BUXTON: But it is perhaps not as significant to consider the total weight of all the explosive in the blast, but to consider the weight of the explosive in a delay.

These explosives do not go off together. They go off in sequence as you know, and that sequence allows the effect to be diminished, and we have said that we would use weights of 45 kilograms per delay in our test blast.

The original test blast was conceived to be probably the closest points that we would blast to the water.

There are toes of basalt, if I can best describe them, at the bottom of the steep slope, and if you will recall from the slide conceptual layout of the plant which I showed, the processing plant is at a height of 30 metres, so it was a question of knocking off these little

toes of basalt to get a well-organized site and to make arrangements and space for the stockpiles.

So that was where the initial test blast was conceived, so it had significance in that it was probably going to be our closest blast towards the water column, and not half a mile back on the hill, where it would have less significance.

So that particular blast was specifically designed for a specific area.

When we get into the discussions of monitoring of the test blast and specifically how we do that, we would expect to be sitting down with the Department of Fisheries and Oceans people, deciding on the specific location, the specific charges, what we're trying to achieve and what monitoring we will carry out on land, in the water, acoustically, et cetera.

Mr. GUNTER MUECKE: Okay, Mr. Buxton. The reason I bring up the 2.5 tonnes, and now I realize we're talking in 45 kilogram charges here and delays, et cetera, but nevertheless, the total in terms of a impact is also a measure, okay, which we can take in terms of the intensity of the blast.

Mr. PAUL BUXTON: Eh...

Mr. GUNTER MUECKE: In other words, if I have... It will make a difference, even if I limit myself

to 45 kilograms per hole, okay, whether I am setting off 50 or 100 of those charges, would you not agree?

Mr. PAUL BUXTON: It may have some, if there is a beaming effect, if there is some overlap, but that certainly would be a function of the design to make sure that the overlap or the beaming effect is minimized and that comes with the design of the blast delays.

Now the reason I bring up the 2.5 tonnes here is because these are the only measures we have been given, so you know, this is what I have to work with.

But the reason is that later on in the EIS document, this 2.5-tonnes blast is characterized as being or described as a worst case scenario, and later on in the EIS, in section 11.2.5, under "accidents and malfunctions", there's mention of 7.5 tonnes of explosive involved in the blasts.

When we go back into the CLC minutes, we are told that the typical blast would be 4.5 tonnes of explosives.

So I'm confused as to exactly what range of explosive rates are involved, and perhaps you could clarify for me what the range is?

I realize it is not a fixed amount, but there must be a range or explosive ranges here which are involved in the operational phase?

Mr. PAUL BUXTON: Yes. I think we should separate out the test blast.

The test blast is designed to do specific things, and that is basically to verify the model, so the charge per delay and the total would be designed very specifically to look at all the parameters and the best places on the site.

We certainly called it a worst-case scenario with respect to its proximity to the water pond, so I think that this is a pretty important value here.

We do expect the effects to be significantly mitigated as we move away from the water column, so we certainly wanted to have a test blast which had significance and some real values in the water column, and we were calling that basically a worst-case scenario because that was the closest blast we anticipated to the water column.

In terms of ongoing blasts to produce the production rock, I'm going to turn to our blasting expert, Mr. John Melick.

Mr. GUNTER MUECKE: Could I...

Mr. PAUL BUXTON: I'm sorry.

Mr. GUNTER MUECKE: Just before you do that,---

Mr. PAUL BUXTON: Yes.

Mr. GUNTER MUECKE: ---I'd like to have a few specifics here.

Mr. PAUL BUXTON: Sure.

Mr. GUNTER MUECKE: Just to make sure, in terms of the test blast, how close to the shoreline will that be?

Mr. PAUL BUXTON: I would have to make reference to that. I believe that it was something in the order of 134 metres, and I'm saying that off the top of my head. We will check that reference and advise you specifically.

Mr. GUNTER MUECKE: Okay.

Mr. PAUL BUXTON: I don't have the test blast protocol in front of me.

Mr. GUNTER MUECKE: Okay. That's fine.

Mr. PAUL BUXTON: We'll get back with that specific figure very shortly. And I would ask Mr. John Melick to talk about the size of blasts to produce volumes of rock.

Mr. JOHN MELICK: Good morning. My name is John Melick, and I'm here to represent Bilcon as the blaster.

Do you have a specific question Sir?

Mr. GUNTER MUECKE: Well, I just outlined to Mr. Buxton what I was concerned about.

During the operational phase of the quarry, we have been given different numbers as to the amount of total explosives used for each blast.

These blasts are specific to be biweekly, and the numbers have ranged from 4.5 tonnes of explosives to 7.5 tonnes, and I guess I would like to have some indication of which of these numbers is right, and I realize there will be a range of values, but could you provide us with what that range would be?

Mr. JOHN MELICK: Yes. We expect to use approximately one pound of explosives to blast two tonnes of rock.

Mr. GUNTER MUECKE: Again, the same... What is in the EIS and what you're telling me now seem to be two different things because what I have gotten here out of the EIS, and that is again section 11.2.5, on accidents and malfunctions, is that the generation of one tonne or rock requires 0.4 kilograms of explosives.

One pound per tonne, per two tonnes, is not the same.

Mr. JOHN MELICK: You have to bear with me Sir, as I am an American, and I am jumping back and forth between kilograms and pounds, but...

Mr. GUNTER MUECKE: Let's just use round numbers here, that half a kilogram is a pound, and so what

we have in the document is that one pound of explosives will yield one tonne of rock.

You just told me that one tonne of explosives will yield two tonnes of rock.

Mr. JOHN MELICK: That is correct, that is what I said. I'm not sure... I would have to refer to the document to verify that.

Mr. GUNTER MUECKE: Okay. So the definitive answer is one pound per two tonnes then?

Mr. JOHN MELICK: That's correct.

Mr. GUNTER MUECKE: Okay. So then if that is a definitive answer, I'd like to move on because in order to load two bulk carriers, the biweekly production has to be 80,000 tons, on the average, per blast.

Is that correct?

Mr. JOHN MELICK: It would be... Yes, there would be 80,000 tonnes of rock yielded via 40,000 pounds of explosives.

Mr. GUNTER MUECKE: I work in metrics, so I think we are on different scales here unfortunately.

Mr. JOHN MELICK: Okay.

Mr. GUNTER MUECKE: If I take the conversion, one pound is approximately half a kilogram. We're talking approximations here anyway.

I come up with that the blast will

involve 16 tonnes of explosives, is that right? Metric tonnes?

Mr. JOHN MELICK: That sounds high to me Sir. I would be at...

Mr. GUNTER MUECKE: Well, it's a simple calculation. You take 80,000 tonnes and half a kilogram, okay?

Mr. JOHN MELICK: Which would be 40,000 kilograms.

Mr. GUNTER MUECKE: Oh, that is 40 tonnes.

Mr. JOHN MELICK: That would be... It would be 40,000 kilograms.

Mr. GUNTER MUECKE: Yes. That's 40 tonnes per blast of explosives. I think we have to half that. Okay. What it comes down to is 20 tonnes.

Mr. JOHN MELICK: 20 tonnes, yes, is correct.

Mr. GUNTER MUECKE: Okay. I come back to where we started with this. In the document it says that a typical blast is 4.5 tonnes, and now you are at 20 tonnes, and there's also mention of 7.5 tonnes. So there's a vast discrepancy of figures here.

Mr. PAUL BUXTON: I think the original figure that you're talking about what a discussion of the

test blast, was it not?

Mr. GUNTER MUECKE: Well...

Mr. PAUL BUXTON: I'm looking here, and I see...

Mr. GUNTER MUECKE: I'm sorry, but I'm looking at section 11.2.5, and I don't recall anything about the test blast there. That's the 7.5 tonnes figure.

And the figure from the CLC minutes refer not to the test blast, but to the typical blast during the production phase.

Mr. PAUL BUXTON: What I'm looking at here under "Accidents and malfunctions", which would have been drawn from industry standards", not site specific but industry standards at that time:

"The quantity of explosives handled will depend upon the size of the design, however it would be in the order of 0.4 kilograms per tonne blasted or approximately 7,500 kilograms or 1,500 pounds for a 20,000-tonnes blast."

Mr. GUNTER MUECKE: Okay. We have agreed now that it's 20 tonnes?

Mr. PAUL BUXTON: I'm sorry?

Mr. GUNTER MUECKE: Have we agreed now that it's 20 tonnes per blast during the operation?

Mr. PAUL BUXTON: I think what we have said, we have agreed that it's a pound for every two tons of rock that...

Mr. GUNTER MUECKE: To generate 80,000 tonnes would take a 20,000-tonnes blast.

Mr. PAUL BUXTON: Yes.

Mr. GUNTER MUCKE: It's just, you know, for clarity because it was not clear to us. And that number of 20 tonnes has not appeared in any document anywhere so far.

Mr. PAUL BUXTON: Could I just give you the figures that you had previously asked for?

Mr. GUNTER MUCKE: Okay.

Mr. PAUL BUXTON: The test blast was designed at 73 metres to the high tide line from the point of detonation, and 118 metres to the water at low tide. That's the location that we have proposed to carry out the test blasting.

Mr. GUNTER MUCKE: Thank you. And that was 2.5 tonnes?

Mr. PAUL BUXTON: I believe so, but again, I think... I want to specify that it was agreed that we would design this blast in consultation with the Department of Fisheries and Oceans to get the information that we wanted out of it to confirm the CONWEP model.

Mr. GUNTER MUCKE: That's understood. Thanks.

Like I said, we have concerns. We were trying to clarify the frequency and the size of the blasts, and I think we have done that.

The other clarification that we are looking for involved the atmospheric conditions under which no blasting would occur.

And in the EIS, there are a number of climactic conditions, atmospheric conditions specified. No blasting if there's fog. No blasting with overcast. No blasting with thermal inversions. No blasting with or in the case of precipitation.

And as I previously indicated in my previous question, which we didn't get through, is that all of these conditions range over a variable scale, and to be meaningful, some limits would have to be attached, or trigger points that are specified that would define exactly what these conditions encompass.

So I would like to ask for clarification on that.

Mr. PAUL BUXTON: I think we can give you something, at least I can give you some text with respect to inversions. We did not look up the cloud cover figure last night, and I apologize for that, and we will visit that at

the lunch-time break and get back to you after lunch.

Mr. GUNTER MUCKE: In terms of precipitation and fog?

Mr. PAUL BUXTON: Likewise.

Mr. GUNTER MUCKE: Okay. Thank you. I think that will clarify about the blasting, and perhaps my colleagues would like to ask some further questions.

Ms. JILL GRANT: I have a few questions about the observation process and the mechanisms to be used for it.

The other day, we asked for an illustration that would show where the observation station is. You didn't show that this morning, but can you tell me where the observation station is located on the terminal?

Mr. PAUL BUXTON: It has been sent. We think we can put it up on screen?

It has been sent over to the Panel managers.

Ms. JILL GRANT: Thank you. While that is getting put up, maybe you can tell me, how does the observer get to it?

Mr. PAUL BUXTON: He would get there the same way as the operator. There is in fact a catwalk, and it's not clearly illustrated on the cross-section, but perhaps we'll have a look at it and you could see.

Ms. JILL GRANT: Okay. And the observer is going back and forth between the observation station and the boat, is that correct?

Mr. PAUL BUXTON: I'm sorry. Communication between?

Ms. JILL GRANT: No. The observer is going back and forth between the observation station and the boat to do boat observations?

Mr. PAUL BUXTON: Yes, there will be communication between the two, and that booth will have a communications device because it's got to talk to the ship's Captain, the shore and everybody else.

Ms. JILL GRANT: Do you have two people then doing observation? Is it not the same person doing the observation from the station and from the boat?

Mr. PAUL BUXTON: No, it's not the same person. No.

There... If you could have a look at the... I'm sorry, the light is going to be in your eyes, but...

The observation booth is seen right up there, perhaps 100-odd feet in the air. And then on the right-hand side, you will see that booth with the operator in it.

Ms. JILL GRANT: Thank you. What's the

height of that observation booth above the water?

Mr. PAUL BUXTON: It's probably 110 feet, something like that.

Ms. JILL GRANT: And according to your documents, there's about 500 metres of visibility that is good visibility for an observer from that observation station. Is that correct?

Mr. PAUL BUXTON: I think we said 500 metres can certainly easily be observed from that height, yes.

My own observations, which are taken every day from slightly higher than that, at about 130 feet over the Annapolis Basin, enable me, with very standard binoculars, 7 by 50 binoculars, to see into Digby Harbour perfectly well and the sea in between, about seven miles with perfect clarity.

I do that for at least an hour, an hour and a half every day of my life. You would be surprised at the clarity that you get and the observation status you get at 100-odd feet up in the air. It's quite dramatic.

Ms. JILL GRANT: But we're talking about observing fairly small features, so the visibility to seven miles is different than the ability to observe details at 500 metres. And the documents do say 500 metres I believe, so...

Mr. PAUL BUXTON: I can see birds with perfect clarity on Bear Island. I watch them every day with perfect clarity, and Bear Island is well over a mile from my deck.

It's the height that gives you that advantage, and it really is quite astonishing when you get to that height what you can observe.

Ms. JILL GRANT: Thank you.

THE CHAIRPERSON: Can I jump in?

Ms. JILL GRANT: Yeah.

THE CHAIRPERSON: Mr. Buxton, I question those observations because seeing a bird and seeing the distance in the distance is one thing, but looking for an object in the water, particularly if you've got a significant sea state where the water is roiled and you have waves, it's very, very difficult under the best of circumstances.

Since you offered us an anecdote, I'll offer you one as well. As an oceanographer, I've been on many cruises, and on one cruise in particular we were looking for a buoy which was two metres across painted international orange.

And it was sub-surface. It came to the surface and when it did, we moved the ship in to try and hook it, and we missed it. And so we had to come around a

second time to pick it up. We never saw it again.

We had people in the superstructure of the ship. We circled forever. We had everybody on the crew looking for it. We couldn't find it.

Now when you're looking for an object like a human head, which is one of the difficulties of course when people are lost overboard, the only object is a small thing, but when you're looking for an object the size of two metres across and international orange, you would think that it would be distinctly visible within a few hundred metres or so, and yet we couldn't find it.

2,500 metres, which is the distance you're suggesting will be quite visible, is a mile and a half. If it's perfectly flat, calm, I presume that you won't have any difficulty seeing things, although keeping in mind that whales, for example, particularly the Northern Right Whale, is very low in the water and blends in with the water.

So if you have an advanced sea state, 30 to 40 knots, 20 to 30 knots, and the sea surface comes up, I don't think the visibility is going to be very good.

Now, you can ask... This is a place, perhaps where local knowledge might have helped you, because there are a lot of fishermen around and a lot of people who use the water who probably would substantiate what I'm

saying.

It's very difficult. Certainly from a boat, it's difficult. But when you go up, the visibility improves.

But what makes it complicated is the disturbed sea state, so... That's just a personal observation.

So I'm not as certain as you are that even if an individual is at 110 feet above water, on difficult circumstances, whether that individual will be able to see what you think he or she will be able to see.

And maybe some discussion with local fishermen might be a useful adjunct to the information you already have.

Mr. PAUL BUXTON: Yes, thank you.

I don't think that, with many of these sorts of mitigation measures that one is talking about, there is absolute certainty.

The guideline is quite specific, and that is that we must not knowingly explode or detonate within 500 metres of a marine mammal.

I think that our intent is to... We've had discussions in our several meetings with DFO personnel over observation methods, over training methods because this is a training exercise.

People need to know what to look for, how to look for it, and we understand that.

Now having said that, whether it's 500 metres or 700 metres, could we be absolutely certain, or 1,000 metres or 2,500, that there is a marine mammal in the water?

If it doesn't surface, we would never know, and that's why we have said that there are acoustic devices which can perhaps if mammals emit noise, that we can pick them up by acoustic devices in the water. And we're certainly prepared to work with DFO in the use of those devices to increase the level of certainty.

Ms. JILL GRANT: I know that in the EIS it talks about the possibility of using those devices if they're proven along the way, but are you now saying that this is part of the proposed Project, that there will be acoustic devices being used?

Mr. PAUL BUXTON: No. I think what we have said is what we mean, that if these devices are proven and they are proven useful and we receive that kind of advice from DFO, that we would certainly be prepared to adopt them.

We're led to believe at the moment that they're not necessarily fully proven devices. Perhaps it's a matter of calibration, I don't know. I'm not an expert in

the subject.

But I'm quite sure that there are people in DFO who are following this development in technology, and when it reaches a point where it increases our degree of certainty, we will most certainly use them.

Ms. JILL GRANT: Thank you. The observation point is obviously fixed on the site, so it can't move along with the blast as you're moving along through the different parts of the site, so are you able to determine what proportion of blast events the observation station will actually be useful for?

Mr. PAUL BUXTON: I think if you look at the contours of the site, you will see that it would be useful for all blasts on the site. There are no concealed areas.

The topography is from the high point down to the shore, essentially on all parts of the site.

Ms. JILL GRANT: But you have a coastline of 1.6 kilometres, and the visibility range is 500 metres, so it presumes there are parts of the site which would be out of the usual visibility range that the EIS suggests is secure from that for the observer?

Mr. PAUL BUXTON: Well, certainly if one were blasting on the extremity, either on the north or to the south, it would certainly increase the uncertainty, if

you like.

But I think I would repeat that we will use the best techniques that are available or are made known to us so that we can comply with the guideline that we will not knowingly detonate when there is a marine mammal within 500 metres.

Ms. JILL GRANT: And during the construction phase, I presume that's when you're going to be doing the test blast, is during the construction phase.

That's when you're closest to the shoreline, and at that point the marine tower won't be built, is that correct?

So there won't be an observation high up for the blasts that are in that zone, is that correct?

Mr. PAUL BUXTON: You're correct in your last statement. I'm not so sure that the first statement was entirely accurate.

We would love to conduct a test blast tomorrow morning. We have been working diligently to gather empirical data since September '02, and we have not been able to do that at this stage.

I believe, perhaps, and the DFO officials will be here to present later, if they have now the degree of confidence which we believe they have to sit down and design a test blast, we would be prepared to

conduct it immediately.

We would like, for ourselves, the confirmation of our model results.

Mr. GUNTER MUCKE: Mr. Buxton, in order to visualize the effectiveness of an observer on the loading facility, it would be extremely useful if you could produce a plan which would show the location of the most extreme edges of where charges will be set off for production along the coastline, the locations of these blasts, and 500-metre and 2,500-metre circles of observation, basically, around these so that one can get a more effective picture as to what sort of distances an observer on the loader will have to be to view to effectively see any mammals, marine mammals within 500 metres of the actual site where the explosion occurs.

Mr. PAUL BUXTON: I think, Mr. Chairman, we could do that, but I would ask that it would be next... Not this Friday, but a week on Friday.

And I would perhaps just add here that that may... The plan may shed a little light on the 500 metres. It's 500 metres from the point of detonation.

And I think, as I pointed out, the worst case scenario, and this is a little toe if you like, of rock, which protrudes out the bottom and we would like to clean off and start with the vertical faces of 118 metres.

The point on the ship loader, my guess is probably about 160 metres into the water, so really from the point of blast, our observer is already 260 metres into that zone.

Now, we're talking this 500 metres from the point of blast that one must not knowingly detonate explosives.

Essentially, our observer is already, in the worst case scenario, about 260 metres out to sea from that point so that, you know, even if we are somewhat uncertain as to the visual acuity of our observer and other sea conditions, et cetera, even if that is 400 metres that he can see well, the worst case scenario is 660 metres from the point of blast.

So our observer is well out to sea. We're getting him out into the body of water.

And the other thing is that I think we have said quite specifically that if we think the visibility is poor because perhaps of limited fog, wisps of fog which would perhaps still enable us to blast, just simply poor visibility, we have a work boat and we would certainly conduct observations by the work boat.

Ms. JILL GRANT: The difficulty, Mr. Buxton, is that your observation point is fixed in one place and your detonation point may be in another place, and the

circles of 500 metres may not overlap.

So that's why we're asking for those clarifications about where exactly the blasting is likely to occur, so that we can determine how often the observation point will actually be useful to observe the arc that's created from the detonation place.

I'd like to follow up with some questions around the boat trip.

You indicated that the boat trip would be used if mammals are reported in the area or if visibility is poor.

How long do you think that the observer's going to be out there on the boat, and what kind of strategy would they have for examining the area?

Mr. PAUL BUXTON: I can only say they would be out as long as is necessary. And I think we should go back to the guideline here. The guideline is that we must not knowingly blast when there's a marine mammal in the water within 500 metres.

And certainly what we are saying is that we will carry out whatever strategy is necessary and satisfactory to the regulatory agencies to put in place a precautionary approach.

You know, quite frankly, if we were not concerned about this issue, we could just simply say we're

going to meet the guideline. And if we don't blast with knowledge of a whale in the water, then we're fine.

I think what I'm trying to convey here is that we understand the reasoning behind this, that there is some importance to this, and we will adopt whatever strategies with whatever technologies are suitable to provide the greatest level of safety and security for marine mammals.

THE CHAIRPERSON: Mr. Buxton, a question about ship docking. It's been a concern for us from the beginning because of the nature of the oceanographic environment here.

As I understand it, we will see a ship arriving once a week, about 70,000 dead weight tonnes, capable of carrying 40,000 tonnes of aggregate. And I see three possible scenarios which I'd like to run by you.

The first is the one which you've outlined in the EIS, is that the ship approaches in the shipping lane, breaks away from the shipping lane, comes into the pylons or piers, and eventually ties up without any untoward event happening.

A second scenario is one in which you've got particular aspects of the tidal cycle, northwest winds blowing 30 to 40 knots, and a ship which is large in terms of its surface area which, of course, is impacted by the

wind and the ship acts like a sail to some extent.

So a ship moving into these pylons under extraordinary circumstances of tidal activity, surface wave activity, intense wind gusting and moving all over the place, and the ship would move into these pylons and perhaps damage itself or damage the pylons or may, in fact, even overcome the pylons and ground, which, of course, would be a crisis.

Those would be the two extremes, safe arrival, no difficulties, and worst-case scenario of a ship running up on the rocks.

But there is a middle ground as well, and that is that you mentioned yesterday or the day before for the first time, although... For the first time, it's not mentioned in the EIS. But that there is a possibility that you could use tugs under some circumstances.

I'm wondering about the environmental effect of bringing in a big ship, also perhaps even supported by a tug, in which the impact on the local environment could be quite severe in the sense of I'm thinking about prop wash.

You bring in a big ship and the way it slows itself down, of course, is it reverses its propellers, so it changes the pitch in the propellers and thereby, it generates a huge amount of turbulence as it's slowing down.

Also, they use thrusters. Thrusters generate turbulence as well.

And both of these things, I think, are entangling. They entangle lines and they generate turbulence.

And for individuals like lobster fishermen who are intent on working in this environment, it could be quite catastrophic when you have lobster pots connected to lobster pot connected to lobster pot, that sort of thing.

I wonder if you could give us a sense of where you stand with regard to the development of this docking facility and these ships?

As I said, you've provided us with knowledge that suggests that you're now considering tugs, but where do we stand with regard to this?

I think the underlying concern is that it's an unprotected shore facing prevailing westerlies, north westerlies, and that it's known to be a very difficult environment, and the EIS simply projects it as just straightforward, easygoing. There doesn't seem to be any hint of the potential difficulties which are there, which I think are quite considerable.

Mr. PAUL BUXTON: I don't think that we've brushed off the difficulties of this. We recognize

that there will be periods in the weather when we can't bring a ship in.

In our discussions with shippers who are very familiar with the Bay of Fundy, who presently serve as, for example, the Bayside Quarry in New Brunswick, the gypsum vessels which go to Hantsport, and we have talked with senior Captains of shipping lines, and they recognize and have said there are going to be periods when we will not come in.

For us, it's primarily a cost of doing business in the sense that if we have stockpiles ready to go and a ship can't come in, we can't deliver our product to market.

For the shipper, it's a much more serious issue because these new vessels are now about $50 million apiece.

And I think it is highly unlikely that a shipping line would in any way put a $15 million ship at risk. After all, if they delay in coming in, the shipping line doesn't pay for it. We pay for it. We have to pay demurrage.

So in a sense, for us, the shipping lines have looked at this terminal. They've looked at the conceptual designs. They're very familiar with the Bay of Fundy, and they have said: "Yes, it has some difficulties

and you could find yourself paying demurrage." And we have built that into our economic plan.

I certainly have no experience as a ship's Master or running a shipping line. The people that we have spoken to are extremely knowledgeable about shipping. They operate ships.

We have spoken to the senior Captain of lines, who arranges for shipping, and yes, we recognize the issues.

We feel that there may be significant periods in the winter when we cannot ship, but we recognize...

We also think there are going to be significant periods in the winter, perhaps a month, six weeks, of very bad winter, eight weeks, where we can't use our wash plant, and hence don't want to ship.

I think these are all sort of the vagaries which are built into our business plan, and our objective is to ship two million tonnes a year, and we think that that is attainable. We do not think that we can say the ship will come in on a Monday morning, 52 weeks a year, and pick up a cargo.

We know it will be weather contingent, and certainly we have very high confidence in the ability of shipping lines to know their business and determine when

it's safe to come in and when it is not safe to come in, and I will absolutely guarantee you that a ship's master or a shipping line will not risk its ship for one voyage of 40,000 tonnes of aggregate when that ship is worth $50 million.

THE CHAIRPERSON: I appreciate that, but the sea bottom is littered with ships that have had the same philosophical approach; in other words, people make miscalculations. The weather is extreme. Unpredictable things happen.

So this is more than simply a cost or extra cost or inconvenience to the company, it has written into it environmental potential.

If a ship runs aground and its tanks are holed, for example, and it loses fuel, then we have a hydrocarbon problem. If it ends up on the... If it drags down the coast, it will interact with all kinds of things along that coast.

It could be a serious environmental problem, not because the intention or concern of the company is any less, but simply because events overtake it. So in a sense, what I'm saying is, is that you're intending to bring in very large ships into a coastline which is known to be difficult, and it's totally unprotected, and I'm wondering what sort of mitigative measures, other than simply saying:

"Yes, they won't do that..."

But as we all know, I mean ship masters make mistakes for one reason or another. And also, events can overtake them sometimes.

Mr. PAUL BUXTON: I appreciate your comments, Mr. Chair, and I disagree with nothing that you've said but I think that, you know, the shipping industry is a mature industry. Just as the airline industry has matured.

I think that the levels of risks we accept every time we fly or every time we drive seem to be acceptable.

We drive tanker trucks of gasoline down the road every day and, you know, there has to be some level of risk associated with every activity that we undertake in our lives.

I'm certainly not qualified to speak any further on the safety or not, or the unsafe arrival of ships.

THE CHAIRPERSON: Have you considered the possibility of formal risk analysis? There are organizations, individuals, consultants, that can provide an analysis of risk, that can look at the situations, the background history, and provide an analysis of the amount of risk which is being considered.

Mr. PAUL BUXTON: We have, on some of the

aspects of the site, consulted with a risk analyst. We have not in this specific one.

As I say, we think that these sorts of events are extremely unlikely, and we do have emergency response plans in place. There are emergency response plans in place. I don't know that I could go any further than that.

THE CHAIRPERSON: Thank you. Okay, we're running behind schedule, but we have one small set of questions yet to be asked, but I think what we'll do is take a break for 15 minutes, and then we'll be back.

We'll complete that questioning, and then we'll move to Transport Canada. My apologies for delaying Transport Canada.

--- Recess at 10:35 a.m.

--- Upon resuming at 10:53 a.m.

THE CHAIRPERSON: As I indicated before the break, we have a few more questions for Bilcon, and then we will move to Transport Canada.

There will be an opportunity for people in the audience to ask questions after Transport Canada, before we break for lunch.

There'll be a subsequent opportunity to ask questions after we deal with DFO, which will be this afternoon. Okay?

So I think that should satisfy the need for questioning at this point.

Now, I'm looking for Mr. Buxton. There he is. Mr. Buxton, a bit of unfinished business. We are still missing two outstanding undertakings. One, maybe your blaster can give us this information, but we asked for supporting documentation to identify the percentage of residual ammonia after an explosion.

And the second thing we asked for, I think was through Mr. Wall, was the metric equivalent of 140 mesh. Both those things were supposed to be delivered today.

I wonder if it's possible that we can get them today? If not, then certainly no later than tomorrow. They seem like simple calculations or simple observations.

Mr. PAUL BUXTON: Yes. We had planned on doing those at the lunch break and getting to them immediately after lunch.

THE CHAIRPERSON: That's perfectly satisfactory then. Thank you.

Okay. We'll turn over questions to Dr. Muecke.

Mr. GUNTER MUECKE: I have a set of questions regarding loading from the stockpiles.

Your stockpiles are exposed to the atmosphere, and because you are on the shoreline, it means they accumulate salt spray during the storage period.

In other coastal operations that I'm familiar with, usually washing will have to be done before the material is loaded in order to wash the salt spray off the aggregate.

Is that contemplated in this case?

Mr. PAUL BUXTON: No, it is not.

Mr. GUNTER MUECKE: In terms of the stockpiles, are they dry or wet?

Mr. PAUL BUXTON: The last operation which will happen to the crushed material is that it will be washed, so certainly when it is put on the stockpile, it will be wet, if you like, damp, surface damp.

There is no question that the surface of the stockpile will dry in good summer drying weather, wind and hot sun, so I would say that the top surface foot, perhaps six inches to a foot, maybe surface dry. The rest of it will retain its moisture.

Mr. GUNTER MUECKE: So the material that goes onto the loader, onto the belts of the loader, if I understand it right, is derived from the interior of the pile near the bottom, so it is material in a wet state. Am I right there?

Mr. PAUL BUXTON: That would be generally correct, yes. It would be picked up in the loading tunnel, yes.

Mr. GUNTER MUECKE: So during the loading process, because you are... The ship is loading moist material, so one of the results of that will be that bilge water will be generated in the ship.

During the movement of the material, its settling in the holes, there's bound to be some release of water resulting in bilge water, which the...

And so my question is, has any consideration been given to the discharge of these bilge waters in terms of the possible environmental effects?

Mr. PAUL BUXTON: It is not permitted to discharge bilge water unless at a facility which has the specific facilities to enable that. That, I think, has been in place for some time.

I think for specifics on the regulations and legislation, Transport Canada will be here and I'm sure that they would have the specifics.

My information is that one may not discharge bilge water except at a facility now which can accommodate that.

Mr. GUNTER MUECKE: We will revisit that with Transport Canada. Thank you.

THE CHAIRPERSON: Okay. I think that brings to an end the Panel's questioning of Bilcon. We would now like to bring Transport Canada individuals forward.

And if you can align yourself. There's six I believe.

PRESENTATION BY TRANSPORT CANADA/ATLANTIC PILOTAGE AUTHORITY - VARIOUS INDIVIDUALS

--- Pause

THE CHAIRPERSON: It's my understanding that this is a combined presentation from Transport Canada and the Atlantic Pilotage Authority. Is that correct?

Mr. JIM CORMIER: That is correct.

THE CHAIRPERSON: Could I ask each of you to give your name and your affiliation, and if your name has any unusual spelling or whatever, would you spell it out so that the transcriber will get it right?

And maybe we could just start over here, and just go through so we have all those names.

Mr. JIM CORMIER: Yes, thank you. My name is Jim Cormier. I am the Regional Manager of Environmental Affairs for the Maritimes for Transport Canada.

Mr. JOHN PRENTISS: Good morning. I'm John Prentiss. I'm a **Navigable Waters Protection Act**

Officer with Transport Canada.

Mr. GARRY MACCAULL: I'm Garry MacCaull. That's G-a-r-r-y; M-a-c-c-a-u-l-l. And I'm a Senior Marine Inspector, Transport Canada Marine Safety.

Mr. ROSS MUNN: Ross Munn, M-u-n-n. I'm Regional Manager Transportation Security Operations.

Mr. PATRICK GATES: Patrick Gates, Director of Operations for the Atlantic Pilotage Authority. I'm also a Master Mariner.

Mr. MIKE FREEMAN: And Mike Freeman with Transport Canada, Environmental Assessment Officer.

THE CHAIRPERSON: Two gentlemen in back, please.

Mr. STEVE BONE: Steve Bone, B-o-n-e. I'm the Communications Adviser for Transport Canada.

Mr. ALAN MILNE: Alan Milne. I'm the Acting Regional Director of Marine Safety.

THE CHAIRPERSON: Thank you very much. Now I believe you're going to make a presentation, so I'll just let you go to it.

Mr. JIM CORMIER: Thank you very much for inviting Transport Canada here today.

As you can see, we have our team of experts that hopefully will be able to present our area of responsibility and involvement in this project as well as

provide any advice to the Panel on areas of concern.

Transport Canada's mission is to develop and administer policies, regulations and services for the best transportation system of Canada and Canadians, one that is safe, secure, efficient, affordable, integrated and environmentally friendly.

Transport Canada is broken down into different core activities, branches as we call them, Marine Safety being one of them that has the greatest interest in this project, as well as Security and Emergency Preparedness.

We have a Programs group, that is where the Environmental Affairs sits and also incorporates airports, harbours and ports.

Other branches that Transport are involved with are surface, rail, civil aviation, communication, policy and coordination.

Transport's involvement... Or the Federal EA involvement began in February 2003 with the identification of two potential Law List triggers under the **Canadian Environmental Assessment Act**, one being the **Navigable Waters Protection Act**, the **NWP**, and the **Fisheries Act Authorization**.

And it's important to note that, at that time, both of these mandates were under the Minister of

Fisheries and Oceans.

Transport became a responsible authority, an RA, under CEAA, in March of 2004 when the Navigable Waters Program was transferred from the Minister of Fisheries and Oceans to the Minister of Transport Canada. Transport's active involvement in the CEAA began in August 2004.

Mr. JOHN PRENTISS: Okay. And I work with the Navigable Waters Protection Program, and we administer the **Navigable Waters Protection Act**, which is a Federal Act.

It's designed to authorize interferences to the public right of navigation.

We do this by ensuring that works are reviewed and regulated to mitigate any potential interferences or any impact on the public right of navigation.

Our processes are in legislation and require registering plans and advertising the Project. And it's also... Several of the sections are CEAA triggers, hence our involvement.

So we became... We had a completed application in January 2003. By February we had advised the Proponent of their need to register their plans and proceed with the public notification process.

Our Navigational Impact Assessment is basically complete. We are awaiting the results of this process to make sure we're in a position to come up with a favourable decision.

Mr. GARY MACCAULL: Marine Safety. I'll talk about the vessel, the foreign vessels coming to Canadian waters. Marine Safety is responsible for the compliance and enforcement of all vessels in Canadian waters.

Foreign vessels that come to Canada must comply with international conventions under the National Maritime Organization.

To list, there's the International Convention for the Safety of Life at Sea, and that's concerning safety and safety equipment onboard vessels.

There's the International Convention for the Prevention of Pollution from Ships, which is called MARPOL, and MARPOL is broken down in six annexes.

The first annex deals with oil pollution. The second annex, noxious liquid substances. The third annex, hazardous substance in package form. Annex four is sewage. Annex five is garbage, and annex six is the air emissions from the ship.

Also for crew on the Crew Standards of Training, this comes under the International Convention for

Standards of Training Certification and Watchkeeping for Seafarers, also called STCW95. That's the latest revision to the STCW Code.

Under the **Canada Shipping Act**, the relevant regulations are the Ballast Water Management Regulations, Navigation and Safety Regulations, and the Regulation for the Prevention of Pollution from Ships and for Dangerous Chemicals.

To ensure that the vessels are complying with the conventions and regulations, Marine Safety uses the following procedures.

All vessels are required to report to the Eastern Canada Vessel Traffic Service System, and there's established Eastern Canada Vessel Traffic Service Zones around eastern Canada from 60 degrees North down to the American waters.

Vessels are required to provide 24-hour reports prior to...24 hours prior to reporting to the ECAREG zone. These reports would be the identification of the vessel, the Master on board, the destination and the route of the vessel, the cargo on board, deficiencies in machinery or equipment of the vessel, any release of pollutants, and also the requests to request clearance to enter Canadian waters.

Once the vessel is within the ECAREG

zone, it's required to have frequent reports on ship movement and also any incidents concerning the safety or pollution when the vessel is in our zone.

We also do port state control on foreign vessels. There's a program in the North Atlantic Trade area. It's the Paris MOU it's called, and we're a signatory to that, so we put our Marine Safety Inspectors aboard vessels to inspect vessels, and they're done at least once every six months.

These vessels are boarded on arrival in Canada, if they haven't already done it within six months, and we go through and ensure that the vessel is complying with all the conventions and regulations.

If the vessel is in deficiencies, we have the power to detain that vessel until the deficiency is rectified.

Also in the reporting procedure, when the vessel is coming, it's been instigated that there is ballast water reporting to confirm that the vessel has a ballast water management program in place.

This can be achieved in one of four ways: exchange of ballast water before in Canadian waters; treatment of ballast water; discharge to reception facilities; or retention on board.

We require the report of vessels, like I

say, before... Along with the ECAREG, before they come into Canadian waters to ensure that they are managing their ballast water on board.

One other point I'd like to bring up, and it was mentioned this morning, Marine Safety would strongly encourage the Proponent to develop a Port Procedure Manual.

The details of the Port Procedure Manual can be found in our publication [inaudible] Process, and in this book I'd just highlight some of the procedures that would be required in the Port Procedure Manual.

You have stuff like berthing strategy, terms of design on ship approach, departure from the terminal, upper limbs berthing operations, terms of winds velocity, wave heights, tidal stream velocity, ice cover, visibility and means of measuring and indicating these factors, load measurements and limbs supporting lines, ship-shore communication procedures, designated anchorages, emergency measures.

Just to name a few, also there would be... Also, in the... With the developed checklist for the procedures for the vessel, for example, inspection, testing and preventative maintenance of terminal berth equipment used by the ships, pre-arrival and departure operations, tests and checks of ship machinery and equipment, cargo pre-

transfer inspection, checklists and conferences, ship-terminal communication chain of authority, cargo-handling procedures, including emergency shut-down procedures, safety precautions, ship-oriented emergency procedures, which would be included in the terminal's contingent plans, and receiving facilities for ballast, dirty ballast, slops and garbage.

Here again, Marine Safety is... It's not a regulatory requirement, but we would strongly encourage that the Proponent develop a Port Procedure Manual. Thank you.

Mr. ROSS MUNN: Good morning. Within the Atlantic Region, Marine Security oversight is conducted by the Security and Emergency Preparedness Branch.

To receive these vessels and to operate the marine terminal, the Proponent must comply with the Marine Security requirements under the International Maritime Organization's International Ship and Port Facility Security Code.

Of note is that the amendments to the International Convention for the Safety of Life at Sea and the requirements under the Code have been implemented through Canada's **Marine Transportation Security Act** and the Regulations.

What does that mean? Basically, in

accordance with the Marine Transportation and Security Regulations, the Proponent is required to prepare a Marine Facility Security Assessment in collaboration with us and develop and implement a Marine Facility Security Plan prior to the operation of the marine terminal.

For these operations to begin, all shall be submitted to the Regional Director of Transportation, Security and Emergency Preparedness for approval, and this must be done six months in advance of operation of the facility.

Mr. JIM CORMIER: So to sum up, the Proponent is required to adhere to all conditions of a **Navigable Waters Protection Act** approval.

They must ensure a Port Procedures Manual is completed prior to the facility operating, ensure all necessary pilotage requirements are in place prior to the facility operating, which our colleague, Captain Gates, will be speaking to in just a moment, and ensure a Port Security Plan is approved.

Transport Canada looks forward to the Joint Review Panel's report and we, along with Fisheries and Oceans, as a responsible authority for the EA, will respond to the Panel's report once it's released.

I've included a list of contacts that are at this table, and phone numbers, and copies of the

presentation are at the back of the room for those interested parties that may be interested in contacting us after the hearings if they think of additional questions or something.

PRESENTATION BY ATLANTIC PILOTAGE AUTHORITY

Mr. PATRICK GATES: Good morning. I'm Captain Patrick Gates. I'm Director of Operations for the Atlantic Pilotage Authority based in Halifax. Just a little intro on the Atlantic Pilotage Authority.

We are a Federal Crown corporation, which has to be self-sufficient, and we report, through Transport Canada, to the Minister of Transport.

The Atlantic Pilotage Authority mandate is to establish, operate, maintain and administer in the interests of safety an efficient pilotage service within the designated waters of the Atlantic region.

Compulsory pilotage area designations. Each Pilotage Authority exercises jurisdiction over the waters within its geographic boundaries specified in the **Pilotage Act** for each pilotage region.

The Atlantic Pilotage Authority, APA, gives power for all Canadian waters in and around the four Atlantic provinces, including the waters of Baie des Chaleur in the Province of Quebec and south of Cape d'Espoir.

The **Pilotage Act** also empowers each

Pilotage Authority to make regulations establishing compulsory areas within the Authority's geographic boundaries.

Pros of compulsory pilotage for terminal operators provides professional pilots. Pilots are knowledgeable of local conditions, reduces damage to your infrastructure.

The pilotage areas for the APA, as designated on the chart there, there are 16 compulsory pilotage areas and many non-compulsory areas throughout the Atlantic region. And we provide the ships...

Either the owners or the ship Captains do contact our office from time to time, and a lot of the smaller ports, to provide pilotage service at some of the minor ports where there's not that much traffic.

The criteria for pilotage. The criteria for determining which ports and districts should become compulsory are the degree of difficulty and the hazards in approaches within the port itself; the amount of vessel movement and manoeuverability and size of those vessels; the nature of cargo carried on board, i.e. oil, gas, explosives, hazardous materials; and the design of the wharves, slips and actual space available for manoeuvring.

The environmental concerns and the preservation of the ecosystem. The Ministerial review of

outstanding pilotage issues, the Canadian Transportation Agency review in 1999 contained 21 recommendations, all of which Transport Canada concurs in principle with.

The details of the Agency's recommendations and the Departmental response thereto can be found in the Report to Parliament by the CTA.

CTA recommendation number 1. The Panel recommends that each Authority be required to identify, in consultation with interested parties any compulsory areas where a change in the factors and circumstances relating to the designation justifies a detailed re-examination of that designation and to develop a plan and a time-frame for doing so.

The Panel recommends that each Authority be required to conduct a risk-based assessment of the proposed new compulsory areas, and those areas where changed factors and circumstances justify a detailed re-examination of the designation.

Pilot risk management methodology. Such designation not be imposed indiscriminately; appropriate research and evaluation of all the facts; a meaningful consultation with the stakeholders; clear justification that compulsory pilotage is warranted.

The PRMM is a consultive process consisting of easy to follow steps to provide a consistent,

transparent, well documented decision-making process.

The PRMM stresses the importance of involving stakeholders, maintains good documentation throughout all stages in the process. Communication is essential. Data and information are very important, and it is fully endorsed by the Minister of Transport.

Exchange of information. Providing a greater understanding of the issues; identifying possible options.

Documentation produced during the process also becomes the building blocks for the risk management library where decisions and risk context issues have assumptions, proceedings, research, et cetera, that can be compiled for future reference.

PRMM documentation provides the following benefits: A record of decisions; a means to explain and defend decisions; historical information and data for future decisions that enhances the knowledge and uniformity and consistency of future decisions; context for informing stakeholders of decisions; a paper trail of events and decisions; and in the event of legal action, a detailed and comprehensive record of previous decisions.

Procedural steps. The Authority will appoint an experienced facilitator who is respected within the industry.

Although the facilitator is ultimately responsible for the success of the completion of the Project, it is expected that he or she appoint an Advisory Committee comprised of a limited number of direct stakeholders.

This group will address or debate all the needs, issues and concerns of the stakeholders.

At the conclusion of the process, the facilitator will present to the Atlantic Pilotage Authority his conclusions and recommendations. It will be reviewed by Transport Canada for due process.

All stakeholders who participate in the project will be asked for their comment.

The Board's final decision to accept, amend or reject such recommendation will follow, and that Board is the Board of the Atlantic Pilotage Authority.

These list the compulsory pilotage areas in New Brunswick, Nova Scotia, Newfoundland, Labrador and Prince Edward Island.

This is a list of ports where we are asked to provide pilots, and they usually come from one of those major ports that were on the previous slide, and we also do coastal and ice-pilotage work as required by the ship's Captain or the owner.

Whites Point pilotage review, compulsory

pilotage. The Authority will maintain the use of gross tonnage as a criteria on which to base pilotage requirements, limits and exemptions.

Canadian and registered ships above 1,500 gross registered tonnes remain subject to compulsory pilotage. Canadian fishing vessels, Canadian Government ships are not subject to pilotage.

In addition, offshore supply vessels of 5,000 gross registered tonnes or less are not subject to compulsory pilotage.

This means that an offshore supply vessel of 5,000 gross tonnes or less that operates out of a base in a compulsory pilotage port located within the Atlantic region will not be subject to a compulsory pilotage.

Marine pilots. The Authority employs professional marine pilots who are competent in all aspects of ship handling. They have a thorough understanding of the effects of wind, current and tidal influences.

This is reflected in the expertise they demonstrate in navigation and handling of all size vessels in proximity to land and within narrow channels and harbours.

There's just some pictures of pilots boarding some large ships and it just gives a bit of a size

of what they have to undertake.

Pilot boats. The Authority operates pilot boats in Halifax, Saint John, New Brunswick and Placenta Bay, Newfoundland. The Authority has 16 contract pilot boat operators in the remaining compulsory and non-compulsory areas.

These are pilot boats that are continued. And the one on the left is actually the same one on the right, but we have that from Boston, and the one on the... That's the new one in Saint John now.

And this is the end except questions. Thank you, gentlemen.

TRANSPORT CANADA/ATLANTIC PILOTAGE AUTHORITY - QUESTIONS BY THE PANEL

THE CHAIRPERSON: Gentlemen, I don't know which one will answer this, but I have a question about the Port Procedure Manual. Is that mandatory?

Mr. GARY MACCAULL: No, it's not mandatory. The term port review process is a voluntary process, and the guidelines for that Port Procedure Manual comes from that review process.

But it's... Like I said, Transport Canada would strongly recommend that a Port Procedure Manual be developed for this operation.

THE CHAIRPERSON: From your standpoint,

it's a useful exercise, is it?

Mr. GARY MACCAULL: Indeed it is. Indeed it is, yes.

THE CHAIRPERSON: It regularizes the port activities.

Mr. GARY MACCAULL: Exactly. It's put standard procedures in place so that the ship knows what to do, you know... And when they're doing a transfer of cargo, you know, it will talk about situations...

They talked about contingency plans but you know, this is just regular operations, you know? Contingency plans would be in place too.

THE CHAIRPERSON: Okay. Thank you. Jill?

Ms. JILL GRANT: The Proponent proposes to have a ship coming in on what it calls an exact line, or I think Mr. Buxton this morning called it a precise line, in and out. And we're wondering how reasonable it is to think that the ship will come in in a very precise way?

This is to avoid fishing gear and other things. Can you comment on that?

Mr. GARY MACCAULL: If the vessel is taking a pilot, it would be under the guidance of the pilot for a certain approach to the port.

When he comes into the traffic lane, he

would... I would expect that the fishermen would recognize that that is the route that this vessel is going to come in and they wouldn't lay their gear across that area.

It can be fairly standard, you know? The route can be very standard.

I have one comment on the route that's indicated on the Proponent's diagram there.

He indicates that the vessel will depart and join the traffic separation scheme, but under Rule 10 of the Collision Regulations, it's required to rejoin or... When you're crossing the separation scheme, the vessel should do, as best as practical, a right angle to the flow of the traffic.

So in that case, that would indicate that the vessel probably would come and join a little further North, you know, to do the right-angle crossing into the traffic zone.

But as far as coming in... Also too, weather conditions would affect, you know, how the vessel's going to approach. Like I say, if the vessel was on a regular schedule, a week schedule, I think the fishermen... And probably it would be a good idea for the Proponent to advise the fishermen that they're coming in.

I can give you a little anecdote or example of the Northumberland Strait where we're dealing

with a situation right now where the cruise ships, you know, in the summertime, ply up to Northumberland Strait.

The fishermen are always saying they're running through the gear all the time, you know, so what we have done with the cruise lines there in that case is they have recommended routes that they maintain, understanding that, you know, these are recommended.

You can't dictate that the vessel always follow these routes. There's other instances where he has to deviate from these routes for the safety of the vessel.

Ms. JILL GRANT: So you would suggest that the route becomes a kind of exclusion zone for fishing then?

Mr. GARY MACCAULL: I don't know if we could make it an exclusive zone. As the traffic separation scheme, that's not exclusive to fishing.

You know, the fishing is still allowed in the traffic separation scheme, although under Rule 10 a fishing vessel, when he's engaged in fishing and displaying his proper signals, has the obligation of a burden vessels, so other vessels have got to stay out of his way.

Under Rule 10 of the Collision Regulations, in the traffic separation scheme, the fishing vessel doesn't have that right. He has to act like another vessel.

So in this case here, you know, we can't exclude him from fishing in the area, but on the other hand he still would have to abide by the Collision Regulations and, you know, give way where appropriate, although if he's outside the traffic separation scheme, and if he's a fishing vessel he would be... He'd have some privileges as a fishing vessel.

Ms. JILL GRANT: And can you clarify, I wasn't sure from the presentation whether a pilot has to go onto this ship from the Pilot Authority, or would that only be determined through the kind of risk assessment process that was described?

Mr. PATRICK GATES: There has been no determination on pilotage at this stage, and this is the first opportunity that the Authority has been brought in to be involved with this project.

And we would propose that we would have to do a risk management review, a PRMM, in order to establish the feasibility of pilotage and whether it'd be necessary or not.

There are certain benefits to bringing a pilot in with his experience of the local tides and weather conditions and so on, and also with the proposed terminal, we would strongly recommend that the Proponent do some computer modelling at the simulator.

There's one in Port Hawkesbury or Summerside where you can actually model this and bring people in and try doing it under certain weather conditions and define the practicality of it and to find out whether or not or how many tugs you may need for this operation.

Just as an aside, we have conducted this for the Nova Scotia Power Terminal in Port Hawkesbury. We did a review for Bear Head Project. We've done a review for the Celtic Petrochemicals in Goldborough (ph) on simulation, and we've spent a lot of time working with Irving Oil in Saint John for the L&G Terminal.

And out of that, between Irving Oil and Repsol and ourselves, we've developed protocol and procedure of how those ships are going to be taken to the dock, how many tugs have to be available to do it, and also determine the weather conditions, the sea states, of how that vessel can stay at the dock and work its cargo.

So there is certain benefits of getting into consultation with the Pilotage. You'd have to establish this as a separate entity, and we would probably, if it was to come about, it would probably be serviced from Halifax, or from one of the collection of pilots in Halifax, and we'd have to do some additional training and the like for that, and establish and area and where the pilot would board and how he would get on board the ship and so on and

so forth.

Ms. JILL GRANT: Thank you. The proposal suggests that exiting the shipping lanes the ship will be down to 12 knots maximum speed, reducing its speed obviously as it comes in.

If the pilot sees a whale, how long does it take to actually slow down a ship of that size that's coming in? Is it feasible to be able to slow down to avoid a marine mammal, or is it feasible to divert course to avoid a mammal that might be spotted in the vicinity?

Mr. GARY MACCAULL: I'll try and answer that. I was involved with the lane change in the Bay of Fundy when we moved the lanes to avoid the Right Whales. At that time, we had several discussions about the speed. In fact, in the United States some of the way they deal with that in some of the areas is reduction of speed.

For the situation we had in the Bay of Fundy, the speed, because of the size of the vessels involved, you would get down in speed and you know, you'd run the risk of starting to lose manoeuverability.

In some cases I think in the States they're down, maybe down to six knots but I mean...

So we did look at that, but we came up with the idea that the best option in the Bay of Fundy was to actually move the lanes to get away from the high density

area of the whales. The problem is, reduce the speed, I mean to spot the whales too, they're not that easy to see. And, you know, it could be nighttime fog, you know?

And with the Right Whales, they're peculiar because they don't seem to... They seem to be, you know, they don't seem to pay attention to ships at times, eh? Sometimes they do, sometimes they don't.

So you know, the trouble with... It can be argued that going through an area of Right Whales at a certain speed, lessen the time you're going to be there, or if you reduce the speed you're going to be in the area longer, so I don't know, you know, what's the best way to deal with this, you know.

Like I say, in the Bay of Fundy we did a lane change, and that substantially reduced the risk to strike a Right Whale because of the concentration.

I'm not saying that you're ever going to, you know, eliminate it altogether.

I don't know if I could speak to whether, you know, if they have time to... When they see a Right Whale, you're that close, whether a reduction in speed of 12 knots or even, you know, slower, but then you run into the risk when you get the slower speed of the manoeuverability of the vessel, so in fact you can't turn the vessel anyway.

So it's... It's not an easy subject to talk about, okay, but you know, when they talk about reducing the speed to 12 knots, I would think that 12 knots is still an acceptable speed to maintain manoeuverability of the vessel.

Whether, you know, a speed from... I don't know what the top speed of these vessels are, but I would expect it to be any more than 16 knots, and to reduce from 16 to 12, you know, whether how much that eliminates the risk of strikes to whales, I don't know. I can't talk to that.

THE CHAIRPERSON: Captain Gates, I was going to ask you about docking, but you were in the room and you heard the exchange between myself and Mr. Buxton about docking a big ship and the risks involved and the unpredictability of the weather and so forth.

And just a moment ago when you were speaking and you were talking about model, my sense is, is that you were answering my question. Were you, in fact?

What I mean is, I was suggesting to Mr. Buxton that it's a very unpredictable place. You're dealing with a great big vessel and that maybe a risk analysis would be useful thing in order to assess what the mitigative steps would have to be.

Can you offer a comment on that?

Mr. PATRICK GATES: Yes, Mr. Chairman. First off, we have to recognize that these vessels, they are a good size, and they're going to be coming in on ballast, which is going to give them a fairly high windage, and so there's less below the water.

When they leave, they're going to be in the reverse condition, and so therefore probably much more manoeuvrable and can handle somewhat more adverse conditions under better control.

We would strongly recommend that this terminal be...this proposed terminal be exercised with a modelling and also to undergo a risk analysis for pilotage. I'm not trying to impose pilotage on here. The Authority would probably take it to review it. There's only one port which was exempted from compulsory pilotage by the APA in 1972, and that is Hantsport, and I'm not quite sure of the details of why that wasn't included, but that's... That is a fact.

All the other ports, where there were pilots came in under the umbrella of the APA, so new terminals and facilities that are outside of the recognized ports will be looked at, we will be directed by our board to review them, and we would ask the corporation, the Proponent of course, to get involved with that.

But for docking the ship, it is going to

be very difficult. Personally, I've only just seen a little bit of that comment there, and I was a little bit concerned about the fact that he proposed to use some mooring buoys for the bow and stern lines, the long lines, and our experience on using those buoys in this part of the world is not very good.

The icing conditions in the wintertime create huge problems in trying to get rid of those lines when you have to get off in a hurry, and adverse conditions. You have to put a man on the buoy and you have to get off. So the thought would be, it would be better to have a dolphin setback, and a gantry, a gangway walkway, so that the lines can be brought by a boat to the dolphin, and they have a capstan on the hooks there, the mooring hooks, and haul them up.

So that would be one suggestion that needed to be evaluated, I would say, because you can't do that work in the wintertime.

THE CHAIRPERSON: Thank you, Captain Gates. Very helpful. Jill?

Mr. GUNTER MUECKE: Maybe I could come back, for just a moment, to how the ship will have to leave the shipping lane.

And we just heard from you that the recommended course is at right angles as opposed to the

oblique angle that is shown on the plans.

Mr. GARY MACCAULL: Yes, that's correct. Yes.

Mr. GUNTER MUECKE: In terms of whale strikes, would it not be preferable to - I haven't measured it out on the map, obviously - but the shortest route is the best, regardless of angle?

Mr. GARY MACCAULL: Well, we're having... You know, we're having traffic come out the outbound lane now, and he's not going to be anywhere outside the outbound lane.

Mr. GUNTER MUECKE: H'm.

Mr. GARY MACCAULL: He's cutting across the separation scheme to into the outbound lane. Albeit, he's going to be closer to the conservation area. But the vessels in the outbound lane come right by that, but that was, when we were looking at the development of the lane change that, you know, that moved the traffic. Because before, the outbound lane was right through the middle of that.

If he has... You know, if he was going out and he encountered a whale, could see a whale, sure, he would alter, you know. The whole area is under vessel traffic management, Fundy Traffic, of course, you know, and radar coverage, so he'd be in constant consultation with

them.

Also, Fundy Traffic does, if they had reports of our right whales in the area, they'd broadcast that to ships, you know, when they're in the zone.

But all I'm saying is that in the collision regulations, just for the safety of the traffic movement, it's... Or it's... Unless it's, you know... You try to go across the separation zone at as right an angle as possible before joining it.

Mr. GUNTER MUECKE: Okay. Thank you. Could I perhaps ask a few things about ballast water and bilge waters? Okay.

In terms of ballast water discharge, maybe you could clarify for us what the current regulations are, and follow that up with how these regulations accommodate exceptional circumstances; if the captain thinks an unballasted docking is not safe, what leeway he has in terms of ballast water discharge?

There's... As you know, there's considerable concern about that in the fishing community because of invasive species.

Mr. GARY MACCAULL: I have the Ballast Water Control and Management Regulations right here, and you want to know the exceptions? Or...

Mr. GUNTER MUECKE: Well, could you just

briefly outline for me what the regulations state as to where the ballast water can be discharged?

Mr. GARY MACCAULL: I have a graphic, actually, that would probably help too, if we can get that up on the screen, that would show the areas for exchange of ballast water.

Mr. MIKE FREEMAN: Just watch your eyes.

--- Pause

Mr. GARY MACCAULL: There's two different scenarios we have for vessels arriving in Canada. There is the trans-oceanic navigation, which are the vessels coming from like Europe or overseas, and then we have the non-trans-oceanic navigation, which would be vessels coming up from the States.

A lot of... In this case here, that would apply because the vessels are only coming from New Jersey. The regulation requires for, you know... It does require that vessels go beyond the thousand metres to exchange heir ballast, okay?

But in this case here, we have traffic that is not, you know... To have it enforced to go to sea to exchange a ballast and come back in, there's been other areas that have been identified that it can be, you know, acceptable to your ballast while on route to Canadian ports.

The green zone there shows the traffic heading to and from Nova Scotia. So this is an area that's just off the Continental Shelf in greater than 1,000 metres of water, and these vessels, you know, especially heading to Nova Scotia, are going up into the Gulf of St. Lawrence and up the river, would require the exchange of ballast that way.

For vessels coming from Calais in the Gulf of Maine, we have the area yellow. Now, ballast waters are required to be exchange if ballast is taken south of Cape Cod, the area of Cape Cod.

So the vessels exclusively trading north of Cape Cod in Canadian waters to come back and forth to Canada, then they could, you know... They would exchange their ballast, and it wouldn't really come under these regulations. Okay?

The red area would be vessels which the Proponent's vessel would come under. He's heading into the Bay of Fundy, and so they're required... They can change the ballast in this area, and also keeping or avoiding any shallow water. I have to look. I think it's... Yeah. Depths of at least 500 metres, okay.

And I mentioned before, you know, the other options for not exchanging ballast is to have treatment facilities on board. That's still under

development, and I don't know how far they are with that, but that's...

And also there's retention onboard, which is not very practical either, you know? Or to assure reception areas for ballast, which is... We don't have reception facilities in the area right now, but that's what is set up for in that.

So the vessels are required to exchange the ballast. We monitor the ballast, this change, you know, to ensure that they do. We have metres and we go aboard the vessels and determine...

And basically what it is, it's just to test the salinity of the ballast water. If it's... You know, if it's a high enough salinity, then it can be pretty well assured that the ballast is taken at sea, as opposed to taken in port in fresh water.

So... And there is, you know, it's... For compliance, there is a prosecution procedure for vessels who do not comply.

Mr. GUNTER MUECKE: Thank you, that was very informative. Now the next part of my question was under certain circumstances, the Captain may consider it unsafe to de-ballast at that stage, and my question is what circumstances would warrant that, and what would be the strategies then in terms of getting rid of the ballast

water? Would he have to stay in that area until conditions have improved?

Mr. GARY MACCAULL: Okay. There's... In the regulations it says:

"It is not necessary to manage ballast water if one of the following emergency situation occurs:

(a) the discharge or uptake of ballast water is necessary for the purpose of ensuring the safety of a ship in an emergency situation or saving life at sea;

(Bilcon of Nova Scotia) the discharge or uptake of ballast water is necessary for the purpose of avoiding or minimizing the discharge of pollutants from the ship; or

(c) the accidental ingress or discharge of ballast water results from damage in the ship or its equipment that was not caused by the wilful or reckless act of the owner or officer in charge, and all reasonable precautions are taken before and after occurrence of damage, or discovery of the damage, for the purpose

of preventing or minimizing the ingress or discharge."

We have situations since these regulations come in effect, which was just last year, that vessels going up into the Gulf of St. Lawrence, into the river...

Because it's more problematic in the Great Lakes for vessels, the Marine Safety has directed vessels back out to discharge their ballast and to change ballast, okay?

So it depends on the case too, you know? I mean, so we would look at that, you know? But so... I mean, we do have the authorities there to direct the vessel out or just not allow them to discharge their ballast in the Canadian waters.

Mr. GUNTER MUECKE: Okay. I think that clarifies it for me.

The next point that came up, as you heard earlier, was with respect to bilge water, because loading of moist aggregate will no doubt result in a certain amount of bilge water being generated, and what the regulations are regarding that, and when and how that material can be discharged.

Mr. GARY MACCAULL: That would be covered under the MARPOL, the International Convention on Marine

Pollution from Ships, and it would be section... It would come under section...

Bilge water would be also encompassed like tank sweepage too. We get into that, you know, where a vessel is cleaning the salt out, eh, and garbage.

So there is... Under the MARPOL Convention, there is listed procedures, and also where you're allowed to discharge this bilge water, okay? And I'm just quoting off the top of my head. I don't exactly, but I would expect and know from other incidents in the MARPOL that if it's at sea, at this certain distance from land, at a certain rate, it's allowed to do that. Okay?

I can't give you the specifics on it from the top of my head. I can get back to you on that, if required.

Mr. GUNTER MUECKE: But is it allowed while the vessel is docked in coastal waters?

Mr. ALAN MILNE: There is a certain distance off shore that you're allowed to discharge, and the vessel has to be underway. And as Gary pointed out, it's a limited quantity. It's a rate per nautical mile, the discharge. And of course it's down to... I believe it's 15 parts per million, so it's very diluted in terms of pollutants.

Mr. GARY MACCAULL: It wouldn't be, you

know, like I say, under MARPOL or even in the ballast water, you know, under "Safety Conditions" too, it would be allowed, okay?

If the vessel wasn't... If safety of the vessel or life onboard the vessel was... Or if it's a choice between discharging bilge water or having to discharge oil pollution, you know? So it depends on the case.

I don't know exactly the wording of the regulation, you know, but there's... I would expect that there's some allowable, you know, off shore. I don't know alongside. I'd have to get back to you on that. I can't really talk to that specifically.

Mr. GUNTER MUECKE: It would perhaps be useful to clarify that for us, because what I visualize is because we are dealing with the same situation every time they load, that they, you know, generate a certain amount, and we have no much, of course, but water that will accumulate in the holds that they...

So that, you know, we can have an idea as to, you know, where that water is going to go.

Mr. GARY MACCAULL: Yeah. There again, I think, you know, the vessel is allowed to do it a certain distance from shore. That would be the procedure to do, to wait until the vessel got out to discharge that bilge water.

I don't think it would be that amount that would make a difference in the...on the ballast of the vessel.

And also it depends on, too, the bilge water, you know? If there's no oil components in that bilge water... I mean, that's definitely not allowed.

Mr. GUNTER MUECKE: Yeah, sorry. I don't understand that. If there is no oil in it, it'll make a... Will that allow the ship to discharge at the docking facility?

Mr. GARY MACCAULL: There again, I'll have to get back to you. I don't know at that docking facility. It would be allowed off shore, but I would have to check the regulations to see for the docking facility.

Mr. GUNTER MUECKE: Okay. Could we have an undertaking from you to clarify this for us?

Mr. GARY MACCAULL: Indeed sir.

THE CHAIRPERSON: By which date could you get it to us? The hearings end on the 30th. Could we get it before the 30th of June?

Mr. GARY MACCAULL: I'll endeavour to do it. If I can't do it myself, I'll task someone to do it for you.

THE CHAIRPERSON: Can I put you down for the 29th of June?

Mr. GARY MACCAULL: 28th?

THE CHAIRPERSON: 29th.

Mr. GARY MACCAULL: 29th.

THE CHAIRPERSON: Well earlier, if possible.

Mr. GARY MACCAULL: Yeah. I'll try to get it. I'm out of the office, but like I say, I'll task someone to do it for you.

THE CHAIRPERSON: Okay. Thank you.

Ms. JILL GRANT: I'd like to ask a follow-up question on the exchange of ballast water. You suggested that in the Gulf of St. Lawrence ships are sometimes sent back out.

Is that the standard policy, that if a ship is coming in and has not been able to exchange its ballast water that it will be sent back out to do so before it comes into the Bay of Fundy?

Mr. GARY MACCAULL: You mentioned the Gulf of St. Lawrence but now you're talking about the Bay of Fundy so...

Ms. JILL GRANT: Well, you had said that, you gave an example---

Mr. GARY MACCAULL: Yeah.

Ms. JILL GRANT: ---from the Gulf of St. Lawrence. So I'm asking whether it's going to be the policy in the Bay of Fundy that if a ship does not or has not been

able to exchange its ballast water, will it be required to go back out to that read zone to do so before it comes in and discharges?

Mr. GARY MACCAULL: Yes. That would be the requirement. You're not allowed to just, you know... If it's ballast water that was taken below Cape Cod, that would...

Ms. JILL GRANT: Thank you. And the ballast exchange requirement, does that require a hundred percent exchange of the ballast water or is some percent retained?

There's a two-day passage from New Jersey. We're just wondering how much of the ballast water would actually be exchanged in that time.

Mr. GARY MACCAULL: I think it's better if I include that in, because I don't know the numbers right off the top of my head, you know? So I'll include that in the reply to you on the other one.

Ms. JILL GRANT: Thank you. The study provided by the Proponent on the waters where the ballast water will be taken on in the Hudson-Raritan Bay Estuary area indicate that there's very high risk there for a number of organisms of concern, including parasitic lobster disease, mollusk disease, Asian crab, brown tide.

So I'm wondering... And perhaps hull

fowling agents.

So I'm wondering what kinds of concerns Transport Canada has, and what kind of monitoring you'd be doing around whether these invasive organisms are coming in, in the ballast water, even after exchange?

Mr. GARY MACCAULL: As to monitor what species are in the ballast water, I think we would defer that to DFO, because we work in conjunction with them, you know, in consultation with them, to set up the ballast exchange areas, and also they do the monitoring for what's in the water.

We check and monitor, like I say, for salinity so that we can check to see that it has being exchanged at sea, but what's actually in the components that could be harmful to our environment, that we'd leave that for the DFO.

Mr. GUNTER MUECKE: Could I move on to the decommissioning and abandonment fees of the port, of the loading facility? And I guess we're interested in Transport's opinion on how decommissioning should proceed.

Could the terminal actually be left in place after operations cease? How is this seen in terms of an obstruction to navigation?

Mr. ROSS MUNN: Well, I'll handle that question, and it's a good question. Under the **Navigable**

Waters Protection Act, should the work be approved, it is approved for a set period of time, based on regulation. In the case of marine terminal, it's 30 years, just off the top of my head, but I think it's 30 years.

The owner of the work is obliged to seek re-approval at that time, should they wish to continue operation. It's standard in our approvals to have a condition of approval that relates to removing the work at the end of its...should you wish to not use it anymore, we expect you to remove it.

Should the owner decide to sell it or divest of it in some way or another, give it or somehow exchange it to another owner, that new owner would then be responsible for any terms and conditions of the **Navigable Waters** approval, which would include lighting or whatever conditions they were.

So in theory, it could continue on into time, the way the act is set up now, or at some point the owner could modify the structure and seek approval for that, as well, and modification could be completely removing it or changing it in some format, maybe for another purpose.

And we would look at that and assess that at the time.

Mr. GUNTER MUECKE: What about change of usage?

Mr. ROSS MUNN: We're not, in our... When we analyse the impact on the public right of navigation, we're not really that concerned with the usage, other than the fact that the thing is sticking out into a navigable waterway, and we expect a boat to be tied up to it.

If the ship is handling, say, oil or crushed rock, it's kind... From my assessment, it's the same.

Others, you know, other departments and other people within Transport Canada may have... It would trigger other ways of assessing the project.

But for us, it's just strictly how it impacts on or into the waterway.

Mr. JIM CORMIER: And if I could just add to that, the nature of the authorization that **Navigable Waters** may be issuing, depending on the type of change, it could trigger **Canadian Environmental Assessment Act**. If the authorization is a 5(1) or a 6(4) authorization, under their Act, they're both triggers under CEAA. So that change might likely invoke CEAA on that change.

Mr. GUNTER MUECKE: Thank you.

Ms. JILL GRANT: The **Species At Risk Act**, SARA, requires that if a potential harmful effect or death of any kind of endangered species is contemplated, that

there has to be a notification so that special attention is paid to that.

I'm just wondering whether Transport Canada issued or received any notifications under SARA about species at risk, and what the implications of those might be for this project.

Mr. MIKE FREEMAN: I think those notifications would be directed at the competent Minister, and if it was a marine species it would be directed at DFO, if it's a mammal, marine mammal, and if it was a marine bird or a migratory bird it would be directed at Environment Canada.

Ms. JILL GRANT: And did Transport Canada issue such a notice with regard to the shipping for this Project?

Mr. MIKE FREEMAN: Not that I'm aware of.

THE CHAIRPERSON: That brings the questions from... Oh, sorry.

Mr. GARY MACCAULL: I wonder if I just could, if it would be all right if I could ask the recorders to get your questions down, because I didn't, you know, get the specific questions you asked me.

THE CHAIRPERSON: The undertaking?

Mr. GARY MACCAULL: Yes.

THE CHAIRPERSON: Yes. I don't know if

we have it formalized yet, but before you leave perhaps we can give it to you exactly.

Mr. GARY MACCAULL: I appreciate it. Thank you very much.

THE CHAIRPERSON: Yes. Thank you.

The Panel's questions are finished at this point, so we will then ask the Proponent whether he or they wish to ask a question. Mr. Buxton?

Mr. PAUL BUXTON: Thank you, Mr. Chair. We have no questions, thank you.

THE CHAIRPERSON: That... Following that, I ask if there are any individuals from Government who would like to ask questions from Federal or Provincial Government. If not, then we will ask if there are any questions from registered participants.

There's one. Mr. Hunka? We don't have a microphone for you unfortunately. Can you see to that Debbie?

PRESENTATION BY TRANSPORT CANADA/ATLANTIC PILOTAGE AUTHORITY - QUESTIONS FROM THE PUBLIC

Mr. ROGER HUNKA: I have a number of questions, but I don't know which one to address first.

We've used the term "invasive". I assume you mean alien species?

THE CHAIRPERSON: To whom are you

directing that question?

Mr. ROGER HUNKA: To the Panel, the Proponent, and this Panel.

Ms. JILL GRANT: Invasive species would be species not native to this area.

Mr. ROGER HUNKA: Alien species.

Ms. JILL GRANT: That grow out of normal conditions, yeah.

Mr. ROGER HUNKA: Okay. I'll use the term "alien" because that's the term that I understand it to be.

In the discharge areas from Transport Canada of ballast, the red area, is that ballast taken on anywhere along the Bay of Fundy? Because I'm not clear of the question from the Panel and your answer.

Mr. GARY MACCAULL: The exchange, if ballast is taken on in the Bay of Fundy, you wouldn't be required to exchange it. It's ballast is taken on south of the latitude of Cape Cod that causes a problem.

So if the vessel is ballasting on the way out, he's going out of our waters anyway, so we're not concerned about...

For example, if a vessel goes into Sydney with a load, discharges its load, takes on ballast water, and then comes to Halifax and discharges in Halifax,

he's not outside the regulations.

Mr. ROGER HUNKA: No, but in this case the ship is coming from the Hudson to the Bay of Fundy. Bringing in ballast from the Bay, from the Hudson.

Mr. GARY MACCAULL: Okay. I'm sorry.

Mr. ROGER HUNKA: So where would that ship be prepared or allowed to discharge its ballast?

Mr. GARY MACCAULL: In the red zone that's in areas greater, I think it's 500 metres.

Mr. ROGER HUNKA: Okay. The other supplementary to Transport Canada, is Transport Canada or does Transport Canada have a Memorandum of Understanding between itself and the Department of Agriculture, the Inspections Unit, dealing with "alien" and invasive species?

Mr. GARY MACCAULL: I'm not aware of anything with the Department of Agriculture. We have MOUs with the Department of the Environment and DFO.

Mr. ROGER HUNKA: Are you aware that the Department of Agriculture just recently has established a unit to deal with "alien" invasive species and their pathways?

Mr. GARY MACCAULL: Personally, I'm not.

Mr. ROGER HUNKA: Is anyone on this Panel aware of it with Transport Canada?

Mr. JIM CORMIER: No, I'm not.

THE CHAIRPERSON: Mr. Hunka, I think that's your question and your follow-up, so I'm going to see if there's anyone else interested.

Mr. ROGER HUNKA: All right. Thank you, Mr. Chair.

THE CHAIRPERSON: I see a hand. Mr. Stanton? Remember, these questions can be directed to the Proponent as well as to Transport Canada or the Pilotage Authority.

Mr. Stanton, there's a microphone right there for you.

Mr. KEMP STANTON: I'd like to know if it's just the terminal that the Department of Transport is looking at here, or whether they would be looking at the amount of buoys and other parts of the project that the Proponent is putting in the water.

Mr. JOHN PRENTISS: From the **Navigable Waters Protection Act** perspective, we authorize any works that are placed below the high water mark. So the plans that we have show a terminal, I think a couple of mooring dolphins, maybe three mooring dolphins, and I think two mooring buoys.

Those are the only things that we have under consideration at this point in relation to the

terminal, that I'm aware of.

THE CHAIRPERSON: Okay. Additional questions? Yes, Mr. Sharp?

Mr. ANDY SHARP: A question for Captain Gates. In his discussion about the modelling and review of ship movements into a terminal, he indicated that there was a modelling facility through the Pilotage Authority, and he indicated that other projects in the area had made use of this facility.

Am I correct in taking from your comments then that this is something that's typically done before a project gets to the Environmental Assessment or the Environmental Impact Assessment stage? You mentioned the Irving Refinery I believe.

Mr. PATRICK GATES: My mention, actually, was to the Irving L&G, only on the marine side of the project, and what we... What usually happen is that we come to meetings such as this and these issues are raised, and then recommendations come from the Committee to the Proponent to follow some guidelines or suggestions, or take it up.

The modelling abilities and facilities are at the Community College, Marine Institute, Nautical Institute, in Port Hawkesbury, and the Nautical College in Summerside, for this area, or you can go to Memorial in

Newfoundland, St. John's, Newfoundland, to do that.

But normally, at this stage, we put it out there for the Proponent so he will be... We're providing some information, and it's for the Committee to then either recommend to the Proponent to follow up on some of the suggestions that we bring, the information brought forward.

THE CHAIRPERSON: Thank you. Additional Questions? Mr. Hunka?

Mr. ROGER HUNKA: Thank you Mr. Chair. This is to the Proponent. In your Environmental Impact Statement, also appreciating that you were not informed about the Aboriginal communities or the representatives to these communities, the area of Aboriginal fisheries, commercial fisheries and food fisheries is not addressed at all.

The question is, are you prepared to begin to address the issue of the Aboriginal food fisheries and the Aboriginal commercial fisheries in your Environmental Impact Statement?

Mr. PAUL BUXTON: I'm not sure really quite exactly what your question means. I was under the assumption that the issue of food fishery for Aboriginal people was a point of negotiation between Federal agencies and the various Native Councils, Native Bands, et cetera,

but...

We have not addressed that, and I'm not sure just where we would fit into that process, and as much as I don't believe that we would be interfering with any Native fisheries, it might be useful to raise that same question with the Department of Fisheries and Oceans officials who will be here this afternoon.

Mr. ROGER HUNKA: All right. Thank you.

THE CHAIRPERSON: Yes? Mr. Morsches.

Mr. BOB MORSCHES: Doctor, I'd like to address my question to Mr. Buxton.

During this morning's session, you mentioned about the ship and it coming in during various weather conditions. Have you thought about a formal risk assessment whereby even, I think even Dr. Fournier mentioned this, where you would actually take a ship of ore size, an ore-size ship, and take it under various seasons and all the various weather conditions - fog, snow, rain, ice, and high winds - and come around the Sandy - or Sandy Cove, excuse me - the Whale Cove, Whale Point (sic) area...

I've been on many ships during my career, and when you have high winds or inclement weather, a ship, even though it only wants to do 12 knots, will go at a flank speed, and indicates that the props are going to be about 25 to 30 knots per hour.

That kind of prop wash causes a turbulence that could go down 50 to 70 metres in depth. The area that we're talking about is full of kelp, urchins, and lobsters.

Of course, they may not be there at the time, but the kelp was always there. We have two layers of kelp in that area, it's a very major area for kelp.

And so I'm wondering if you have considered having a formal risk assessment by actually deploying a ship, borrowing a ship for a day under these various conditions and try it out?

Mr. PAUL BUXTON: I'm not sure, Mr. Chair, that we would do a risk assessment by engaging a ship for a few days.

I think we have every intention of consulting the experts in the Atlantic Pilotage Authority at the appropriate time, and availing ourselves of their experience and the experience of the Federal Department of Transportation.

There's a lot of expertise out there. I think what we have done is gone as far as to satisfy ourselves that there are sufficient openings and windows that we can carry out a commercial traffic from that facility.

We know there are constraints. The

constraints are built into our business plan, and we will certainly seek the advice of those with the greatest amount of knowledge with Atlantic Pilotage Authority at the appropriate time.

THE CHAIRPERSON: I think that I will bring these questions to a close. There will be another opportunity later this afternoon after DFO presents.

But for the moment, I'd like to thank the Pilotage Authority and Transport Canada for coming here this morning. Thank you very much, gentlemen.

We will resume the session at quarter past one.

--- Recess at 12:13 p.m.

--- Upon Resuming at 1:15

THE CHAIRPERSON: We've got a minor glitch that we'd like to have... I hope you'll agree with it. Dr. Chris Taggart from Dalhousie is on a tight schedule. He's scheduled... He's got to be out of here by 3:00, so what... And he's got a 15-minute presentation, so what we were thinking...

You stay put, but what we would do is we would just let him jump in ahead of you, and then you would follow.

I know it's a little inconvenient, but I think this will suit everybody.

--- Pause

THE CHAIRPERSON: Okay, okay. Let me make an introduction, first.

Ladies and gentlemen, we're going to get underway right now, and the schedule has been changed, as I indicated a moment ago. Dr. Christopher Taggart from Dalhousie University, Oceanography Department, will be making a presentation prior to the DFO individuals. Okay.

PRESENTATION - DALHOUSIE UNIVERSITY - Mr. CHRISTOPHER TAGGART

Mr. CHRISTOPHER TAGGART: Thank you. Pardon me?

--- Pause

Okay. So my name is Chris Taggart, Oceanography Department, Dalhousie University, and I thank the Panel and Bilcon for this opportunity to make this presentation.

To help ensure a thorough examination of the matters relevant to the mandate of the Panel, to provide the encouraged public input that the Panel asked for, and to provide as an interested party, some views on implications of the EIS, and to facilitate information by the Panel so it can address the factors as they are outlined in the Joint Panel Agreement.

So that's where I'm coming from, and I'd like to begin by stating that I provided for the Sierra Club a 23-page review document of the EIS, focusing primarily on Volume 4, Section 9, and from that critique, the response from Bilcon listed the issues that were raised. Not all of the issues are on this table, but many of the issues that were raised in that review, going from stock ties to suspended sediments, through to the North Atlantic Right Whale, other whales, shipping lanes, et cetera.

From that review, the response from Bilcon to that document was Bilcon has noted the comments contained in the review which is noted as not peer reviewed. So Bilcon chose... If you could, next slide please... To give the one cent response to that review. So I'd like to reiterate some of the points that were raised in that Review for the edification of the Panel, and perhaps the Proponent.

If we can go to the next page, please? Yes. From the working paper of the review, number 1628, for which there was no response from the Proponent, there were issues related to tide current information, there was pointed out that there are more sophisticated high resolution and relevant tidal prediction data and models available. There was no evidence or argument provided about the relevance of the tidal information and the currents of

the region of interest.

Residual circulation and the transport of particulates and contaminates were issues found within the EIS, and current predictions to the proposed site can be at least an order of magnitude greater than those at Saint John, which were the reference point by the EIS.

So I'm just going to quickly address each one of these ones here. If you could go to the next slide, please? So the currents shown are those to be expected from the average tidal range at Saint John's, New Brunswick of 20 feet. In the working paper, it's stated that there was no evidence for the argument to provide that this had any bearing or relevance.

The point being made is if you look at the tidal currents... Next, please. At Saint John, New Brunswick, those are scaled so that the east/west currents, and the north/south currents are running about .125 or .07 metres per second.

If you look at the location of the Bilcon site, you will see that the tides are much stronger... Next, please. At the proposed site. These are scaled and so we're reaching .75 to .8 metres a second.

So the point to make, be made here is that the currents as proposed at the site can be 16 to 11 times stronger than at the reference Saint John's(sic). So

as presented in the EIS, this is pretty misleading information.

Next point? The wind-driven and residual circulation interests and the residual circulation is going to be relevant to the long term for propagation of suspended sediments, or other contaminants in the water. There is a web-drove model provided and cited by, and used by many people for the Bay of Fundy region, developed by scientists at the Department of Fisheries and Oceans.

And I just give you an example here quickly of a drifter... Please? Thank you. If we begin at a high tide at zero depth in that panel near the side, there are a series of drifters released into this model, and it shows you the trajectory of where those drifters would go over I believe it's a two-week period, so mostly along the coastline.

If you do the same model at a different time starting a low tide, for two weeks, you get a very different picture of what's going on, and so the message there is... Next?

In a highly invective environment, a diligent environmental assessment will recognize that the fate of these materials will depend on the release location, it will depend on the time of release, and there are many uncertainties and possible outcomes from doing this.

Next, please? We can then begin at 25 metres's depth, and do the same sort of thing. Here we're beginning at high tide, and you see the trajectories of expected projectories over a two-week period, and then we begin at low tide, and we see a somewhat different trajectory over a period of two weeks.

So the message here is that it depends also on the depth at where the contaminant or the suspended sediments are provided.

Next, please? And one more issue, now I've looked at seven drifters at 25 metres starting at low tide, running for two weeks, and these are, these drifters propagate from the coast out in towards the Grand Manan Basin and you can see the trajectory of those particulates. It's rather interesting, in the next slide, or next point, these trajectories right into the primary right whale feeding habitat.

Next slide? So the message is that in some situations, cementing materials, toxins, for example, from some places may focus in the Grand Manan Basin where they could be taking up phytoplankton and possibly biomagnified into the zoo plankton that represent the primary food for the, for whales in this habitat that are resident there for periods of possibly three months.

Next slide, please? There's a whole

literature on the WebDrogue and Web-Tide prediction models that can be consulted to address these kinds of issues, because most of this is published and most of it's available online.

Next slide, please? There was issues about species of whales, the North Atlantic Right Whale, so-called ship interactions, and rationales for designated routes. One consideration of a route would be orthogonal to the coast. Again, there was no response to these suggestions by the Proponent.

I will quickly now address each of those here. Next, please? This is whale sighting per unit effort. For all whale species, sei, minke, humpback, fin and right whales, and low white blue is very low sightings per unit effort.

Yellow, orange, red is very high sightings unit per effort, and these data are heavily weighted by right whales. So if we look at the Bilcon transit route as proposed by the Proponent.

Next point, please. It's not orthogonal is the highest concentration of the expected whales, and so there is an alternate route that is self-determined by the distribution of those data, and that alternate route looks like this.

Next, please? And it could have, and

should have been considered if environmental concern was foremost.

Next, please? So the question is why is Bilcon not concerned with minimizing the likelihood of a vessel/whale encounter? Quickly to the next slide. We can do this by looking at the same sort of... All the other whale species, with the exception of right whales, to remove that heavy bias and look at the distribution of where the whales are.

And, again, the Bilcon route is going through the yellow and touching on the orange and green areas. And the alternate route goes up through the blue areas into the shipping lanes, and is also orthogonal to the coast.

So you're minimizing the potential interaction with the animals. So this could have, and should have been considered, if the environmental concern was foremost.

Next, please? So the question is why are they not interested, and then we could go once more and look at, for example, humpback whales. These are not effort-corrected data. These are simply sightings data over 1978 through 2004 data, and again, we can see where most humpback whales are sighted, and again, there's the Bilcon route and there's the alternate route, and I think you can

see the obvious difference between the two.

So the question is why is there no concern with minimizing the likelihood.

Next slide, please? Bilcon mentioned in their EIS that the proximity of the designated shipping lanes is considered a primary mitigation measure, and a strong... I suggest that a stronger measure might be to route that as orthogonal to the coast and with the traffic lanes. But the message seems is that Bilcon is not interested or capable of grasping this message, when it is handed to them.

Next slide, please? Presently, Bilcon stated that there are no speed limits on vessels travelling the Bay of Fundy waters. In the review paper, it suggested that perhaps a speed limit could be suggested that would minimize the severity of a collision, but there was no response by the Proponent, and so, again, once must conclude that perhaps Bilcon is not interested or capable of grasping that information.

Next, please? If you look at the probability of a lethal strike to a large whale is a function of vessel speed, and here we are assuming these are very large vessels... Much, much bigger than whales... We can see that point.

At 12 knots, the probability of a whale

strike being lethal at 12 knots is about 50/50. At the next speed, if you drop the vessel speed down to eight knots, the probability of a whale striking being lethal is about 20 percent, so that's one in five. Much less. And if you look at the higher levels...

Next point? At 15 knots, it's about an 80 percent probability that you will kill the animal and, of course, above those speeds, it's almost certain death.

So these, this information is known. This information is published, and this information has been provided very similarly by people in the United States of America who have done similar work well over two years ago.

Next slide, please? So the message that Bilcon could set their own speed limit if they wanted to reduce the risk of environmental damage.

Next slide, please? So this is my summary point. Bilcon was provided with criticisms, ideas, suggestions and concerns. Bilcon chose to ignore or note the criticisms, ideas and suggestions.

Next slide, please? Bilcon ignored the opportunity to reduce potential environmental impact.

So the final message is, if Bilcon cannot address and provide means of ameliorating potential environmental impact beforehand, particularly when it's pointed out, then what evidence is that there Bilcon will

ever consider or address issues if and when they become demonstrated impacts?

So my final point is a question. This is a critical question. What if, and I request the Panel to consider this question.

Thank you for your time and, again, I thank the Panel and Bilcon of Nova Scotia for this opportunity to make this presentation.

THE CHAIRPERSON: Dr. Taggart, you'll entertain some questions?

Mr. CHRISTOPHER TAGGART: Yes, sir.

PRESENTATION BY THE UNIVERSITY OF DALHOUSIE- QUESTIONS BY THE PANEL

Ms. JILL GRANT: I couldn't quite read from the graph. Can you tell us what the probability of a strike being lethal is at 14 knots, which I... Is that the speed?

Is there any kind of speed?

Mr. CHRISTOPHER TAGGART: At 14 knots, the probability of the strike being lethal is about 80 percent. The confidence intervals on two different models are provided in the publication that's being referred to here, and they range between a low of about 60 percent to a high of 100 percent.

Mr. GUNTER MUECKE: Dr. Taggart, this

morning we heard that the manoeuvrability of the ship, the carrier, is affected by speed.

Mr. CHRISTOPHER TAGGART: Yes.

Mr. GUNTER MUECKE: That it's not only... So as you reduce speed, you also decrease the ability to avoid a sighted whale. So if that is...

What would happen to the probability if that was taken... Or is that taken into account in the model that you just showed us?

Mr. CHRISTOPHER TAGGART: No, that is only if a strike occurs, what is the probability. It's if the strike occurs to a whale where the speed is known, what is the probability of it being called.

Mr. GUNTER MUECKE: So one, in a sense, could add to that if the speed is decreased, there is actually an increase in probability of hitting.

Mr. CHRISTOPHER TAGGART: There may be, although I don't know if that's been quantified or measured.

The other issue would be, it depends on what kind of speed limits you're limiting the ship to. In the Bay of Fundy, you're dealing with currents of two to four knots, which a ship has to overcome.

The estimates that we've been able to compile show that it's about a 20 percent probability at eight knots. How manoeuvrable the proposed vessel might at

those speeds is not known to me, and what will matter is whether or not the vessel has bow thrusters. Vessels that have bow thrusters are very manoeuvrable.

Ms. JILL GRANT: And can I ask you a question about the illustrations that you showed indicating where particles end up?

What size particles are we talking about, or are we talking about dissolved materials, or what...

Mr. CHRISTOPHER TAGGART: No. These do not include diffusion or mixing base kinds of trajectories. These are straight advective. It would be equivalent to an orange put into the ocean, or following a water mass as a drifter.

It is a model, okay. The validation basis of that model is not known to me.

THE CHAIRPERSON: Mr. Buxton?

Mr. PAUL BUXTON: Just a couple of quick ones, if I may, Mr. Chair.

I just wondered whether Dr. Taggart was aware that we had committed to vessel speeds.

Mr. CHRISTOPHER TAGGART: Whether which?

Mr. PAUL BUXTON: Whether Bilcon had committed to specific vessel speeds.

Mr. CHRISTOPHER TAGGART: I'm not aware

of what those committed speeds might be.

Mr. PAUL BUXTON: Well, the fact is that they are in our responses. They are in the document. They've been presented at least twice to the Panel, if not more, since these proceedings started.

And I don't really have any specific comments, Mr. Chair, except to say that we did recognize Dr. Taggart's talents in these matters and, over a significant period of time, we corresponded with Dr. Taggart, in fact, asked him to carry out very specific work for us, to which there was initial agreement. And I believe the arrangement with Dalhousie University was also permitted and agreed upon.

And subsequently, Dr. Taggart declined to carry out work for us. Is there some truth in that?

Mr. CHRISTOPHER TAGGART: That would be incorrect. We did correspond. You did ask that something be done, and then, the last information that I had from you was what would I do for you as opposed to this is what we would like done. I have records.

Mr. PAUL BUXTON: I think we could provide, if it's of any interest to the Panel, copies of e-mails in that matter.

Mr. CHRISTOPHER TAGGART: As could I.

THE CHAIRPERSON: Are there any

additional questions emerging, first of all, from Federal or Provincial Government individuals? If not, from the audience.

PRESENTATION BY THE UNIVERSITY OF DALHOUSIE- QUESTIONS BY THE PUBLIC

Mr. Moir, you look poised. You're not poised. Okay. Mr. Hunka?

Mr. ROGER HUNKA: Just some clarification from this morning from Transport Canada on right angle entry is preferred.

How does your proposed northern route fit in with what Canada Transport suggested as a preferred route for intersecting a route?

Mr. CHRISTOPHER TAGGART: I believe the plot shows that before entry to the lane the ship would turn left, or right if it was leaving.

As you can see, it's not directly 90 degrees, but it's close to 90 degrees entry and exit to the lanes.

THE CHAIRPERSON: Are there any additional questions for Dr. Taggart? Gunter.

Mr. GUNTER MUECKE: Dr. Taggart, some of this information is new to us. We haven't seen it.

Could we ask you to submit it to us?

Mr. CHRISTOPHER TAGGART: Well, you can

have this.

Mr. GUNTER MUECKE: Thank you. You'll make the Powerpoint available to us.

Mr. CHRISTOPHER TAGGART: Yes.

Mr. GUNTER MUECKE: Thank you.

THE CHAIRPERSON: If there are no further questions, we thank Dr. Taggart. Thank you.

Mr. CHRISTOPHER TAGGART: Again, I thank you for the opportunity.

THE CHAIRPERSON: Gentlemen, we finally get to you. You've been very, very patient. Thank you very much.

Perhaps we can start by getting you to identify yourselves and your affiliations, internal affiliations. Presumably you're all from DFO.

And if you've got a complicated name in any way, please spell it. It's for the benefit of the transcriber of these documents. So maybe we could start here.

Mr. IAN MARSHALL: I'm Ian Marshall. I'm the Area Director for Sou'western Nova Scotia.

Mr. NORMAN COCHRANE: My name is Norman Cochrane. I'm a research scientist with the ocean physics section at the Bedford Institute of Oceanography.

Mr. KENT SMEDBOL: I'm Kent Smedbol. I'm

a research scientist stationed in St. Andrew's, New Brunswick. I lead the region's research team for species at risk. S-m-e-d, as in Delta, B as in Bravo, o-l.

Mr. MIKE MURPHY: I'm Mike Murphy. I'm the Acting Regional Director of Oceans and Habitat for the Maritimes Region.

Mr. TED POTTER: I'm Ted Potter, and I'm the Acting Regional Manager for Habitat Protection and Sustainable Development.

Mr. TONY HENDERSON: Tony Henderson, Habitat Assessment Biologist.

Mr. JOHN TREMBLAY: I'm John Tremblay. I'm a research scientist with the Population Ecology Division at Bedford Institute of Oceanography.

Mr. THOMAS WHEATON: And I'm Thomas Wheaton. I'm the Area Habitat Coordinator for Southwest Nova Scotia.

Mr. DAVID BISHARA: My name is David Bishara, B-i-s-h-a-r-a. And I'm the Conservation and Protection Supervisor responsible for enforcement for Digby, Annapolis and Kings County.

Ms. Tana Worcester: Tana Worcester, W-o-r-c-e-s-t-e-r. I'm with DFO Science and the Centre for Science Advice.

Mr. DAVID MILLAR: David Millar. I'm the

Species at Risk Coordinator for the Oceans and Habitat Branch, and it's M-i-l-l-a-r.

THE CHAIRPERSON: We have you all, then. I understand you're going to make a presentation now.

PRESENTATION BY DEPARTMENT OF FISHERIES AND OCEANS - VARIOUS PRESENTERS

Mr. MIKE MURPHY: Yes. Thank you very much.

In terms of the presentation, we've provided you with the presentation already, and in the interests of time, I think I'll move to the middle of the presentation and leave out a lot of the roles and mandate and our involvement in the project and go directly to the middle where we talk about the overview of issues related to DFO's mandate.

I'd like to review some of DFO's findings, recommendations and outstanding questions as a result of our review of the Proponent's information.

Our presentation will highlight the main findings around marine mammals and blasting, marine mammals and shipping, fish and blasting, and this is on a variety of fish and shellfish species, lobster and blasting, invasive species, and fish habitat.

My colleagues and I will address any detailed questions in these areas after the presentation.

Human activities in or near the ocean often transmit sounds under water, and some of these sounds can have a range of effects on marine mammals from no response to small behavioural changes, masking of hearing, temporary or permanent changes in hearing sensitivity to non-auditory injury such as haemorrhage and direct fatality.

In general, sound propagation modelling conducted by the Proponent and reviewed by DFO predicts sound levels in the water column at 500 metres to be 185 decibels as the worst case estimate for a single blast, and we understand a single blast to mean a single shot.

It is important to note that noise levels for distances other than those at the water line and at 500 metres were not modelled.

The US National Marine Fishery Service has been using 180 decibels root mean square as the maximum acceptable exposure level to impulsive sounds for cetaceans. To compare these thresholds to the sound levels predicted for the Whites Point Quarry Project, five decibels should be added to this value to arrive at an exposure level of 185 decibels.

DFO assumes there is a risk of potential effects within 500 metres, and this is reflected in the DFO guidelines for the use of explosives in or near Canadian fisheries waters, which states that no explosive should be

detonated within 500 metres of any marine mammal.

While the zone of disturbance of marine organisms by sound may extend beyond the 500-metre safety zone, it is considered unlikely that blasting would result in physical effects on marine mammals, endangered or otherwise, beyond 500 metres.

However, there may some behavioural effects, but it is uncertain what this would be and whether they would have any long-term impact on an individual or population, considering the amount of blasting.

There may be some subtle behavioural effects on marine mammals beyond 2,500 metres from the blast site. However, these are not expected to result in overall changes to the distribution of the population or other population scale impacts.

The 500-metre safety zone, which states no blasting in this zone when marine mammals are observed or known to be present, and the 2,500-metre safety zone for endangered marine mammals are expected to reduce the potentials for harmful impact of blasting on marine mammals under good visibility conditions.

The use of a trained observer to monitor the 2,500-metre and 500 metre-safety zone would need to be in place to ensure marine mammals are not in these areas prior to a blast.

However, there is some uncertainty as to the ability to detect and identify marine mammals at distances of 2,500 metres, particularly under poor visibility conditions such as fog, rain or waves.

It is not clear, from the information provided by the Proponent, when observation from a boat would be conducted to improve the chance of sighting marine mammals and how much this would increase the effectiveness, especially in poor visibility.

The following research and monitoring recommendations would help to verify the predictions included in the environmental assessment.

Validate acoustic modelling using the initial blast in near and far field locations prior to operational blasting and arrival of endangered right whales in the Bay of Fundy.

This would include measuring the underwater blast sound levels at 500, 1,000 and 2,500 metres plus at the margin of the right whale core area during blasting conducted outside the time when endangered whales are present in the Bay of Fundy.

After this initial blast, there should be visual observation of marine mammal behaviour before, during and after operational blasting when whales are present. This would be conducted in areas of known marine

mammal aggregations.

Verifying the effectiveness of visual observation methods at 2,500 metres from the blast site is also recommended, including determination of the average site visibility conditions.

Use of ongoing passive acoustic monitoring should also be considered.

Opportunities to link up with other research initiatives such as university research should be considered.

I'll now move to marine mammals and shipping.

It is understood that shipping has the potential to affect marine mammals through noise and ship strikes. However, the project is not expected to significantly increase shipping in the Bay of Fundy.

Just using the pilotage numbers for the Port of Saint John, the relative increase in large vessel traffic from the proposed project would be approximately six percent.

The main mitigation in place for ship strikes in the Bay is the new shipping lane. The new shipping lanes which came into effect on July 1, 2003 were expected to reduce the likelihood of a right whale suffering a ship strike in the Bay of Fundy by up to 80 percent.

Now, biologists at the Centre for Coastal Studies in Provincetown, Massachusetts think the reduction is closer to 95 percent. Also, the route from the shipping lane to the quarry is not a known aggregation area for whales, including right whales.

The Proponent has also stated that the ships will decrease speeds once leaving the shipping lanes. Our information was to below 10 knots. I understood this morning now to 12 knots, which will further reduce the likelihood of lethal strikes.

However, given that the shipping companies would likely not be under the direct control of the Proponent during transit, it is not clear how some of the proposed mitigation will be controlled by the Proponent.

Shipping noise. It is possible that the higher levels of ambient noise in the ocean have reduced the ability of right whales to hear mating calls over large distances, perhaps reducing mating opportunities.

As noted previously, the Proponent has indicated that the ships will decrease speeds once leaving the shipping lanes, which will also reduce the noise from ships approaching or leaving the quarry.

If this project were to proceed, it would be advisable to make baseline measurements of bulk carrier noise around the terminal and nearby areas of

potential environmental sensitivity.

Fish and blasting, potential effects. Studies by DFO show that an over-pressure in excess of 100 kiloPascals will result in damage to the swim bladder, the gas-filled organ that permits most fish to maintain buoyancy. The kidney, liver, spleen and sinus venous may also rupture and haemorrhage.

Fish eggs and larvae also may be killed or damaged.

Department of Fisheries and Oceans has prepared the guidelines for the use of explosives in or near Canadian fisheries water to provide information to Proponents on the conservation and protection of fish, marine mammals and their habitat from impacts arising from the use of confined or unconfined explosives in or near Canadian fisheries waters.

These guidelines provide methods and practices which, if incorporated into a project proposal, are intended to prevent or avoid the destruction of fish or any potentially harmful effects to fish habitat that could result from the use of explosives.

Using DFO's guidelines, the Proponent would need to maintain a setback distance of at least 33.7 metres in order to meet the DFO guideline criteria of less than 100 kiloPascals over pressure. DFO has requested that

the Proponent increase the separation distance by a factor of three, to 100 metres when inner Bay of Fundy stock of salmon, an endangered species, would be present.

Our information is that this is between May and October. I believe the Proponent said May to September.

This would ensure the shock waves from blasting are well below the levels that could cause injury or death. Any behavioural reaction would likely be a brief startle response, with no impacts to the individual or overall population.

Monitoring of the initial blast levels near shore should be required to confirm these calculations.

Blasting and potential effects on lobster. DFO's guidelines on the use of explosives in or near Canadian fisheries waters are based on impacts on fin fish, and therefore do not necessarily apply to lobsters, which lack the sensitive swim bladder.

The Proponent's modelling predicts that the pressures at even the closest location in the water are not expected to exceed 216 decibels.

There's very little information on the impact of blasting on lobsters. The most relevant and recent information we are aware of is a study done by DFO staff in Newfoundland examining the impact of seismic noise

on lobsters.

This research demonstrated that adult lobster exposed to seismic sound levels of 227 decibels showed no mortality or significant injury.

It should be noted, however, that non-lethal effects were observed in the recent lobster research with respect to feeding and biochemistry, with effects sometimes being observed weeks to months after exposure. A histochemical change was also noted in the hepato-pancreas, tamale, of animals exposed four months previously.

These initial studies were meant to be exploratory in nature, and caution is warranted about over-interpretation of these results. Also, the recent study did not include an assessment of noise on lobster eggs or larvae.

Given that some uncertainty on the impact of blasting on lobsters remains, a monitoring program with input from DFO should be implemented if this project proceeds.

Potential impacts from invasive species. Aquatic invasive species have already been responsible for significant impacts on some native fish species in Canada.

Annually, the problem is responsible for billions of dollars in lost revenue and control measures.

During the late 1990s, two invasive

species of tuna kit were determined to be having a detrimental impact on numerous shellfish aquiculture sites in Nova Scotia. The European green crab originally arrived in a ship's bilge water and have moved up the coast from Cape Cod.

For this project, the determination of likelihood of effects is challenging in that one successful introduction in colonization from one vessel discharge can lead to local and regional effects.

One of the main mitigation measures is the Ballast Water Management Regulations. These Regulations require ballast water exchange for vessels travelling between points south of Cape Cod, Massachusetts and Canadian waters.

These Regulations are administered by Transport Canada and were addressed in their presentation. Also, the risk of invasive species increases with the rate of shipping.

As previously mentioned, the relative increase in shipping for this project is low, but it still must be recognized that it only takes one successful colonization to result in regional impacts.

Monitoring may help detect possible invasive species in the early stages of colonization. However, depending on the species, eliminating or

controlling the introduced species after it is detected can be difficult or impossible.

Fish habitat. The marine terminal would be built using pilings, which are less destructive to fish habitat than a traditional in field wharf. However, the installation of the pilings will result in some habitat loss.

The extent of marine benthic habitat affected by the pilings would be approximately 40 square metres.

If the project proceeds, an authorization under Section 35 of the **Fisheries Act** would be required and the proponent would be required to establish or enhance fish habitat in accordance with DFO's policy for the management of fish habitat.

This policy contains the guiding principle of no net loss of productive capacity of fish habitat through habitat compensation.

As part of its Environmental Impact Statement, the Proponent has provided an initial compensation plan using artificial reef structures for a site near the proposed terminal. DFO's conducting research on various artificial habitat structures to evaluate which are best for habitat enhancement for various species, including lobsters.

If this project proceeds, DFO will use this research and information from similar projects to ensure appropriate fish habitat compensation is developed by the Proponent. Also, as a component of the compensation plan, the Proponent will be required to monitor the project to ensure it is providing the required compensation for lost productive capacity.

In some situations, habitat can be harmfully altered by the release of sediments which covers habitat, affecting feeding or reproductive areas in both fresh water and marine environments.

DFO works closely with the Nova Scotia Departments of Environment and Labour and Natural Resources in protecting fish habitat from sedimentation arising from projects regulation by Provincial legislation.

Mitigation and monitoring of sediment from quarry, mines and pits are typically requirements of Provincial approvals, and DFO will often review monitoring information and recommend additional mitigation if there is a concern that sediment levels may affect fish habitat.

If the project proceeds, in addition to the mitigation measures proposed earlier, DFO recommends monitoring in the following areas.

Noise from blasting and shipping at various locations and times of the year to verify noise

level predictions, including a representative blast prior to the presence of right whales in the area.

Marine mammal behaviour observation during blasting events using qualified observers.

Monitoring of habitat compensation for various species, including lobster, as well as a monitoring program developed with DFO input on the impact of blasting on lobsters.

Sediment monitoring at the settling pond's outfall or other potential sediment source areas.

Monitoring for invasive species near the terminal.

If the project proceeds, DFO will continue with our regulatory role, specifically applying the **Fisheries Act** and **Species at Risk Act** to those components of the project which interact with DFO's areas of interest. There are other areas, such as ballast water management, where we can provide expertise, but we do not have a regulatory role.

If monitoring was to show that the project was having unacceptable impacts on fish or fish habitat, including marine mammals, DFO would address these issues through the **Fisheries Act** or **Species at Risk Act**.

Fisheries and Oceans Canada looks forward to the recommendations from the Joint Review Panel

and, shortly thereafter, the Federal Government will provide a formal response to the Panel findings. Thank you.

PRESENTATION BY THE DEPARTMENT OF FISHERIES AND OCEANS - QUESTIONS BY THE PANEL

THE CHAIRPERSON: Thank you very much.

One issue of some interest to us is whether, in fact, DFO has any experience with other coastal quarries. There was recently a coastal quarry that was under way in British Columbia, I remember.

Are there others, Newfoundland, anywhere else, where you've had experience?

Mr. TED POTTER: Your reference to BC is the Orca Quarry, and here in Nova Scotia in Aulds Cove and Martin Marietta (ph), Porcupine Mountain on the Strait of Canso. That's right next to the water.

THE CHAIRPERSON: Are there lessons to be learned from these other quarries?

Mr. TED POTTER: In that particular site, we're not dealing with species at risk in that immediate vicinity, similar to the right whale or inner Bay of Fundy salmon. There are things we've learned with regard to infilling the rocks, habitat compensation issues.

THE CHAIRPERSON: What about the British Columbia experience? That is some ways is similar to this one, is it not?

Mr. TED POTTER: It's similar in some ways, but in other ways it's different. Different species, again. So, you know, and you have the same general project components from quarrying to shipping, ships coming in, the conveyor belt. And so that information from this project and work done there has been exchanged back and forth.

THE CHAIRPERSON: So there, what you're saying is that the information obtained in those other places is not translatable; it doesn't translate to this project, not even in generalities.

Mr. TED POTTER: No, in a general sense, yes.

THE CHAIRPERSON: Can you convey any of that wisdom to us? Is there anything there that you should flag for us, or anything of importance?

Mr. TED POTTER: Well, in a, from a DFO perspective, we focus our attention on fish and fish habitat, and in the case of these quarries, unless there's diversion of a stream, fish bearing waters, we look at the marine terminal aspect of the project.

Quite like, as a general sense, we look at the footprint of the facility, what's that going to be, is that a solid structure, is it on piles, will there be free-flow, what's the sources of sediment, will the sediment be going into the fish bearing waters, and we will also use

the guidelines for use of explosives near fish bearing waters.

THE CHAIRPERSON: What about some of the issues that were just identified, the five, the list, the five, of invasive species, for example? If I'm not mistaken, the project in the west coast is actually moving into the U.S., is it not?

Mr. TED POTTER: The, looking at the invasive species, we're working here on the east coast, we take it from a zonal perspective. So we're working here on the east coast through a committee that's been set up, and it's to look at what species we have here.

The primary mitigation that's used is the similar thing that's being considered on the west coast, which is the ballast transfer zones. So those things are very similar.

Ms. JILL GRANT: A few questions about the species at risk. As you just identified, that's a different issue here. So I understand under SARA that when a species at risk is likely to be affected there is some kind of notification that happens. Does that happen in this project?

Mr. TED POTTER: In general sense, in this case, for this project, when it was initiated, the Department of Fisheries and Oceans was lead RA, responsible

authority, for both the **Navigable Waters Protection Act** and the **Fisheries Act**. We are not in the practice of sending letters to ourselves, given that we initiated it, so we were aware of it from the onset.

When the file, when Transport Canada received the Navigable Waters Program, there was no need for them to send back a notification on a file that we had already initiated. So the responsible authority in this case, DFO, for the marine mammals and marine fish, was well aware, and we were working in close collaboration with Environment Canada for the migratory birds and any bird species that fall under the **Species at Risk**.

Ms. JILL GRANT: And can you clarify for me whether the meaning of "likely effects" is the same under SARA as it is under the CEAA legislation? It seems like it's a little bit different. Can you clarify what the meaning of "likely effects" would be?

Mr. KENT SMEDBOL: Yeah, and it's used slightly differently in Section 79(1) from 79(2), so in 79(1), the requirement for notification is likely effects, and it's not just adverse, and it's not just significant. It's any effect, there should be notification.

So even if your project is going to benefit a species at risk, and even if it's not a significant benefit, it's just minimal, whatever the effect

is, you're supposed to do the notification. So we don't use that same significance criteria in the **Species At Risk Act**. And also, under 79, it doesn't have to be adverse.

Under 79(2) it's about identifying adverse effects, but again, you don't have that word "significant" in there. Under 79(2), you're supposed to identify any adverse effects, and if there is an adverse effect you're supposed to take measures to reduce that effect and to monitor it.

So again, we don't put that significant threshold in the **Species At Risk Act**. We would expect that any adverse effect at all, minimization should be in place, mitigation, as well as monitoring. So I think that's the big difference is that we don't put a focus, under the **Species At Risk Act**, on whether an effect is significant or not, because with **Species At Risk** we want any adverse effect to be managed, effectively. So I guess that's the big difference.

Ms. JILL GRANT: And am I right in understanding that if there's likely to be any effect under SARA that's some kind of permit, if there's any kind of potential harm, some sort of permit would have to be issued? Is that correct?

Mr. KENT SMEDBOL: If there's an expectation that there would be... Basically, there's a

section of SARA called the "Prohibitions", which you may or may not be aware of, which is, you know, you cannot harm, kill, harass, there's a series of them, capture, take, a species at risk.

And so if you expect that one of those prohibitions would be violated, then if someone wanted to proceed with an activity that was going to cause that violation, then they would need a permit in order to avoid potentially facing penalties under the **Species At Risk Act**.

So the question then becomes is the activity going to violate one of those prohibitions, and if there is an expectation that it is likely that it would violate one of those prohibitions, then the Proponent would need that permit, if they wanted to protect themselves from prosecution or from penalties under the **Species At Risk Act**.

Ms. JILL GRANT: So in this case, you've indicated that there is some possibility of physical harm from ship strikes, and some possibility of behavioural effects.

Can you give us an idea of what kind of behavioural effects are possible in the species at risk, especially the right whale?

Mr. KENT SMEDBOL: Possible, so you're thinking non-lethal? With behavioural, I assume you mean non-lethal. It really is quite a range there. It would

tend to group into things. I think that it would affect behaviour on a relatively long-term basis, and those that would affect behaviour very quickly or quite, what's the word that I'm looking for. Anyways. Quickly gone.

They can, for fish... Well, let's start with marine mammals. If we look at things such as noise, then some suite of behaviours that may be changed include things like feeding behaviour, socialization, logging at the surface, which is just the animals resting.

It's difficult to say what the animal, what a particular animal will actually do in response to a particular event. There is a large variation in individual behaviour [inaudible].

Some of the controlled studies that have been done in the U.S., for instance, using noise playbacks to right whale, in particular, some whales will stop doing whatever they're doing and just hold to and listen. Others are oblivious and continue on with what they're doing. Others change from one behaviour to another. So for instance, if they're involved in feeding dives, they'll stop diving and they'll swim along the surface.

It's difficult to pinpoint a particular type of behaviour resulting from a particular stimulus.

Ms. JILL GRANT: And my understanding of some of the studies that were done in Trinity Bay,

Newfoundland, in I think that's humpback whales, but in the 1990s there was a lot of drilling and blasting and...

Mr. KENT SMEDBOL: The Bbllеoram, yes.

Ms. JILL GRANT: Yes. Do you have some indication on the kinds of results that that had?

Mr. KENT SMEDBOL: There are two cases from Bbllеoram of actually humpback whales washing up dead on the surface. Post-op necropsies highlighted damage to inner ear structures that were likely caused by severe over-pressure, but this could not, they could not link blasting in Bbllеoram directly to those whale deaths.

Sudden lethal behavioural changes, the suite of things that were seen in that, in the Bbllеoram situation are similar to what's been seen in most studies that have looked at the effect of noise and marine mammals.

This is actually a large field, especially brought to prominence again in the last several years because of the use of mid-range, mid-frequency sonars by U.S. Navy. So there actually is a lot of literature on the effect, possible effects, of noise on cetaceans, but it is not a group of animals upon which we can easily experiment, so it's difficult to establish cause and effect.

Ms. JILL GRANT: Right. And in the blasting in Trinity Bay, there was feeding changes and avoidance behaviour, is that right?

Mr. KENT SMEDBOL: I am familiar with some avoidance behaviour, but it's a long time since I've read that literature, so I can't give you a definitive answer yes or no. I do remember vaguely some behavioural changes, but I'd have to go back and look that up for you.

Ms. JILL GRANT: Thank you. And there was some discussion in the presentation about changes to the conservation area, the shipping lanes, and so on. When were those changes made?

Mr. MIKE MURPHY: The shipping lanes were instituted July 1st, 2003.

Ms. JILL GRANT: Thank you. 2003. And am I right in understanding that two right whales were killed by collisions in the summer of 2006?

Mr. KENT SMEDBOL: Actually, more than two. I think you're referring to possible deaths in Canadian waters. One was seen off shore, off the southern southwest Scotian Shelf, close to Brown's Bank. There's actually a second right whale conservation area in Rosalie Basin, in that vicinity.

A second one, I don't remember the exact location, but I do not believe it was discovered in the Bay of Fundy. There have also been two right whale strikes this year in U.S. waters. Lethal. All four that I'm discussing are lethal.

There was also a definitive strike in Canadian waters in 2005, which was, we actually did the necropsy in Campobello Island. Our U.S. colleagues actually undertook the necropsy. That was struck and killed by what was likely a small vessel, probably around 50 feet, based on the propeller size.

So actually, when we talk about ship strike, some of us who are a bit close to this prefer to use the term "vessel strike", because it's not just large ships that kill right whales.

THE CHAIRPERSON: When these whales are pronounced dead, is it generally the case where knowledge about the experience is available? You just conjectured that maybe it was a 50-foot, based on a propellor, but are most of these kills simply discovered after the fact and it's hard to connect the information together, so you don't know necessarily exactly where it was, or what the ship speed was, or any of that contributing information?

Mr. KENT SMEDBOL: With the right whale, we actually rarely have that information. Most of the evidence generated for cause of death comes from the necropsy. There are a few cases, especially down in the southern U.S. where right whales are much more coastal than they are in our waters, that we have, you know, a vessel master will actually call in and say, you know, "We struck a

whale", and we have a time and a place.

Right whales are actually, you know, they're very rare, so actual collision of right whales relative to the total number of large cetaceans is relatively small. For instance, in Dr. Taggart's presentation, they used, in their analysis, they used ship strikes, ship collisions, with all large whales in the vicinity in order to generate the figure.

THE CHAIRPERSON: Isn't it true, too, that right whales are essentially oblivious to their surroundings, or at least oblivious to ships we hear, and they're either feeding or sleeping or doing something, but the ships just seem to, they don't frighten them away.

Mr. KENT SMEDBOL: That's generally correct. Especially relative to other cetaceans, they tend not to show this type of escape response, or even often any response to vessels at the surface.

There was a study undertaken in 2005, I believe, in the U.S., where they've been trying to develop alarm calls, actually using some of the whales' calls themselves to alert whales, and this has turned out to be, the irony of it such work actually elicits the worst possible behaviour from right whales. The come up, and they hide ten metres under the surface, which means they're basically undetectable.

Right whales also have a habit of what we call logging, so that they may sit just at the surface and do nothing. It probably relates to its resting behaviour.

The second type of behaviour that's quite common especially in Canadian waters, right whales are taken, a behaviour that's called, we call surface active groups, and it's quite intense socialization, actually, a lot of wrestling, a lot of splashing of water. You can have up to 50 animals involved in these. And when right whales are involved in a certain active group, they are utterly oblivious to what's going on around them.

It's unfortunate, but their behaviours make them very conducive to vessel strike, and they're a coastal whale. So time and space and their behaviour are all against them.

Ms. JILL GRANT: One of the elements in the presentation suggested that a six percent increase in traffic was not significant. What level of traffic increase would there have to be for it to be significant.

Mr. KENT SMEDBOL: That's a good question. My background, as a scientist, I tend to treat significance from a statistical sense. I don't think that's the way that it was meant.

Six percent, five percent chance of...

What was really being measured there is what is the probability of a whale and a ship occupying the same three-minute square in about the same time.

So what you're saying, you're increasing that probability, or with that increase in shipping if it's a linear... I can't remember, actually, from the research that was undertaken, I didn't not undertake that research.

If that relationship is linear, it's one to one. If not, it is quite a small increase. We've already Saint John has reduced the potential overlap, time/space overlap in the same squares by about 95 percent over the last three years, so I guess you would add six percent shipping to that, do your re-calculation.

You'd have to re-look at, you'd have to look again at the new shipping distribution, taking into account that six percent of ships. I would argue that it is likely not substantial. I think it would actually be quite a low increase in probability of ship strike, but not zero.

Ms. JILL GRANT: Thanks. And there were some comments raised about problems with the proposed observation strategy to identify whales in the area that the ship is traversing, so I would like to have some comment on the technical feasibility of this mitigation strategy.

Mr. KENT SMEDBOL: Yeah, I listened to your questions earlier today concerning... So if I deal

first with the single observer on the stand. If one looks at that relative to 2500 metres is your outer limit of interest, given... Well, first I'll say given excellent conditions, good sea state, the trained observer, that observer would be able to detect whales out to 2.5 kilometres now, starting from that point.

The first thing is, at that distance it would be extremely difficult to detect, to be able to speciate that animal. You might be able to say, yes, it's a large animal, it's a large whale. It'd be highly unlikely to be able to say that is it a right whale or is it a hump back whale.

When we do this kind of sightings work from ships, I actually went back last night and looked at some of the data that we have on this, we have detected right whales as individuals out to over a kilometre. Usually we're using cues like the blow, which is a V-blow, which is diagnostic, but you can't have any breeze and you have to be right on the angle when you see that.

Really, there are four factors or four different issues that come into play in detectability and sightability of animals at the surface. The first one, of course, the obvious one, is weather. So on a clear day, without glare, without haze, with a good sea state, say Beaufort two and lower, you might have a good chance.

I'm not saying you'll see every whale that's there, but you might detect whales if they're present. The detectability is definitely not zero at that range.

But as soon as you bring in glare, fog, precipitation, sea state, we don't even, for abundance estimation, if we use line transect sightings data, we usually throw out everything at Beaufort four and higher. We don't even use it because detectability goes down so low.

The second thing is the angle of incidents from the, of the observer to the whale. This actually, with the set-up that's described by the Proponent, is actually quite good for that. They're very high up, relative to the surface.

The third thing that people who do this work understand all too well, but if you don't do it, you probably never of it, and that's the idea of observer fatigue. You're basically staring at the water for a long time. When we do sightings, transect surveys, we usually employ a team, and those teams are rotated out to avoid...

This has been modelled many times on sighting surveys, that observer detectability drops, and it's a non-linear function. The longer an observer is looking at the water, the poorer they get at seeing anything.

The fourth thing is actually the target species that's involved, so this brings in all the issues of size of the animal, so detecting a humpback versus a harbour porpoise. Harbour porpoise you will not see up to two and a half kilometres, and the animal is only a metre long.

The behaviour of the animal, so what does it do at the surface, what are its markings or cues, is there something diagnostic about that species. For instance, the right whale, they don't have a dorsal fin. They have a V-blow, it's the only one to V-blow, and they also fluke up when they dive, so they tend to wave at you.

Dive time is important, right whale dive, although not in that close to shore, but out in the basin, probably 20-minute dives. So there is an issue of availability to be sighted. So you have to factor that into the time that one would allow prior, you know... How long would one have to be watching before you were sure that there were no animals in the area.

So there are all those, those four general categories that come into play in detectability.

Ms. JILL GRANT: And you said that was in the best of conditions. So in this particular part of the Province, how often is that going to be the case, and what's the situation when the conditions are not so good, starting with that observation tower, and then we'll go to the boat.

Mr. KENT SMEDBOL: Higher is probably always better, except maybe in fog conditions. To be honest, I wouldn't be able to give you a good estimate of amount of available days that are of use. High summer, when we do our work is, we do it because the weather is great and not just because the whales are there. The whales are also there through October, and once you hit September then you get wind shifts and stuff like that.

Very difficult to determine. Some animals... I'll just leave it at that. I don't think I can give you a solid answer on that. But there's no doubt that as those conditions change, your detection range, effective detection range, is decreasing.

Ms. JILL GRANT: And what about the proposal to go out with a work boat and try to observe in situations where the visibility is not adequate to observe from the observation tower or the distance is too far? How effective can we expect a work boat observer to be?

Mr. KENT SMEDBOL: I think that would depend on the protocol, how they search the area. They will run, an observer on a small boat, we run small boat surveys, as well. If one's effective sighting range is reduced down to, say, 500 metres, then you would have to adjust your survey track to make sure that you're effectively occupying or at it can cover, at least, sight all the available area.

As, of course, in fog, well, I basically think you're out of luck.

So it then becomes an issue of coverage in time, but I don't think there's a straightforward answer to it. It's certainly better than not having the boat out. There is no doubt about that.

Ms. JILL GRANT: Is there a certain level of sea swell where it becomes impossible to see enough?

Mr. KENT SMEDBOL: We don't count whales after sea state four. You can...

THE CHAIRPERSON: Can you put that into miles per hour? Or knots would be fine?

Mr. KENT SMEDBOL: Beaufort four? Anyone?

Mr. BOB MORSCHES: [No microphone] Doctor, sea state is wind plus the water, and it's how high the winds are...

THE CHAIRPERSON: Yes, but can you convert Beaufort four to knots?

Mr. KENT SMEDBOL: There's a fetch issue too, with that.

THE CHAIRPERSON: Yeah.

Mr. KENT SMEDBOL: So usually, effectively, for large whales, we would stop counting at a metre seas with breaking waves. You can still see them,

though, but your detectability drops. But if you have the wherewithal to spend time at it, you will still detect whales.

Ms. JILL GRANT: And I notice that the Proponent, in their Proposal and in your presentation here today, too, it was suggested that the effectiveness of this observation strategy should be monitored. How can you monitor and determine the effectiveness of this mitigation strategy, given that you won't know what you've missed. What do you...

Mr. KENT SMEDBOL: Yeah, and that's an excellent question. That also confronts us whenever we do a survey for abundance estimation. So what we do is we actually statistically model our detectability, and then once that function drops down below a pre-defined threshold, say, well, pick one, then we lop off all the distances that are greater than that, and we discount it.

So what we do is, after the fact we come back into the lab, analyse our data, fit a curve, and the say: "Oh, actually, we were only really good out of 500 metres instead of a kilometre", and then that's what we're stuck with.

In this situation, I tried to give it a little thought last night. I'm not sure how... I think it would require a bit of thought, and I can't give you an

answer right now, how one would address that. One possibility, off the top of my head, is you put markers out, but you just don't tell the observer where the markers are, and then see how they go.

But there may be, there may be stuff that's already done, but I'm not familiar with it, any such techniques.

Ms. JILL GRANT: If this monitoring identifies a whale as a ship's coming in, is it feasible to think that strategies can be taken with sufficient time to actually avoid a collision?

Mr. KENT SMEDBOL: I can't speak for the vessel. There's one thing to bear in mind with this. There's no guarantee that the whale is going to stay where it is. So the two things are moving in time/space. I'll let others perhaps address the vessel issue.

THE CHAIRPERSON: So I guess to summarize, that if you're dealing with winds of 30 knots, let's say, 30, 35, wind speeds in which it's probably okay for a ship to make its way into a pier, but probably not higher than that, and if the wind has been blowing for a day or two, so that you've had a fetch and you've got a sea that's running a metre or a metre and a half or so, and that individual's up in the tower, 110 feet above the water, looking out there, and of course it's blowing at the same

time, and presumably the weather could be deteriorating.

The, what you're saying is it's almost impossible for somebody to see 2500 metres, two and a half kilometres. That's a mile and a half.

Mr. KENT SMEDBOL: I think effective detectability would be close to zero at that range.

THE CHAIRPERSON: Zero.

Mr. KENT SMEDBOL: Close to zero. I can't give you a definitive, out to the end of the range, especially if there's whitecaps. So one of the things, one of the things we really cue on is water disturbance or a whale jumping or a fluke-up or something like that.

So what happens with sea state, where you have waves, you're looking for that motion as well, right? And everything is motion. So it really drops. Especially at distance. It really is a function of cue sighting at distance.

But I can't give you a percentage. I would say it's definitely low, out that far.

THE CHAIRPERSON: Okay.

Mr. MIKE MURPHY: I think I should, just for a little bit of clarification, the 2500 metre zone, the observation during that period is for the blasting, not so much for the shipping.

THE CHAIRPERSON: Okay. Well, there are

two elements of concern, as you are well aware; incoming ships and the blast effect. Yes.

Mr. GUNTER MUECKE: Taking in a slightly different direction, regarding the blasting model that is going to be applied.

You said that what, in terms of the model, what matters is the charge, and you gave 45 kilograms as the model parameter, if I understood this right. And my question is, to what extent is the total blast size in terms of total amount of explosives relevant in the modelling.

Mr. NORMAN COCHRANE: Well, I think this is a very important question, and one that I don't think has been really fully resolved. The modelling study that was done by Hannay and Thompson, that is the JASCO and LGL report dated August 2003, largely dealt with the effect of a single shot hole that was loaded, as you say, with 45 kilograms of ANFO.

And the modelling that they did was in terms of a single shot hole detonation, and there are, I think, mentions that probably the effect of multiple shot holes would not enhance the overall sound pressure levels due to the fact that the signatures, the pressure signatures of these individual blasts would not significantly overlap.

I, myself, am not fully convinced that that is necessarily the case, and especially at the 500-

metre range, where if we accept the CONWEP model that was put forth by the Proponent's representatives, the duration of the blast is quite long, in the order of ten milliseconds, and it would seem to me that certainly if you are detonating explosives with the 8-millisecond delay, that there would be some quite significant overlaps.

Now I'm not sure if you want me to go into my assessment of the acoustic model, its virtues and shortcomings, so of which has been I think communicated to the Proponent's representatives.

Mr. GUNTER MUECKE: Perhaps before I ask you that, you can talk to one of my concerns of risk here. As an earth scientist, I'm somewhat familiar with seismology, that's one of the things I've touched upon in my life.

How would the model be effected do you think if there was, in the rocks themselves, if there were in the rocks themselves, good reflectors?

Mr. NORMAN COCHRANE: Well, certainly there would be diffraction effects, and I think there are many good questions that could be asked.

I think, and I believe I'm correct in stating this, that the model put forth is not intended to be a very precise description of actually what happens but rather is to give essentially an upper bound... It's a

crude model that would give an upper bound to the effects, that is the model has been parameterized very conservatively, and I would agree that that's probably the case.

As you'll notice, the model is two dimensional, and it's being applied to a three-dimensional situation, an actual shoreline.

It is a complex model in that it deals with an explosion in an elastic medium, where the effects are very close to the explosives, very difficult to model.

But in addition to that, it deals with the propagation of sound into a sloping wedge of water, where the medium does support elastic waves, and that is a very complex problem in itself and one that you really have to search the literature to find it dealt with properly.

Do you want me to go on and elaborate in some detail or are there some...

Mr. GUNTER MUECKE: It would be useful, yes.

Mr. NORMAN COCHRANE: Okay. The... I will tell you what we have done anyway in trying to assess this model.

The Proponent uses a transmission model from the elastic medium for soundwaves propagating from the elastic medium into the water by Oriard, I have taken to try

to verify Oriard's computations.

It is basically a model that predicts energy flux from one medium into the other in terms of P-waves in the water wedge.

The only thing I could find immediately in the literature is a model by Perkowski that dealt with the same problem, and I was able to verify from Perkowski the magnitudes of the reflected P-wave from the water bedrock interface and the converted S-wave that is generated.

However, Perkowski's results for the transmitted P-wave were in variance with Oriard's, and it appears that that is most likely a typographical error in the formula and that derivation of that particular result was not recorded in the literature, and it's a very complicated thing, so it was not easy to go back and verify, however at least the amplitudes of two of the waves were predicted properly by Perkowski's result.

Perkowski's result, as stated, does not appear to support conservation of energy, is not consistent with where Oriard is, so I presume that there is a typographical error, and so we were able to satisfy ourselves that the Oriard Model is very likely correct, and we were able to set that model up on a computer so that we could actually compute the transmission coefficients from

the bedrock into the water as a function of angle incidence.

Now as I said, the model that they used is a fairly conservative one. I believe for the transmission coefficient of 0.3 that is stated in the Hannay & Thompson report, they assume an incidence angle of about 80 degrees, or the waves are coming in at about 10 degrees to the water bedrock interface, that is at a very shallow angle.

It seems to me from looking at the shoreline, we're probably dealing with a slope on that interface of two, three, maybe 3.5 degrees.

We did do some calculations, but what we did come up with, and I don't think it has been verified by the Proponent's representatives, but I believe that there was an error here and that the transmission coefficient is much smaller.

Our calculations seem to show that that's about a factor 5 too large.

THE CHAIRPERSON: Could I just briefly interrupt here? I find this very interesting and in many ways, it would be extremely useful for us, for me, if you could have that writing. Would that at all be possible?

Mr. NORMAN COCHRANE: Yes. I'm not sure...

UNIDENTIFIED SPEAKER: We have submitted that as part of our comments.

Mr. GUNTER MUECKE: Pardon?

THE CHAIRPERSON: I couldn't hear you.

MR. NORMAN COCHRANE: We have submitted our critique as part of our overall comments on the review of the EIS.

Mr. GUNTER MUECKE: At the level of detail we have just heard?

MR. NORMAN COCHRANE: Yes, approximately that level of detail.

Mr. GUNTER MUECKE: Okay. Okay, I will go over that again. Going back to one of my original points, a single shot versus timed multiple shots.

Could you provide me with some indication on this, as you increase the size of the array, the size of the blast, what happens to the ability of the waves to become accumulative?

MR. NORMAN COCHRANE: The model, if you look at the transmitted wave form, you will find that a key point in the Proponent's model is that there is a cancellation of the pressure signature in the water column from the pressure wave reflected from the water surface, the water/air interface, which is a pressure release surface that leads to an inversion of the waveform when it is

reflected.

The effect of the directly transmitted wave up through the water column and the reflective wave from the surface tends to effectively shorten the pulse length associated with the detonation, that is if we do accept the CONWEP model.

Now I have not stated this, and this is not in writing, but I feel that there is an additional problem here.

We're really using a RAY (ph) Model, and I believe that it's really what I would call an item RAY Model, where you have to trace out all the possible ray paths, and it seems to me that some important ray paths have not been included here that would lead to a much extended reverberation within the water column.

For one thing, if the ray is transmitted into the wedge and the transmission coefficients are very small, then the reflection coefficients are very large, and that means that the ray, once it's into the water column, gets trapped there and reverberates.

I don't think the model as presented takes into account these effects properly, so while I do agree with the Proponent that if the model as stated is valid, then the effective waveform is greatly shortened and the potential for overlap, even at 8-millisecond delays, the

effect is greatly lessened.

But if the reverberation is extended within this water column, then the effect of overlap becomes I think much more significant, and it would have to be further investigated.

The other thing is I'm not... The Proponent has not really given us a proper description of what the delays will be from the individual shots once they actually reach the water.

It depends upon the geometry and the precise layout of the shot array. Actually, I would like to see a better description of what the impulses, the sequence would be really like in practice.

The other thing to consider, if we go to longer ranges, and really long-range propagation has not been modelled.

In fact, predictions within the water column are only out to I think 164 metres. We have looked at 500 metres, but only by us taking the model, the CONWEP model for the impulse in the bedrock at the 500-metre range and assuming the same angle of incidence and the transmission coefficient of 0.3, and that's the way we were able to come up with the 186 dB or so.

Mr. GUNTER MUECKE: Yeah, I think that has...

Mr. NORMAN COCHRANE: But longer ranges, I don't think this model is necessarily valid. There are a lot of other things that occur that...

Certainly at longer ranges, there are interface waves and things like that. They become very important to the propagation of the energy along the water bedrock interface.

Mr. GUNTER MUECKE: I think I have a better understanding now of what is happening here and what the limitations of the model are, and I'm looking forward to seeing it a written submission. I really would look forward to that.

I think it's probably at this point an appropriate time to break?

THE CHAIRPERSON: Yes. I would like to take a 15-minute break and then we will come back and resume this discussion.

--- Recess at 2:46 p.m.

--- Upon resuming at 3:01 p.m.

THE CHAIRPERSON: Ladies and gentlemen, let's begin.

It's come to my understanding that you do have some information on the Orca program?

Mr. MIKE MURPHY: Yeah, we have a couple of pages that may help you out, and we'll provide this at

the end of the process. And if there's any more, then feel free to get a hold of us and we can try and get the information from the Pacific Region.

I also - I'd like to ask David Millar to just add a couple more comments about the SARA permitting process that he'd like to add to his answer of earlier.

THE CHAIRPERSON: Please.

Mr. DAVID MILLAR: So I just wanted to clarify on SARA permitting that we don't just give permits to anyone. There are conditions that have to be met to get those permits, and this is definitely germane to this particular project.

There's basically three conditions for issuing an Incidental Harm permit, which would be that they must have considered all reasonable alternatives to the activity and selected the best solution. They must put all feasible mitigation measures in place.

And the third one is that we must be confident that the activity will not jeopardize the survival or recovery of the species at risk.

We determine that, in part, through something that we call an Allowable Harm Assessment, which is a scientific review process done through peer review that looks at the productivity of the species and the amount of human-induced mortality and harm that it can tolerate.

For both inner Bay of Fundy salmon and for right whale, that process has been done. And in both cases, it's determined that there's no allowable mortality for either of those species.

So that's obviously an important consideration, and it means that there would be very limited circumstances in which we would issue permits for these two species, so that should be taken into account.

THE CHAIRPERSON: Thank you.

I would like to raise an entirely different subject with you, and that has to do with residues from blasting.

Yesterday, I think, or maybe it was the day before, we had a discussion in which we were talking about the explosives that will be used at the site, which is ANFO, Ammonium Nitrate Fuel Oil.

And we were talking about the fact that it's a well-known fact that when this explosive is used that there's a residue of ammonia left behind.

We were using the number of two percent, which may be incorrect, but we're in the process of trying to refine that number. But for the sake of this discussion, we will assume it is two percent until we hear otherwise.

The question I have for you is that if blasting is done in this site once every two weeks and we

established this morning that the amount of explosive that will be used is 20 tonnes. 20 tonnes every two weeks.

Two percent of that is residue in the form of ammonia which, as I said, may be too high, but that would work out to 400 kilograms released every two weeks. So it would be on the site.

And obviously some of it would be buried, some of it would be on rocks, some of it... I don't know. But there's a large amount. 400 kilograms is almost half a tonne.

So every two weeks, this material would weather and, presumably, the way the plan is in the EIS, is that it would converge or be drawn to sediment ponds, where it would be trapped.

Now, the sediment ponds would retain water and the water would be used to... Be recycled within the project, but at some point those ponds would be too full and there would have to be a controlled release, so this material, which every two weeks is accumulating and building into the system.

Now, I'm well aware that ammonia breaks down and changes to other things, but also, there would be a strong nitrogenous component to this material.

Now, as it builds up, assuming that ammonia washes out, one part of it is that it's toxic. The

other part is that it's an important nutrient.

And if there was... And we have heard earlier in our presentations, presentations of others, that if there was an anticipated storm or a big event was coming and there was some fear that the ponds couldn't hold the amount of water that was anticipated to be coming, there would be a sudden flash release of it to bring the levels down. Otherwise, the water would overflow or the berms might break. Okay?

So it's possible that not only could there be controlled releases of this material, but there could be sudden episodic events of 10,000, 20,000 litres.

Now, the impact on this... This is hypothetical, of course, because we don't know the exact number of the percentage, but the question then becomes, from a habitat standpoint, from an organism standpoint, the sudden release or even the controlled release of large amounts of toxic material or even if it breaks down and converts to nitrate or nitrite, it's still going to be nitrogenous and it's still going to end up in the environment.

I'd like to hear what you have to say about that.

Mr. TED POTTER: I'll speak to this on a couple of fronts.

The pollution prevention provisions of the **Fisheries Act** are administered by Environment Canada and, in this case, the residue here would be considered as a deleterious substance, and we'd be looking for Environment Canada to speak to this.

In the scenario that you've outlined, this is something that's really become, to our knowledge, as an issue over the last few days as... You know, and the amount, as you said, could be a hypothesis as to the correct amount.

So it's not something that we have spent a great deal of time or effort looking at.

That being said, you know, this stuff goes into a sediment pond. That needs to be treated in an appropriate way.

And your question also alluded to upset or storm events which would see washouts and that. These are things that would need to be considered and contained in environmental protection plan for the site.

So there's not something there where we've gone through or reviewed anything in the EIS that would speak to that at that level as you've described.

We would be very concerned if there was eutrophication in the area on the nitrogen side.

THE CHAIRPERSON: Is there anything to be

gained by asking you to take an undertaking to reflect on this, and is this... Are your comments all that we can expect from you, or is there anything additional to that that we might find useful in considering this?

We consider this to be an important issue, and we would be interested in having a more reflective view of it.

Mr. TED POTTER: Where I would see going with this is that we'd work in collaboration with Environment Canada to provide an appropriate response.

THE CHAIRPERSON: All right. The hearings break up on the 30th. We would like to know when that might be possible.

Mr. TED POTTER: Prior to the 30th, but as soon as possible.

THE CHAIRPERSON: 29th?

Mr. TED POTTER: At the latest.

THE CHAIRPERSON: At the latest. Okay. We'll put it down as the 29th.

Mr. TED POTTER: And if it's earlier, you won't mind.

THE CHAIRPERSON: No. Correct.

I'd like to take you somewhere else as well, and that is, is that we've also discussed the role of science in this initiative. And we recognize that samples

are collected and observations are made for multiple reasons.

One of those reasons, of course, is to satisfy regulatory requirements, but there are also other requirements or needs that are filled by science.

And one of the things that has concerned the Panel is the fact that observations have been made on sediments, benthos. Photographs have been taken. Plankton samples have been made. Inter-tidal observations have been collected, that sort of thing.

But most of these are rather modest in number, maybe a dozen samples, let's say, and usually taken within a day or two or three, on the outside, maybe four times. So what we have is maybe anywhere from half a dozen to a dozen samples collected over a period of several days, which really works out to a point in a temporal point.

And in some sense, you might consider these to be opportunistic rather than systematic.

And as I said, collections of this sort can be extremely useful, and I'm not questioning the collection process itself or the quality of the individuals who did it. That's not in question.

But the collections can be used for identifying VECs, for example, or they can assess the presence or absence of things, or they can create a

snapshot.

But if you wanted to use that information to look at ecosystem-based management, for example, a broader overview, or you wanted to do long-term monitoring, for example, or, as has been suggested in the Proponent's document, the EIS, adaptive management, all of those things require very secure view of the starting point.

They require a baseline that is substantial because everything is related back to that baseline. You start from something and you proceed onward.

I'm wondering how DFO would view this in the... I'm asking now about the role of science in all this because ecosystem-based management is an important component of the EIS. Long-term monitoring has been suggested in many different places, and adaptive management is referred to in the EIS 140 times.

In other words, there are many places where things have been referred to adaptive management. This is what we'll do, and if we run into difficulties, this is how we'll do it.

So I'd be interested in DFO's comments.

Oh, and there's one other example which I might offer to you, and that is, it's been suggested that the conservation square that is used to contain... That contains the right whales that a small boat would monitor

the explosives, the shock waves from the explosives, at the corner of that square.

And it's considered to be long-term monitoring as a way of gauging the impact from the explosives on the right whales.

And maybe you could comment on the value of that.

Mr. TED POTTER: There'd probably be two or three of us who would respond to this question given its breadth.

With regard to your introductory part about the number or quantities of samples taken, they are low. They are very low.

It provides some background information. It gives an indication of what's present, so it can be used as a presence-absence for what's been found, but it does not provide a detailed baseline overview that could be used for future environmental effects monitoring.

In particular with respect to other, large-scale projects we've been involved in, this is probably one of the weakest parts of the science links going forward, is not having adequate or sufficient quantitative versus qualitative baseline measurements.

Over the course of an environmental effects monitoring program, our observations for other

proponents has been more along the lines of hypothesis drift as opposed to substantiating hypothesis.

The questions from a scientific perspective, these were the predictions that were made in the Environmental Impact Statement. Here are our conclusions as to what would be the results, and we have either met or not met them.

And therefore, the value of the information derived is limited, at best. And so that would be a key cornerstone that an effective environmental monitoring program would be established, the cornerstone of which would be sufficient in number and in quality of baseline samples so that... As a general overview.

And this is across many major projects.

THE CHAIRPERSON: I could ask Dr. Smedbol about the corner monitoring of sound, particularly in result of the blasting. Will it be useful? Will it be effective?

Dr. KENT SMEDBOL: Yeah, I haven't given that a lot of thought.

One thing that comes to mind immediately is I would see the primary use of such a passive receiver would be simply to monitor the... And determine the level of received sound from the blast and to ensure that that level of received sound is below some threshold that has been determined by management of the project.

It's interesting to note that, unrelated to the project, that one of the core objectives of the draft recovery strategy I have in front of me is actually passive acoustic monitoring of the population.

So there might be some piggybacking on that value above and beyond its worth to this particular proposal. Beyond that idea of ensuring that received sound stays below a threshold, given... For instance, if it was only one receiver, you can't triangulate on, so that same receiver could also be set up with hydrophones to receive whale calls, for instance.

If you had an array, you could then triangulate on calls and determine where the whales are relative to the sound source, so there may be additional value in that.

I think the receiver would have to be set up in a way that it can be interrogated almost real time.

There are examples of this in use, for instance, in Cape Cod Bay. There is a passive acoustic array set up in there to track right whales in relation to traffic and they're communicated with through cell phone technology.

Beyond those two ideas, determining received sound level and detection of right whales, off the

top of my head, I can't think of any other strong uses for it. Give me a few days, I might come up with some other hypothesis to test.

But I think the important one is ensuring compliance monitoring.

Mr. MIKE MURPHY: There's some additional comments from Tana.

THE CHAIRPERSON: Please.

Ms. TANA WORCESTER: My additional comments were just on the first part of the question, not so much on the right whale monitoring.

In terms of long-term monitoring of environmental effects, I guess some other experience from some other projects would be the establishment of sites that you could go back to and look at sort of over time.

So in order to look at a time series of change over time in response to an environmental effect, you might want to establish those up front of what the locations were that you were going to investigate.

And certainly, I mean, specifically in relation to the existing baseline monitoring data in terms of the inter-tidal habitat, for example, there might be additional sites that you would want to investigate, including what was mentioned this morning about the Laminaria beds or the kelp beds, which I believe were not

surveyed in the information that's been presented to date.

So that would be another component to consider.

THE CHAIRPERSON: Thank you. Thank you to all of you.

Mr. GUNTER MUECKE: Since we have been talking about monitoring, maybe I can continue along those lines.

Bilcon also proposes to monitor for invasive species, and now I need feedback because my memory has just gone from Bilcon.

Could you quickly outline to us again the monitoring program for invasive species that you're proposing?

Mr. PAUL BUXTON: I think I... Rather than get into specifics, I think I should return to a point here, and I was going to make it in my remarks, but that we have proposed monitoring protocols, but there has been general agreement at all meetings with DFO that the issue of long-term monitoring would be discussed with DFO, with the appropriate people within DFO.

So whether it's... And I noted the comment that we would be doing monitoring at the corner of the North Atlantic right whale conservation area in a boat.

Well, I don't think we've ever discussed

a boat, and we would certainly not propose a boat. It would be either a surface buoy or a bottom-anchored buoy, whatever our experts proposed, and the protocols of the information would be determined in consultation with DFO.

I think what we have said is that we have got some background information on invasive species. We have taken samples at the site, that we will take samples in the future at certain points in time for two reasons.

One is we want to know what's happening at the site because if something does come in, we want to be able to issue a warning that it's come in.

I'm not so sure that there are rules and regulations in place which would specify what we should do in terms of monitoring because the compliance monitoring basically rests with Transport Canada.

And I think I made this point the other day that what we would like to do is to contribute to some knowledge here so that we would propose to do some long-term monitoring of invasive species off the site.

We would like to do that in consultation with DFO so that we can determine (a) if something is coming in, but also to provide some background and some research data on the site.

So I don't think I'd be prepared right now to say this is what we intend to do, although we have

suggested various things that we would propose to do. Those things, in my view, would be determined in discussions with DFO.

Mr. GUNTER MUECKE: Okay. Could I turn it back to DFO, then?

What would you envision would be an effective monitoring program for invasive species?

Mr. TED POTTER: Our first step would be before that. It's prevention, as Mr. Murphy outlined in his presentation that one incident can lead to colonization either at a local or regional level.

So prevention is the measure here as opposed to sighting it once it arrives. Invasives have proven very difficult to the point of almost impossible to eradicate on establishment.

So the first part would be direct... The main mitigation would be directed at the ballast transfer as through the Transport... Or Transport Canada regs through the ballast.

Within the broader context in a Nova Scotia setting, there are 45 monitoring sites in Nova Scotia along the coast, through the Bras d'Or Lakes, as well as 11 additional sites on the New Brunswick side of the Bay of Fundy.

DFO's aquatic invasive species group is

looking at five species, primarily tunakits. Of those, we have already discovered... Our closest monitoring site is at the Digby Yacht Club, and we have found gold star and a few vase tunakits at that site.

We have also found... Our next site going down around the Neck and around the Islands is near Meteghan in St. Mary's Bay, and again, vase and gold star tunakits are present there.

We are concerned that other species would come in. In particular, we're concerned about potential diseases that would affect lobster and, in particular, the disease that affected the Long Island lobster in 1999.

There are green crab, which was mentioned in our presentation, which have already established themselves and have moved north along the coast through the Bras d'Or Lakes and into the Gulf of St. Lawrence.

And we are concerned about Chinese mitten crab as well entering the area.

Monitoring. We have monitoring protocols set up, and I believe it's... I'll just refer to the document here. We can provide a copy of that to the Panel, but it's ranked as invasive species Level 2 monitoring.

And there's a whole series of detail here as to site selection, protocols, equipment to be used that we can provide.

Really, monitoring confirms that you've got a problem and there's very little you can do about it. Prevention is the answer in this case.

Mr. GUNTER MUECKE: Thank you.

Ms. JILL GRANT: Just a couple of other questions on the invasive species question.

Do you have any special concerns around the area where the ship is going, the other end?

Some concerns have been flagged in a study done for the Proponent by Mallet about the high risk of some of the species in that area, so I just wonder whether that creates a special concern or not.

Mr. TED POTTER: In general, it's the ballast water that is the source of invasive species, although it's not the only source. There could be attachment to the hulls.

Our environment assessment focuses on invasive species coming to our area, not going to a home port, international destination. Our jurisdiction doesn't carry us that far.

Ms. JILL GRANT: What's your experience of the effectiveness of ballast water transfer for removing

the risks of these kinds of organisms?

Mr. TED POTTER: That would be beyond my capacity to answer.

The program has been put in place over the last two years. The monitoring started last year.

And for effectiveness, what we've seen is about five species per decade since European arrival in the Americas. And with increase in shipping and vessels going all over the world, I'd be at a loss to see that actually declining.

We are trying to take preventative measures here. I think that, in the long run, this will delay as opposed to prevent.

Ms. JILL GRANT: One of the species that you mentioned is the parasitic lobster disease.

What's the value of the lobster fishery in the Bay of Fundy, and what's the nature of the parasitic disease that might affect them?

Mr. TED POTTER: What I'll do is I'll ask two experts here we have with us. I'll ask the Area Director for Southwest Nova Scotia to speak to the value of the lobster fishery, and then I'll ask Dr. John Tremblay to speak to the effect with regard to lobster.

Dr. JOHN TREMBLAY: The way the information on landings is acquired b DFO is through logs

from fishermen. It's not sliced up quite as easily.

I don't have that in front of me for the entire Bay of Fundy, but on the Digby side, looking at, say, the upper Bay of Fundy on the Nova Scotia side, you'd be looking at the order of 10 million, 10 million dollars.

Are you looking at... Looking for figures on value or landings?

Ms. JILL GRANT: I'm not sure what the difference is between those two, but we... Yeah. We want to get a sense of what the annual value of the lobster fishery is.

Dr. JOHN TREMBLAY: Yeah. It's substantial.

With respect to the disease, it hasn't been found north of... It hasn't been found in Maine, I don't believe, so there are, you know, other waters where these vessels are going through and the disease has not been found there yet.

So I expect the chances of it getting here are reduced, but they're not zero.

Ms. JILL GRANT: And does that disease completely eliminate the lobster catch? Does it reduce catch?

What is, exactly, the effect of it?

Dr. JOHN TREMBLAY: In Long Island Sound,

which is quite a localized area when you look at the distribution of lobsters as a whole, catches declined remarkably over a period of several years.

But I understand it wasn't just disease. It was a combination of low temperature, particular environmental conditions, low oxygen as well.

So I'd be very surprised if it would eliminate any population of lobsters on its own, but it would certainly have a serious impact.

Mr. MIKE MURPHY: If I could just add in terms of the value of the lobster fishery, I wouldn't want you to leave with the impression that the industry is 10 million dollars.

It depends on where you decide to... From what line to what line. You know, I think if it was helpful we could provide you with some information by statistical district or by different areas along the coast and you would have a sense of 10 million dollars in this particular area, but if you expanded those boundaries out, you may be talking of 300 million dollars in Sou'west Nova Scotia.

I mean, it just depends on where you want those boundaries to be.

Ms. JILL GRANT: Thank you. That would be very helpful, so we'll register that as an undertaking.

If you could get it to us by the 29th at the latest, that would be great.

Mr. MIKE MURPHY: That one I think we can get by the 29th.

Mr. GUNTER MUECKE: While we're on the lobster fishery, I'm, in my mind, trying to configure how the impact of this project on a lobster catch can be evaluated.

And is it possible or has it been done in terms of the possible local effects to evaluate? You have to have a baseline to evaluate change, have the lobster catches been affected.

This will be, obviously, within a certain specified, limited local radius, and to evaluate it you have to have a lobster catch analysis prior to the enterprise.

Has this been undertaken or should it be undertaken?

Dr. JOHN TREMBLAY: It hasn't been undertaken. There are landings available on a 10-minute grid basis.

That's the finest resolution we have, so quite a large area, but we do have landings on that basis going back 10 years, so we could look at the grid that is closest to the proposed quarry and look at changes over

time.

Obviously that's not the best way because we like to have higher resolution information, so this is why DFO proposed a monitoring program.

We haven't discussed this any further. We certainly would want some industry input in the design of any such program, but it could involve sampling before and in between actual blasts, for example, to see if something like catch rate declines dramatically after a blast.

And it could also involve looking at hemolymph protein to see if it's affecting moult cycles and so forth.

But basically, there is not a lot known about the effect of blasting on lobsters and other decapod crustaceans, other crabs and so forth.

It certainly doesn't seem to induce mortality. Some studies in the lab exposing animals to quite high levels of seismic have not shown any mortality, but there are some sub-lethal effects that have been shown recently.

Most of that information is preliminary or in review, is where that is. It hasn't really been peer reviewed.

Ms. JILL GRANT: Just a follow-up. We asked Transport Canada earlier today, and maybe it's

appropriate to ask you as well.

Given the nature of the kind of turbulence that the ship's likely to generate coming in and the unpredictability of when it's going to be able to get in due to conditions, how feasible do you see it being for lobster fishermen to continue to work in this area once... If the project does go ahead?

Mr. JOHN TREMBLAY: I guess we really don't have the information on the table as to what the turbulence would be, to answer that question.

I mean, there is fishing going on in other areas where large ships come in, but, you know, we don't have the comparative data to make the conclusive statement.

THE CHAIRPERSON: That information wouldn't be generally available, say, 70,000 dead weight tonne ship reversing its propellers, for example, as it positions itself. The amount of energy released into the water would be huge.

And that turbulence, I mean, tipping over lobster pots, perhaps, or... I don't want to put words into your mouth. I don't even know the answer to this.

And lobster pots are joined together so that tying them up in knots and that sort of thing, is that just fanciful or is there any possibility there?

No one knows.

Mr. TED POTTER: I think the answer is nobody's really looked at this closely.

With regard to what's proposed here, if we were to look across the Bay at the Canaport facility with huge oil tankers coming in, there's an exclusion zone there for safety while the vessel's coming in.

And having talked to some of the operators, while the vessels are not there, strings of lobster pots are laid through the area and recovered or retrieved prior to a ship coming in.

That does not negate that traps get entangled or washed out.

What DFO would do, because this is not part of our authorization process, is we would strongly encourage the Proponent and industries, in particular in this case with the fishing industry, to have discussions on how they would interact and what the arrangements would be there and come to an agreement.

THE CHAIRPERSON: Thank you. That's very helpful.

Mr. GUNTER MUECKE: We understand that there is quite an important herring fishery in this part of the coast, and having a facility, the loading facility which is lit up and with lights directed downward in order to

avoid boat collisions and interference with migratory birds, could you give me a sense of how you feel about possible interference of the facility with the herring fishery?

Mr. KENT SMEDBOL: Light is a known attracter for herring. In fact, it used to be commonly used in the herring fishery, the seiner fishery, as a way to attract fish to the surface. That's no longer done.

So I could foresee, hypothetically speaking, that it may actually function in drawing herring into the area.

It should be noted that there is... The area along Digby Neck, in the summer months, it does sustain a very heavily prosecuted fishery for herring. Mainly seiners come in quite shallow in that area.

There are also still several weirs that function along Digby Neck, so it's a known area for herring aggregations during the spring, summer, fall months.

Other than it... So it is possible that lights at night could attract them, but they're there in the area to begin with.

Mr. GUNTER MUECKE: Would it in any way interfere with their spawning or their usual movement patterns?

Mr. KENT SMEDBOL: Spawning areas for herring in Scotia Fundy are well documented, and there isn't

one in that particular area.

Spawning tends to occur in the summer months, usually July, August for this species. The main areas in and around Fundy would be there's a large spawning area in Scotts Bay at the head of the Bay.

There's also a very large one on German Bank, which is the largest component of Scotia Fundy herring, where that spawns. There are a few smaller ones down past St. Mary's Bay.

To my knowledge, there is not a substantial component that spawns in that area.

Mr. GUNTER MUECKE: What about movement patterns?

Mr. KENT SMEDBOL: They actually move back and forth quite close to the coast in that area. It's one of the reasons why we... You know, it's an historical area for fishing weirs.

It's also one of the reasons why we find large fish-eating whales in the area. They're targeting herring in that area so, for instance, herring are the reason why we have whale watchers on Digby Neck.

THE CHAIRPERSON: Okay. I believe that the Panel is finished its questioning, so now we'll turn it over to the Proponent, Mr. Buxton.

Mr. PAUL BUXTON: Thank you, Mr. Chair.

Some of these will be clarifications, some may be a comment, and some may be direct questions, if you'll let me.

To your last question with respect to turbulence, it may be that there is significant information available at Porcupine Mountain Aulds Cove. Certainly about 60 ships a year come into that facility to pick up aggregate and, also, there was a coal loading facility there taking coal up to Point Aconi.

And I'm led to believe that the area directly in front of the port is, in fact, heavily fished for lobster, so it may be that there is some background information that the local lobster fishermen could provide data on.

I don't have it, but it may be available.

A clarification with respect to the in shore Bay of Fundy salmon.

I did say May through September, and Mr. Murphy said May to October. It may be my wretched accent, but I did say May through September, and I'd like to ask you if that's correct.

Mr. MIKE MURPHY: Our information is to October, through October, that would... There would still be inner Bay of Fundy salmon in the area in October. So to or through.

Mr. PAUL BUXTON: Okay. Thank you. I think our original information was that it was May through September, and so that's what we put in the document.

If it's October the 15th, we have no difficulty with that. We just don't have that information, I guess.

On to fish habitat compensation plan, which was mentioned in your presentation. And I would just simply like to comment on that, perhaps, that I think we spent a dozen, perhaps not a dozen, 10 meetings with DFO officials outlining this compensation plan to the extent that we felt at our last meeting that everybody was comfortable with it.

I understand since from DFO that there's been new research, new documentation and they would like us to revisit that in the light of new information which has come to hand, and we're very comfortable with that. If there are new technologies, we'd be very pleased to meet with DFO again and revise that plan in accordance with better science, if you like.

I have a comment on CEAA and a question on CEAA. Perhaps as an impression that only new projects that pass through comprehensive studies or panels are subject to CEAA, and I would like the DFO expert... I am sorry about names. Didn't get them all in my head. To just

comment on whether or not CEAA, in fact, applies to all existing projects as well as new projects which are coming in.

Mr. DAVID MILLAR: There's different components of CEAA that apply differently. Section 79, which is the project review component, applies to new projects. It's specifically intended to apply to these kind of situations, projects that are undergoing an environmental assessment under CEAA.

And so that's intended to make sure that CEAA review identifies adverse effects on species at risk and proposes appropriate mitigation monitoring.

So that part of the Act would apply only to new projects. On the other hand, the prohibitions which say you can't harm, harass, kill applies to all activities unless they have a permit or some sort of exemption, so that does apply to all activities regardless of whether it's a new project or an ongoing activity or any other kind of activity, regardless of whether it requires a review or an EA or anything.

Does that clarify?

Mr. PAUL BUXTON: Thank you very much, Mr. Chair.

I would just like to make a comment on ammonia, since it came up yesterday, and, in fact, we have

an undertaking to provide you with some background data.

And also, we are preparing an additional piece on that to clarify our position.

But I would like to refer to a meeting which was held February 7, 2005 with DFO and Bilcon, and it covered a number of subjects, as our many meetings with DFO did.

But at that meeting, DFO... And these are the minutes. I'm reading from the minutes of the meeting now, which were prepared by DFO.

"DFO provided the Proponent with a paper entitled 'Practical Methods to Reduce Ammonia and Nitrate Levels in Mine Water' by Gordon F. Reevey on mitigation measures for the use of ANFO, ammonium nitrate fuel oil-based explosives. DFO's explosives expert has said that if the mitigation that has been proposed by the Proponent and the recommendation outlined in the paper by Gordon Reevey were incorporated into the blasting plan, there will be little in the way of residual impacts occurring from this aspect of the proposal."

And I could just also add to that

that... And we will put this in writing for you, that an awful lot depends, of course, on best practice.

If things are done properly, certain things happen. If they're done improperly, other things, and not very nice things, happen.

In correspondence with Gordon Reevey as of last night, communication to Bilcon, his statement is the percentage of ammonium nitrate residue would likely not be measurable if best practices are used.

Now, we intend to put this into a little presentation for you along with the reference documents that you asked for, and we will give that to you before this Panel terminates.

I would like to ask just, really, a general question with respect to the model, the CONWEP model. This is certainly not my field of expertise, and clearly DFO has very considerable expertise.

But I would like to confirm, and this was my understanding and I think it had been clearly said in the documents, that the CONWEP model that we ran was, in fact, a very conservative model.

Mr. NORMAN COCHRANE: Presumably you want me to respond to this.

Mr. PAUL BUXTON: Well, let me perhaps give a quote from DFO's comments on our EIS because we can

only respond to communications that are made to us. And it refers to fish habitats blasting:

> "Most assertions in this section are based on the acoustic model study by Department. Hannay, JASCO Research, and D. Thompson, LGL Limited, titled 'Peak Pressure and Ground Vibration Study of Whites Cove Quarry Blasting Plan'. Comments on this study have been provided previously by DFO. See Appendix 9 of the EIS.
> And that was a preliminary.
> Several issues were earlier identified in regard to the study, the most important pertaining to apparent quantitative inaccuracies in assessing how P compressional to S sheer wave conversions at the water sediment interface would enhance the amplitude of P waves transmitted into the water. The conclusion was that Hannay and Thompson study probably over-estimated the compressional wave amplitudes transmitted into the water column. This would tend to strengthen the statement

that the model presented represents worst case situation."

And that is a direct quote from DFO comments. Our response to that was:

"Bilcon agrees with the conclusion that the CONWEP model study conducted by JASCO Research probably over-estimated the compressional wave amplitudes transmitted into the water column and that this aspect of the model represents a worst case situation."

I'd just like a comment on that, please.

Mr. NORMAN COCHRANE: Is it all right if I speak to this, Mr. Chairman?

THE CHAIRPERSON: Yes, please.

Mr. NORMAN COCHRANE: Yes. I think there's a bit of confusion here.

The CONWEP model is only one component of the Hannay and Thompson overall model. We mentioned the CONWEP model, which was essentially a model for giving us the time domain signature of the compressional wave in the bedrock generated by the explosion. That is the CONWEP model.

The Oriard model is the model that attempts to quantify the transmission of acoustic energy

from the bedrock into the water.

And in addition to that, the Hannay and Thompson study also attempted to look at what happens within the water wedge itself and how there can be interference phenomena that tends to decrease the acoustic pressure signature within that wedge of water itself.

So there are really three different components, and the CONWEP model is only one of them.

I, myself, am not an expert on the CONWEP model, and I cannot really give you a very good idea of just how accurate it is likely to be or at what range it would give an adequate description of this compressional wave pulse in the bedrock.

Mr. PAUL BUXTON: Thank you very much. I would just perhaps like to ask a follow-up question. It was our intent on this project from September 2002, when an application was first made, to in fact have a blasting plan approved so that we could set off test blasts and produce empirical data, and I would just like a comment on the value of, let's say, models versus the data that can be gained from empirical test blasts where we now have concrete evidence.

Mr. NORMAN COCHRANE: Yeah. I'd like to go back to some of your earlier comments. I would like to say that we still...

In fact, in my earlier remarks, I did support the stated conclusions in that DFO report that indeed the transmitted pressure wave into the water is likely to be somewhat lower than was stated in the Hannay and Thompson report by...

A transmission coefficient lower by about a factor of five, which probably makes you very happy so...

But I should also say that there is some concern about the Hannay and Thompson model, as well as the reverberation phenomena within the water column is properly and adequately modelled. So in a sense, that might increase the acoustic levels within the water column.

But at the same time, the model does seem to be parameterized fairly conservatively, so... But there are many uncertainties. It's a very simplistic model, and I believe what you're trying to imply is that monitoring is going to be a very important component, and I would certainly concur with that, and I would certainly encourage a very comprehensive modelling or monitoring, as opposed to strict modelling, study.

Monitoring is going to be all-important.

Mr. PAUL BUXTON: I think that that was the point that I was trying to make, Mr. Chairman, however complex, and this seems to be an extremely esoteric subject

which I don't pretend to understand.

But certainly we do intend to enter into detailed discussions with DFO's experts to set up the test blasts to that we can either confirm or amend the sorts of distances that we've set out, and I think that that's the position that we've taken from day one, and we're simply waiting to be able to do the test blasts to be able to do that.

Just moving on a little bit, and again, I don't want to get into large debates about these issues, but perhaps a commentary would be useful. We did have some information earlier on this afternoon about ship speeds and the speed of the ship with respect to mortality rates.

But I think we missed out a rather large section of the discussion, and that is, I wonder whether any reliable information can be brought forward with respect to the reliability or, I'm sorry, the probability of a whale/ship collision, because we can debate what happens when a ship hits a whale, but what is the probability of a whale/ship collision in the Bay of Fundy?

Mr. KENT SMEDBOL: There are a series of analyses that are currently under review. They have not been peer reviewed. They deal specifically, though, with the relative probability of collision, not the absolute probability of collision. So what these analyses evaluate

is the probability of having a collision in a particular area within the Bay, relative to any other area within the Bay. But it can't, but these analyses can't give you an answer that says there's a one in one thousand chance a whale will be struck.

It's... There are statistical reasons why for that. For instance, we don't know where all the whales actually are in time and space, so we can't give you, we can't calculate an absolute value. So I guess the short answer is at this moment there is not a peer-reviewed document that can provide that answer. It is an area of current study, even the absolute analysis.

Mr. PAUL BUXTON: Yes, thank you. We've found the same thing. We do have at hand a non-peer-reviewed study, which leads us to believe that the levels of probability are relatively astronomical, and you may have access to that document and may want to comment on it.

Mr. KENT SMEDBOL: One comment I can make is that the probabilities, the magnitude of the relative probabilities are driven by where the whales are, not by the ships. I'll leave it at that. So one could understand that the likelihood of collision, the relative likelihood of collision is highest in the lane of the traffic lane that crosses the major concentration of right... Or just is adjacent to the major concentration of right whales.

So it is the whales that tend to drive the risk.

Mr. PAUL BUXTON: Yes. Thank you very much. But I'm just wondering whether anybody has an estimate of the probability. We know in general terms where the ship is going. May be some debate about precisely where it comes off the shipping lanes.

But in broad terms, could you characterize the level of risk, the probability of a whale/ship collision?

Mr. KENT SMEDBOL: Again, not in absolute terms, and I'm not the lead on these analyses. I am familiar with them, and given they're not peer-reviewed, I don't know how much I should really speak to them, since I'm not the author.

But in general, if you can recall the sightings per unit effort map that was displayed in two of the, actually one of Bilcon's presentations and also one by Dr. Taggart, that figure is not greatly different from the relative probability analysis.

As I said, it tends to be driven by the whales, but I must stress, this has not been, this has not made its way through peer review.

Mr. PAUL BUXTON: Thank you very much. On whales again, I think something else that perhaps was not

gone into, we talked about the issue Okay. blasting with respect to whales, and we have talked about the issue of whale ship collisions.

But I wonder if you could give us some sort of reference or some picture of, for example, what the effect of fishing is on whales, for example net entanglements, and I'm aware of a paper that was produced I think jointly between Nova Scotia and Scotland within the last year which talked about the fact that whale watching tours were now being held to be the most significant problem with respect to behavioural effects on whales.

A comment would be useful.

Mr. KENT SMEDBOL: I have some of that information before me. For context, last winter, in February, DFO undertook what is called a recovery potential assessment for North Atlantic right whale, so most of these statistics that I'll read off in the next little bit are driven from that analysis.

So I do have some information that relates to that. I'll find the Table. 50 percent of mortalities in right whale are known to have... Known mortalities in right whale have a human origin. Of those, almost all of them are either due to vessel collision or entanglement.

So from 1970 through January of 2006 for

known mortalities in North Atlantic right whale... These numbers include both Canadian and U.S. waters... We have 27 mortalities due to vessel strike, we have eight known mortalities from entanglement, 12 mortalities are suspected from entanglement, there are eight whales currently entangled, 33 have been entangled in the past, and are now gear free.

We have 21 mortalities for which there is not a known... To which we could not ascribe a cause, and this is all excluding neo-natal mortalities, so not young of the year, 'cause there tends to be a high mortality among newly born calves.

Some more statistics. From 1986 to 2005, there was 61 confirmed reports of entanglements of right whale. Of those, a significant proportion have been entangled more than once.

In fact, over 60 percent of the population, the last estimate which is not published, but I have from the right whale consortium, and the New England Aquarium, is that 71 percent of photographed right whales have entanglement scars.

Two issues related to detection of cause of mortality. The first one is that... And I think the question even the Panel was getting toward this; that if ships... If vessel collision occurs offshore, we do not

know, we don't know what, how many of those that are actually struck that we detect, and when we do detect and are able to assess the condition, they're usually well, you know, well into decomposition. But if they get hit well offshore, we are not going to detect.

In fact, there was a vessel, a whale that was struck off the coast of Georgia this winter, and simply... Well, a dead whale was detected floating. We never could get out to assess it because of weather conditions, and we lost track of it. It's gone.

Another thing is all... So the best way to characterize this, then, is that known mortalities due to human causes are underestimate of the actual number of mortalities caused by human activities. So I already mentioned vessel strike; what happens if it occurs offshore. We might not be able... It may escape detection.

With entangled right whales, for those that are chronically entangled, and that end up dying from that entanglement, they are often in an emaciated state so they no longer float, or it's highly unlikely that they would float. So if the animal eventually dies, we may not detect that death.

So there are... We actually have a statistics in the consortium that is used. If we do not re-detect an animal after seven years, it's considered dead,

and a higher proportion of animals that have been entangled for at least two years fall into that category than the population at large. So there is some evidence to say that we are not detecting all of the actual human-induced mortalities.

But that's all that I have with me.

Mr. PAUL BUXTON: Thank you very much. I didn't realize I'd get such a comprehensive answer.

Just perhaps another quick comment, can you... And I was surprised to hear you say that there had been a detected whale killed from a small vessel, and you characterized that by being in the 50-foot range, which would be a standard size, let's say a scallop dragger. Have you any information in fact to sort of characterize ship strike mortalities by size of vessel, for example?

Mr. KENT: Yeah. In that case, and all the necropsies are actually undertaken by a team that's led out of Wood Hole, Woods Hole Oceanographic Institute, so DFO actually doesn't undertake necropsies but we are party to the information.

There are two known deaths from ship strike that are likely caused by... My sentence structure's horrible there. In the last two years, two whales that have been struck and likely killed by a vessel, it was determined that it was likely struck by a small vessel, so the first

one which I had mentioned was off Campobello in 2005; a second one off the coast of North Carolina. In that case, we know it because it was hit, and then the owner of the vessel reported it. That was about a 50-foot pleasure craft.

The one that was struck in the vicinity, in Canadian waters, in the... Around Campobello, an analysis of the corpse showed from looking at propellor cut patterns on the corpse, from that and from the mark of the skeg which was visible through the cut pattern, one can determine approximately the size of the prop that struck that animal. And from that, that information was sent to a marine engineer and a marine architect, and they said the best guess was that prop size was between 26 to 30 inches. So it was obviously struck by a small vessel. Whether that vessel was a commercial vessel or a private vessel, we don't know.

So the point is right whales can be killed by vessels of all sizes. The manner of their death is different. So in that case, it was probably blood loss. In necropsies of dead whales, there's a second type of cause of mortality, and this is usually extreme blunt force trauma, and this is the one that we consider likely to have occurred from large vessels over 300 gross registered tons. So in those necropsies, you can see, for instance, jawbone

completely broke.

There's one case last year where the skull was actually cracked in two. The very large broad-scale injuries that are consistent with extreme blunt force trauma, and we would consider those to be consistent with impact from a large vessel.

Mr. PAUL BUXTON: Thank you very much. The... My previous question actually had two parts, and you answered one at great length and in great detail, but the second one was concerning a recent study 2006 between a Scottish university and a Nova Scotia university that reported to find that whale watching was the biggest cause of behavioural changes in whales. If you could comment on that, I'd appreciate it.

Mr. KENT: Yeah, I'm somewhat familiar with that study, and this is... We acknowledge even within Fisheries and Oceans science that this is a knowledge gap that we have to fill. We actually had our own pilot study to evaluate behavioural responses to ship, to vessels in the Bay of Fundy, but we've been unable to secure further funding for that.

In that particular study, it looks at what is considered chronic visitation of individual animals so that the view in that particular paper is that these animals were exposed at, to small vessels, whale-watch

vessels, or also private vessels, for an appreciable time during the day, and the view of those researchers was that this, in their interpretation, was interfering with those animals' ability to undertake their daily requirements for, you know, feeding and socializing and that sort of thing.

Well, that was their conclusions. There is, among whale researchers, some acknowledgement that this could indeed be occurring. On the west coast, for instance, with transient killer whales, there are rules about not only how close you can approach those pods, but for how long you can stay on an individual pod.

We have done some back in the envelope calculations based on mark recapture photography of individual whales.... We can identify individual right whales by their markings.... That for instance one whale in 2004 was visited 14 times in one day, 'cause we had 14 photographs from different proprietors. So there's no doubt that this may be an issue. We have not properly evaluated it, though.

Part of the problem is determining... The real kicker for this is determining impact of those visitations, because the variant, the change in behaviour among individual whales is extremely variable, so it requires a fair bit of data to be able to pick out patterns that we could then relate perhaps back to that human

activity. But we fully acknowledge this is a... At least from DFO science, we consider this a knowledge gap.

Mr. PAUL BUXTON: Thank you very much. And finally we've had some doubts with respect to the capacity of observers at whatever height and with whatever techniques being able to detect varied mammals in the water at various distances.

I believe that the last time that we met with DFO, or perhaps second-last time, we did discuss the state of the art and the development of detection devices to assist in this kind of thing, and I wonder whoever would be the appropriate person could comment on that, at this time.

Mr. MIKE MURPHY: Yeah. Unfortunately, there's nobody here who was at that, who was present at that meeting. I think earlier on Kent gave a fairly good overview of the process that they use in science for observation, and certainly that, you know, that gives you a sense of the protocols, or a sense of the concerns that we may have.

Mr. KENT: There is one addition that actually I forgot in my evaluation. When the Panel had asked me to... About the probability of detecting animals at distance. If you have a stable platform, you can also employ what are called "Big Eye" binoculars, which... I don't know if you've ever seen them, but they're... And

they can basically take you out to the horizon, but the... And these are used on large, stable platforms such as large vessels. The National Marine Fishery Service uses them on their surveys.

But again, you need good sea state. That's still a factor. There's no doubt that... It may not help you in the original detection, but it may help you in honing on that cue, and determining the species.

The other issue would be passive acoustic detection of animals. That's sort of considered state of the art.

Mr. PAUL BUXTON: Thank you very much. I think at that meeting we did say that we would commit to whatever new devices were, had been devised for the detection of marine mammals, and it seemed that the state of the art, at that time, was not quite developed.

I think if I could just turn to my colleagues just to see whether that is complete, if you wouldn't mind, Mr. Chair.

--- Pause, conferring with colleagues)

Thank you, Mr. Chair.

And I would like to say, at this stage, that we have been meeting with DFO officials since July 2002. We've had a significant number of meetings on a large number of issues, and I would, on behalf of the company,

like to, at this time, thank DFO for their professional advice to us over the years. We very much appreciate it. Thank you, Mr. Chair.

THE CHAIRPERSON: Thank you, Mr. Buxton. I think there are a couple more questions from the Panel that have surfaced since, so Gunter?

Mr. GUNTER MUECKE: Yes. I would like to briefly come back to the blasting model and the test blast.

The blasting model is a numerical model which involves large uncertainties. I think that we have established that. And I would like to have your comments on the value of a single test blast in evaluating a model of this type.

Mr. NORMAN COCHRANE: Well, I think there are two types of test blasts that one might consider. One might be the detonation of a single shot hole, and the other would be the detonation of a pattern of shot holes similar to what would be utilized during the operational phase of the quarry, which could involve something like 50, 60 or maybe more shot holes.

And I think really both of these should of these should be done. For one thing, I think the detonation of a single shot hole could be quite valuable in determining whether reverberation effects within the water layer are quite significant or not, and I personally am not

quite certain as to the significance of this, and I think you have to realize that these models are very simplistic, and whereas the physics are very complicated, and certainly the use of a single blast, a single shot hole blast would give us some confidence that we have really captured the complexity of the phenomena.

Mr. GUNTER MUECKE: Thank you. Just in my memory, a similar model was evaluated, or they tried evaluate at another quarry. This was respect to damage to buildings, and it actually, in terms of testing it, they suggested that it would take at least a dozen events to test the model to some level of satisfaction. Is that a realistic evaluation that it would take?

Mr. NORMAN COCHRANE: I would say the more events that can be tested, the better, yes. But certainly even if the physics is really not properly covered by the simplistic model, by a great margin, maybe even one test would disclose that. But certainly the more you have, the better.

I mean, there are many approximations and simplifications have gone in this. We don't consider a rough interface, the fact of scatterers, boulders, that sort of thing, and also I think there could be disagreement as to exactly what the slope of the interface is, or how it is really oriented, as well, with respect to the blast. I

don't think the geometry of the monitoring has been very well defined.

Mr. GUNTER MUECKE: And the model assumes homogeneity?

Mr. NORMAN COCHRANE: Yes.

Mr. GUNTER MUECKE: As a geologist as opposed to a geophysicist, I never look at a rock body and think of it as being homogenous.

Mr. NORMAN COCHRANE: Certainly if there are systematic refraction effects, then that could affect the effective angle of incidents of the blast waves onto the base of the water column, and the propagated energy into the water column is very critically dependent upon that angle of incidents.

Ms. JILL GRANT: We don't have time to get into all of the, those species that are listed under CEAA. We had a fair bit of time to talk about whales, but... The right whale, but I wonder if you could endeavour to come back with(sic) us with a summary table of the species listed under CEAA that apply in the marine environment in this Project, and identify the potential effects on each, and whether the effects are likely, as defined under CEAA... Whether the likely effects are adverse, and whether they're mitigable, and whether a CEAA permit would be required.

If you could do a summary table on that for all of the species, that would be very helpful for us.

Mr. TED POTTER: We'll do it.

Ms. JILL GRANT: Thank you. By the 29th is okay?

Mr. TED POTTER: [Inaudible].

Ms. JILL GRANT: Thank you very much.

THE CHAIRPERSON: Okay, I think...

Mr. PAUL BUXTON: Mr. Chair, I wonder...

THE CHAIRPERSON: Yes?

Mr. PAUL BUXTON: I think a new element was introduced...

THE CHAIRPERSON: Yes.

Mr. PAUL BUXTON: ...and I think...

THE CHAIRPERSON: Yes, of course.

Mr. PAUL BUXTON: ...I must comment on it. I don't believe that we've ever talked about a single test blast. We reference in our document an initial blast. In all our discussions, we've talked about whatever information we need to do to test the model, and find out what is happening, and I think that that would be our commitment.

And I would also make the point here that since 2002, when we first tried to, I guess, have a blasting, an initial blast, and a test blast put in place,

at that time, we had a quarry on the site, a permitted quarry. And hence we came under the Rules and Regulations of Nova Scotia Department of Environment and Labour.

Later on we dropped the permit to that quarry, and I would say that when the quarry ceased to be there, we could have, in fact, had our test blasts on the site. We were only prohibited from holding that test blast, because we held a quarry permit.

And I think that what we have tried to do here is to be very reasonable with the process, and not, I suppose, be somewhat inflammatory by setting off test blasts to get this empirical data which I think you will all agree would have been very valuable to present to this Panel.

But there has been nothing to stop us setting off a blast on that site since we gave up the quarry permit.

Now having said that, DFO will very quickly remind you, and very correctly that had we killed a fish, or had we harmed a mammal, we would be in very serious trouble, but the fact of the matter is that we could have conducted that sort of experiment, and chose not to do so.

So that I think it is wrong to leave it out there that we are supposing that one test will do it, and that's a fix, and we gain all the information. I don't

believe that we've ever said that. We will do whatever we need to do to gather the empirical data to establish the accuracy of the models that we've run, and then we'll proceed on that basis with our blasts. Thank you.

THE CHAIRPERSON: Thank you, Mr. Buxton. Okay, we now... First, any questions that would come from Government individuals, Federal or Provincial, to DFO? None? Okay. Mr. Sharpe had his hand up first, I guess. Quick off the mark.

PRESENTATION BY THE DEPARTMENT OF FISHERIES AND OCEANS - QUESTIONS BY THE PUBLIC

Mr. ANDY SHARPE: I'd like to follow up on a line of questioning from Dr. Muecke earlier on the number and series of blasts as part of an overall explosion.

The DFO representatives made a number of predictions of impacts on whales, fish and lobsters to blasting. This morning we had a discussion on the amount of the ANFO that would be used every two weeks. I think 20 tons was the number that was put forward.

A quick back at the envelope calculation at 45 kilograms per charge suggests something in the order of 400 charges per overall blast, so my question for the DFO representatives would be do they feel there's any need to modify their predictions for blasting on whales, fish and lobsters, in light that there will be in the order of 400

individual charges, particularly taking into account behavioural and sub-lethal effects?

Mr. NORMAN COCHRANE: Well, I didn't believe that there would be as many as 400 shot holes detonated at once. I thought it was more of the order of 40, 50, 60, something of that order.

I think what we stated this morning referred, or this afternoon, referred to one shot hole that the predicted levels at 500 metres I think was... And I think there was some other levels that were quoted, as well, for closer distances. Those referred to the detonation of one shot hole, and I personally believe that those probably are not good estimates, if there would be multiple detonations; that is an operational-type blast involving many tens of shot holes.

However, I think it is one of the reasons that we wanted to institute a monitoring program, because this is somewhat of an unknown, and has not been properly modelled.

THE CHAIRPERSON: Thank you. Mr. Morcocchio, and I go right down the list.

Mr. MIKE MURPHY: If I could, I think it's... I'd like to follow up on Norman's point that we really were suggesting that after the initial blast, the initial test, the idea was to look at the predictions that

had been made, and then evaluate the program and see what type of mitigation measures should be put in place at that stage.

I don't think we really said we predicted a lot of things at this stage. The idea is to have some safety zones set up, and have that initial blasting, and then look at mitigation and where we are in terms of the prediction, right?

Mr. NORMAN COCHRANE: Certainly if we did have some field data from single shot hole detonations, it would certainly give us a much better basis to determine whether these levels would be significantly enhanced by multiple shot hole detonations.

As I said earlier, this model is very simplistic, and it depends upon interference effects in the water column, in many cases, to shorten the effective length of the acoustic pulse as measured within the water column, itself. That may or may not be sufficient to prevent the... May call stacking or accumulation of multiple acoustic events, the pressure pulse, to very high levels.

And certainly if we had monitoring results from single, a single shot or shots, it would give us a better basis for knowing whether the... Inserting simple delays between the shot holes, time delays, would be sufficient to prevent the stacking and the accumulation of

the acoustic energy.

Mr. BRUNO MORCOCCHIO: Bruno Morcocchio of the Sierra Club of Canada. Document 1637 on the Public Registry is the comments from the Sierra Club of Canada on the adequacy of the EIS, and it refers, in part, to an Environmental Assessment Best Practice Guide for Wildlife in Canada, Canadian Wildlife Service, Environment Canada, February 2004.

I'd like to read some of these best practices that will help me frame the question that I have about some of the interventions and recommendations that DFO has made. It says:

> "Describe project effects on wildlife and risk with vigour and detail reflecting the current understanding of the ecology of the species. Use status reports, recovery strategies, action plans, and species management plans as main information sources where available, and consult with wildlife experts, specialists and local and Aboriginal communities. Consider all direct, indirect and cumulative effects in the analysis. Tolerance of risk impacts should never be lower for

wildlife at risk than for other species. Uncertainty should not be used to allow a project to proceed, but rather should require further work to demonstrate that the project will not affect the species before it's allowed to proceed. Where there is a threat of serious or irreversible harm, that is significant adverse effect to wildlife at risk, or a threat of significant reduction or loss of biological diversity, the precautionary approach should be applied, which means lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat. Adaptive management is not a solution where harm may be irreversible. Adaptive management, also referred to as adaptive resource management, is a management and learning process developed to meet the challenges of managing resources in the face of uncertainty, with a focus on monitoring and assessing the outcomes of decisions

to reduce the uncertainty in the future. It can only be applied in cases where harm is reversible, since it implies that mid-course correction should be made as required. The onus of proof should be on the Proponent to demonstrate to the satisfaction of the decision maker that the adverse effects on wildlife at risk, or biological diversity are not significant. The level of caution should be proportional to the level of threat, recognizing that in some situations, no risk is acceptable, determine by factors such as the following: Populations present, or a number of individuals."

I think we can agree that the right whale population certainly meets this test that would demand the highest level of caution, and one would also expect that DFO would have "operationalized" these best practices principles in their assessment of the impacts of the proposed quarry.

Yet many of the recommendations seem to be adaptive management measures. You point out quite rightly so, on slide one, that any additional shipping the

Bay of Fundy increases the potential for collisions with marine mammals, including right whales.

You point out on slide four that how mitigation...

THE CHAIRPERSON: Mr. Morcocchio, is this going to a question?

Mr. BRUNO MORCOCCHIO: Yes, it is, and... Yes.

Troubling also is the uncertainty about the impacts within the 500-metre range from the percussive events and between 500 and beyond 500 metres, and it's striking that with not being able to gauge the effects at less than 500 metres, that with any degree of certainty beyond 500 metres we can establish that only behavioural effects will go on.

My point is that many of these principles outlined don't seem to have been followed, and will DFO undertake to review their assessment to comply with these measures set out in these best practices that one would hope for an endangered species as threatened as the right whale would be the minimum amount of concern, particularly the reverse onus, which doesn't seem to have been applied here by DFO as the regulator.

Mr. MIKE MURPHY: I think we have upheld what we've had to do under the terms of both the **Species At**

Risk Act, the best practices that you've mentioned, and our responsibilities as part of this process.

If you will notice through this, we recommend that a lot of this initial, the initial blast testing should only be done outside of the period when right whales and inner Bay of Fundy salmon are present. That gives us some information as to what the effect would be without a possibility of harm to those endangered species.

So I don't really view that as adaptive management in the sense that you're talking about. I view it as collecting information that will allow us to see what the effects could be when those animals are present.

I think we've been pretty stringent in ensuring that it is the Proponent that comes forward and tells us what they're going to do. We haven't been telling the Proponent that this is the minimum standard. We've been telling the Proponent: "These are our concerns. It's up to you to develop measures, to develop processes that will give us comfort that we can uphold the standards that we are supposed to uphold, according to the law."

So it... I think I answered it.

Mr. BRUNO MORCOCCHIO: I don't think many of the questions, particular with respect to applying those principles, have been answered. But I'll move on.

I have a particular question about

the...

THE CHAIRPERSON: Mr. Morcocchio, one question in follow-up.

Mr. BRUNO MORCOCCHIO: Oh.

THE CHAIRPERSON: So if it's not a follow-up to this, then we're going to move on. I mean, the time is late, and I'm sorry to cut you off, but...

Mr. BRUNO MORCOCCHIO: We've been exceptionally patient so far all day today.

THE CHAIRPERSON: Mr. Muir, are you... No, I think Mr. Mullin had his hand up. Yes, please.

Mr. DON MULLIN: I'll try to make this really quick. It's regarding comments that Dr. Smedbol made, and it has to do with some work done by John Lean (ph), a Professor Emeritus at Memorial Univeristy, and it was the same situation that we were discussing in terms of location.

And he published, peer reviewed, in peer reviewed journals, as well as non-peer-reviewed publications, indicating that the blasting didn't have an immediate effect on the whales' behaviour, and he said that that was the wrong dependent measure to be using to test the effects of blasting.

However, his subsequent work suggested strongly that what happened is in the area where blasting

occurred, the next season the whales did not return to that location. So I just want verification of that because Dr. Lean has retired and no longer practices, so I can't ask him for verification. But I wonder if I could get a comment from DFO, and if that's true, what's the implication of blasting for whale-watching activities in the Bay of Fundy.

Mr. KENT SMEDBOL: I'm only familiar, actually, with one publication by John on that particular topic, and it does relate to a change in occupancy in Belleoram area following... During construction phase. So that I can, that I can confirm.

The rest of it, I'm afraid I'm a little distant from that literature. I'd have to get back to the Panel.

I think, though, in any evaluation of behavioural impacts to a human activity or to any stimulus, it's necessary to consider both short and long-term impacts in that analysis. So if I was designing or, you know, I think a properly-designed study would not limit the analysis to a very short-term post-stimulus response.

These animals, particularly white whales, but all large cetacean, their migration routes and patterns are learned. So there is a fair bit of individual input, input from the individual to where and when they are in time and space. So it is not, it's not like doing tests

on worms. You definitely have to think in multiple temporal and spatial scales.

THE CHAIRPERSON: Thank you. Mr. Moir, Mr. Hunker, and Ms. Peach.

Mr. ANDY MOIR: It's Andy Moir. I hope this is going to be very, very brief.

I just, we've seen a couple of times now, both from the Proponent and a couple of other slides, showing this distribution of whales in the Bay of Fundy, and I guess my question is how do you figure out where those whales are? Is it based mostly on what the whale boat watchers report plus some of your own surveys?

And the reason I ask this, I guess, is I'm fairly familiar with at least the whale watch aspect of this, and I know well that if one whale boat sees a whale, there'll be no less than seven or eight sort of steaming to the same area, so you may in fact... And I don't know if this happens with that, because I'm not a scientist, but you might have sort of skewed results on where these whales are, because all of a sudden you're getting a lot of reports from different whale watch boats that have gone to the same place because that's where the whales are, or perhaps they're find a couple of humpbacks off of Beautiful Cove in Freeport, and because that is so close to where a lot of the whale boats are, they go and look at those whales, and then they steam

back and get their next group of 35 people to go and look at the same whales.

So I guess I'm curious, is there a chance that the very data that you have collected as to where whales are in the Bay of Fundy may be skewed.

Mr. KENT SMEDBOL: I can address that question. The answer is yes. But the databases, I assume most of the information that's been evaluated here has been provided from the right whale consortium, of which DFO is a member, but so are may NGOs and Universities and such. And that database is built from contributions from a number of sources.

But there are various levels of sources, if you will. There are opportunistic sources, such as one example is from contributions from the whale watch companies, and we have some of that information yourself, we're very lucky to get that information. But also information or sightings that are collected from standardized line transect surveys.

So I would make the distinction, and I haven't generated the plots that have been shown here today, but I would make the distinction between those two types of data. For instance, the plots that both the proponent and one of the presenters today showed talked about sightings per unit effort, which was that kind of density plot. That

information, if it came from the Right Whale Consortium, which is the holder of that information, and has not been altered, is based solely on formal line transect surveys.

Scatter plots may include all opportunistic data, so I can't comment on the second series of plots that were shown, but what we call the SPUE, the sightings per unit effort, the information that was used to evaluate the lane change, information that is used to evaluate right whale density and aggregation, that is based on formal transect methods.

THE CHAIRPERSON: I think Mr. Hunka is next.

Mr. ROGER HUNKA: Good afternoon. I'm Roger Hunka, with the Native Council of Nova Scotia. I have a series of questions, but I'll restrict it to one and come back.

You weren't here Saturday or Monday, and it's a similar question as far as consultation goes. We heard from the Proponent that Nova Scotia Department of Environment and Labour did not give them instructions to discuss this project or consult with aboriginal people. Neither did the Nova Scotia Department of Natural Resources.

I ask the question of the Department of Fisheries and Oceans, who's aware of the Aboriginal peoples in the area, did you provide any instructions to the

Proponent in your many meetings since 2002 to consult with them about their fisheries, be they food fisheries or commercial fisheries?

Mr. TED POTTER: Well, I'll provide two parts in response. One is, we've directed the Proponent should discuss interactions with all users in the area, and that included people involved in the fisheries, and the fisheries is made up of a number of different sectors, including Aboriginal fisheries. So in a general sense, yes, we have.

In the Federal fiduciary aspect of consultation, letters have gone to Native Council, the 13 Chiefs and Councils here in Nova Scotia, and the Mi'kmaq Rights Initiative, the KMK.

Mr. ROGER HUNKA: So in a general way, but as a follow-up, when you read the Environmental Impact Statement, it's silent on food fisheries and Aboriginal commercial fisheries. Is that... Whose fault is that? Can't blame the Proponent, if you were general about it, and you have a fiduciary.

Mr. TED POTTER: It's, the information and the discussions with interactions between various industries, including the fishing industry, and the Proponent should be led by the Proponent.

With regard to our consultation, our

letters have gone out as of late December offering to sit down and meet with the various Aboriginal groups throughout the Province at a time and in a forum that's convenient to them, requesting a response back to, at the time, our acting manager for major projects, Environmental Assessments and Major Projects.

We've had some informal discussions, including with yourself, but there has been no formal consultations.

Mr. ROGER HUNKA: So there is no consultations.

Mr. TED POTTER: It's been offered. We've sent out a letter that's requested that, and at the convenience of the...

Mr. ROGER HUNKA: Well, I don't want to argue with you, but I'm going to the EIS. Are you satisfied that regardless of whether it was in 2002 or December of 2005 or 2006, whenever your letters went out, that there is, within the Impact Statement, a paragraph or a sentence indicating that there Aboriginal food fisheries occurring, and as well as communal commercial fisheries, in the area. Do you feel satisfied?

Mr. TED POTTER: There could be a lot more information provided on the interaction for all fisheries, including Aboriginal food fisheries and any

ceremonial or recreational fisheries, yes.

Mr. ROGER HUNKA: So is it sufficient or deficient?

Mr. TED POTTER: It could be added to substantially.

THE CHAIRPERSON: Mr. Hunka, thank you.

Mr. ROGER HUNKA: Alright. I have another question later on.

THE CHAIRPERSON: There's only one round tonight. I mean, we're running out of... It's already quarter to five, and we've got two more speakers that were supposed to go. Mr. Dittrick, no, you're sharing off with Mr. Marcocchio for Sierra Club. You're...

Mr. MARK DITTRICK: I have a point of...

THE CHAIRPERSON: Ms. Peach is next, and we're not going another round either, so I'm sorry.

Ms. JUDITH PEACH: I just have a question about the idea of tipping point.

The marine environment is obviously very stressed, like Mr. Buxton pointed out, from various sources, and all these at-risk species get stresses from various sources, mostly human.

I'm wondering if the DFO or scientists have any sort of modelling for incremental increases in stress. So when do you know when you've pretty much

admitted the last ship that is going to kill the last whale that makes that species viable? Because there's so many species in the marine environment that seem to be at risk, compared to the terrestrial environment, I wonder if there's any sort of modelling to say how do you know when you've reached that sort of tipping point for that environment, considering how inter-related it is?

THE CHAIRPERSON: Looks like it's you, Mr. Smedbol. I heard the word "whale".

Mr. KENT SMEDBOL: Well, I actually don't think the question was specific to whales. It sounded to me a bit more to the marine environment, or the marine community, if you will, community of species, and the questioner put her finger on what might be one of the most difficult things to model, and that is community dynamics. Especially changes or influences on community dynamics.

We have some simple energy flow models, state flow models, of community structure within, say, the larger Gulf of Maine, but what the questioner has asked for is probably beyond our ability to give a strong answer for. It is extremely difficult. We're dealing with non-linear dynamics and flexion points of severe knowledge gaps on the inter-relationships between species.

THE CHAIRPERSON: Ms. Peach, it sounds like your question is pushing the envelope, so I think...

Okay. One last question. Mr. Stanton, and then I'm going to wrap it up, I think, so that we can move on.

Mr. KEMP STANTON: I think there's been a study done in Cape Breton on seismic testing concerning crabs, and the test found, preliminarily, anyway, that most of the damage done to the crabs by the seismic testing was to the ovaries of the female crabs. It didn't kill any of the crabs and it didn't much affect the males.

My concern is, if that is so, and there's damage done at Whites Cove by the first few blasts, how many years would it be before you would be able to detect that damage by examining the population dynamics? Because if the ovaries were destroyed, you wouldn't see the effects for five to eight years.

Mr. JOHN TREMBLAY: Yeah, the study you mentioned is somewhat controversial in that there was a control site and an experimental site. Crabs were exposed to seismic noise at both sites, and there were some sub-lethal effects, as mentioned, some damage to the ovary, in the test site.

But a kind of rigorous review of the experimental design found that the two sites were not really close enough, similar enough. There were differences between the two sites such that you couldn't really say for

sure whether the effects seen were due to the differences between the control and the experimental site, or due to the seismics.

So there has been some further work on snow crab. My understanding is that that is, I haven't... I wasn't at that review meeting, but it's still in review. Again, there's some controversy as to interpretation of the results. They're certainly not clear, but there is some uncertainty about the effects of noise, such as seismic and probably blasting, on the eggs of decapod crustaceans.

THE CHAIRPERSON: Okay. That brings to the end the DFO portion of this. I'd like to thank you gentlemen. It has been extremely useful to us and very valuable, and we do have a couple of undertakings, I believe, so we'll look forward to seeing those on the 29th.

Thank you once again.

We'll take about a minute or two, just to get, allow our colleagues here to move off, and then we have two presentations, actually, one by Jerry Ackerman and a second one by Leslie Wade and Linda O'Neil.

--- Pause

PRESENTATION BY JERRY ACKERMAN

THE CHAIRPERSON: As I indicated, we have two presentations. The first will be by Gerry Ackerman.

Mr. JERRY ACKERMAN: I thank the panel

for this opportunity. I want to make my compliments to the Panel and to the process that has been suggested.

I ask that the closing remarks from my Upper Valley Neighbours may be submitted in writing on the final days of these hearings. Is that acceptable?

THE CHAIRPERSON: Would you say that again?

Mr. JERRY ACKERMAN: The closing comments as they were for the hearing, I have some of those but I would like to submit those in writing, including the reaction of the Valley neighbours.

THE CHAIRPERSON: You would like to read them into the record?

Mr. JERRY ACKERMAN: I would like to do that on a subsequent day, Friday or Saturday of next week if I could?

THE CHAIRPERSON: The closing session will be on Saturday afternoon, on the 30th.

Mr. JERRY ACKERMAN: Yes. Can I submit something in writing at that time?

THE CHAIRPERSON: Yes. You can submit them in writing and certainly they will be included, yes. Yes.

Mr. JERRY ACKERMAN: Okay. I'll confine myself today to my personal observations, analysis,

experience and pointed opinion.

I first visited Annapolis Royal 30 years ago and I was struck by the elements of authentic history still very much evident and by the natural beauty of where the river meets the ocean for an 8-metre handshake twice a day.

Five years later, I managed to invest my personal energies and available entrepreneurial capital in the area.

My subsequent actions included the acquisition and development of a campground at the Bay Shore of Delaps Cove.

The 1888 octagonal barn property in Upper Granville, the only chef-designed restaurant in Allain's Creek, an abandoned Acadian residence in Moschelle, a central in town residence-home business property that had been rebuilt after the 1921 fire, and the 1950s motel, no longer royal except in name.

Each property was begging for attention, renovation, preservation and purposeful development. The town population at that time, in 1981, was 633.

I was not alone in visualizing the once Nova Scotia capital town's potential as a first-class tourist destination.

While the amount of my financial

involvement still stands as the largest sum from a private source, numerous other entrepreneurs took a turn at upgrading the town businesses and residences.

Funds from the several levels of government have impacted significantly. Three that I will mention are the town infrastructure via by the Development Commission, $7 million; the Upper Clements Theme Park, $26 million, and the Tidal Power Plant, which was $56 million. Mr. Buxton was very much involved in the first two.

What has become of these investments and personal energies? On the plus side, our town has won both Provincial and Federal Bloom Awards and has been proclaimed as the most livable tiny town in the world, a U.N. competition.

Yes, Annapolis Royal is truly a fine place to live, as long as you bring your pension money with you. On the down side, business successes have been few and far between.

For example, no industrial or manufacturing ventures have survived. For example, the service businesses paying all costs, including investment capital, management and staff include only the banks, one hardware store, one food store, a pub (thanks to their VLTs), one drugstore and one eating place (temporary and a long ago). I don't have data on the government liquor

store.

Salvage values for these government impacted, the ones I mentioned, I'd have to say that infrastructure can't be really salvaged and no one has made an offer for the Tidal Power Plant because it's probably negative, and the Theme Park was sold last month for a dollar.

Also on the downside, we have entertained two environmental disasters, one is the Tidal Power Plant and the second is the Parker Mountain Basalt Pit.

The former interests only the occasional curious tourist who wonders about the suds on the river. The latter constitutes a permanent disturbance to its adjoining residence and an eye sore when viewed from anywhere in town, not just from my front porch.

The Tidal Power Plant in 1981, the Memtec Consultants imagined no serious erosion or environmental damage, but such has not been the case.

Upstream property owners filed a total of five dozen lawsuits to force the scaling back of the intended usefulness of the plant.

The unexpected fish kill from the turbine requires significant corrective mitigating measures. The trivial power generated by the twice-daily outflow fit

into the grid may well be the most expensive source of electricity in the province or the continent.

Privatizing the power company without adding the multi-million dollar assessment to the town's tax base did nothing for our ability to upgrade and maintain the infrastructure of the town.

Persistent pressure has partially improved the power companies' tax contributions over the recent five years.

The pit on Parker Mountain Road, not a quarry because blasting not allowed and it's less than 4-hectares, so no environmental assessment and no public hearing required.

This development, or desecration as some of the neighbours perceived it, of the North Mountain was initiated in secret with assistance from the county reeve and his counterpart at the Department of Environment. A major funding came from ACOA.

The Council itself was taken by surprise when confronted by the immediately adjoining residence whose safety, comfort and peaceful enjoyment was being removed permanently.

The dozen jobs created have continued. Blasting has happened, although it wasn't supposed to, and somewhere since I have left the area, one was bought out by

the company.

Improvements to the community have remained invisible. What has happened to the population of this best-bloomed, most-livable tourist destination?

From 1981 to 2000, there was a 20-year decline of 13 percent. From 2001 to 2006, a five-year decline of 19 percent. These are Stats Canada figures.

Present prospects for reversing this decline are extremely limited. We experience less tourist business each season. For example, seven bed and breakfasts are now listed for sale.

I understand Mr. Buxton's property has been on the market for years.

Removal of the ferries looms as a major and constant threat. October of this year is the current deadline.

Hardly a success story for the "come from away" investor-residence seeking to help rebuild our community.

I conclude by announcing to the Panel that my seasoned observations hold out no positive expectations for the residents, fishermen and tourist operators of Digby Neck were the Mega-Quarry development to proceed.

THE CHAIRPERSON: Thank you Mr. Ackerman.

Ms. JILL GRANT: Mr. Ackerman, you said that there had been a 19 percent decline in the population of the Annapolis Royal over the last five years? Did I get that correct?

Mr. JERRY ACKERMAN: I'm sorry, I'm not quite hearing you.

Ms. JILL GRANT: Did you say that there had been a 19 percent decline in the population in five years? Is that correct?

Mr. JERRY ACKERMAN: Yes, 19 percent in the last five years. Those are official figures.

Ms. JILL GRANT: So your perception is that tourism is under threat in Annapolis Royal?

Mr. JERRY ACKERMAN: There are no tourists there now for this year, next to none, and there's no indication that that's going to change in the next two months or subsequent to this year. Tourism will be minuscule.

Ms. JILL GRANT: What factors do you attribute that decline to? What factors do you attribute that decline to?

Mr. JERRY ACKERMAN: I'm sorry, I still don't hear you.

Ms. JILL GRANT: What factors are responsible for the decline---

Mr. JERRY ACKERMAN: What factors?

Ms. JILL GRANT: ---in tourism?

Mr. JERRY ACKERMAN: It's easy to blame somebody at a distance, and I could go down a long list. Tourism has never been fully respected during this last 25 years that I've been here, in this Province.

It's not seen as a high-profile job and income generator, that's one factor. Another is the 9-11 conspiracy as what explained. It means that you can't fly and you can't cross the border and so on without serious restrictions. So I think this is a factor.

THE CHAIRPERSON: If I understood you correctly, you weren't saying that the quarry or pit or whatever was responsible for the decline, you are saying it simply didn't save the town, that's all.

Mr. JERRY ACKERMAN: I'm not saying that all. I'm only saying that anyone who saw the quarry open and said: "We've got a dozen jobs that we didn't have before", that will change the direction of our community and it will bring us a sense of prosperity we didn't have before.

THE CHAIRPERSON: Yes, thank you. Mr. Buxton, do you have anything you would like to say?

Mr. PAUL BUXTON: No, thank you Mr. Chair. No comments.

THE CHAIRPERSON: Any questions from the audience? If not, then thank you Mr. Ackerman.

That brings us to the last presentation, and actually there are two names listed here, Leslie Wade and Linda O'Neil.

PRESENTATION BY Ms. LESLIE WADE

Ms. LESLIE WADE: Hello. My name is Leslie Wade. I'm going to make this brief. Everyone is tired, and...

I'm speaking as a private citizen and land owner who is deeply concerned about the environment. It grieves me to witness what is happening to our magnificent province as I continue to fight land use issues in my own area.

Despite Kings County being the only county in the protect prime agricultural land, the municipal bylaws lack the teeth of provincial legislation, resulting in the county being hit with proposals to change their planning strategy.

Our agricultural region, the economic crutch for the Annapolis Valley with the best farmland in Eastern Canada, is on the fast track to disappearing.

There are three huge proposals in the wings, 300 houses on 47 acres of prime land in Weston; residential and commercial development of 400 acres west of

Wolfville and a proposal in waiting for 200 houses near Port Williams.

And these projects are on protected agricultural land, so we can only imagine what is happening elsewhere in the Province.

The lack of adequate legislation to protect our natural resources has resulted in David and Goliath scenarios whereby small communities are against giant corporations.

The very qualities that bind us to this area are at the risk of being destroyed, along with our capacity to be self-sustaining.

Nova Scotia is under siege. The forests are being over-harvested being sustainable levels, risking the same faith as our fisheries.

Our air quality has been diminished with the funnelling of carbon emissions from the States resulting in smog-alert days.

Nitrate levels exceed the standards in some valley wells, and the situation could get worse according to some experts.

In this area, our beautiful shoreline is being targeted for a rock quarry to build roads in the U.S. and like a bad disease, if this gets approval, it has the potential to spread further along the Bay of Fundy and

threaten the already struggling fishery along with the impact on quality of life and tourism.

The Avon Peninsula faces a similar threat with a 1,200 gypsum quarry which could ruin the watertable as well.

Then there is the aggregate industry exploiting our soils with so little control that areas under 10 acres can be extracted anywhere without an environmental assessment, and a biassed assessment for over 10 acres with a Proponent hiring the environmental consultant. Under four acres, one doesn't even need a permit.

We have the largest pit east of Quebec in Colebrook, Kings County, and it keeps on expanding. It's at least over 100 acres at the moment.

There are at least seven other pits in the same area and it's one of the fastest growing residential communities in the valley.

One has to be concerned about the impact on the watertable. At least 30 percent of the pits in Nova Scotia are not monitored. The Department of Environment lacks adequate trained personnel to supervise the operations they are aware of. There are many that they are not aware of, and they rely on the public for feedback.

The question has to be asked based on past history of the Department in monitoring aggregate for

compliance, how well will they cope with an operation as huge as the Whites Point Quarry?

There are many ironies around the environmental issue. Agricultural land is under municipal jurisdiction for protection, yet sand can be extracted from prime farmland with the topsoil being temporarily set aside because aggregate is under provincial jurisdiction with little controls.

The process of removing the sand according to soil experts is very destructive to soil structure and its future capacity to grow crops.

The lack of vision by the Province has resulted in millions being spent to twin the 101 so that more traffic can move more quickly, use more gas, produce more carbon emissions, develop more farmland when it's expected that in 40 years, the oil reserves will be gone along with the fish.

The Province is focussing on environmental protection laws for wilderness areas, but ignoring legislation to protect farmland and hinds our future food source we can't afford to import.

The time is now for the Province to generate the will and the courage to develop better protection for all our natural resources before it is too late.

With the present policies, once approval is given for one proposal, the door is open for further developments. We have witnessed this in every area of our resources.

Global warming is threatening our very survival on the planet. It is time to express our outrage at the environmental destruction as companies continue to extract, exploit, deplete, pollute and pave over our natural resources, all in the name of progress.

When do we wake up and smell the sewer? Thank you.

THE CHAIRPERSON: Ms. Wade, you have a specific comment or a suggestion for us relative to this particular initiative that we're here for?

In other words, you've provided a general overview of your feelings, but what about this Project?

Ms. LESLIE WADE: Well, I guess I would hope that the recommendation... I mean, I don't... I'm deeply concerned about this Project and the impact on the environment, and it's another example of big companies coming in and stripping resources and leaving destruction behind, and I don't see it as beneficial to the community in the long term in terms of self-sustaining.

So my hope would be that the Panel will

take the recommendations of the public concerned about this to recommend against this.

THE CHAIRPERSON: Do you have any mitigating suggestions, any way in which this Project could go forward, but with some mitigation?

Ms. LESLIE WADE: No, I don't feel... From everything that I read and my awareness of how the Department of Environment operates, having experienced it in my own area...

One particular issue was a baltzar's bog, which is under the aggregates, part of the aggregate industry, and the problems involved there, the lack of monitoring, the inappropriate permits and so on, that does not give me confidence that if this Project were to go through, that it would be properly monitored.

THE CHAIRPERSON: Thank you. Do we have anything else? Ms. O'Neil?

PRESENTATION BY Ms. LINDA O'NEIL

Ms. LINDA O'NEIL: I wish to begin by expressing my gratitude to the Panel and to the Federal and Provincial Governments in their part for facilitating these two weeks of public hearings.

It is indeed a solid sign that we do live in a part of the world where democracy, its principles and policies, continue to survive and thrive.

I speak today as a concerned citizen. Neither an expert, nor experienced in public speaking, but as someone who cannot find peace within through silence.

The Project up for discussion is something that concerns me deeply, although not directly, at least not yet.

I live in an area some 150 kilometres to the west where the ribbon of basalt stretches to and beyond. This explains the selfish part of my motivation for being here today.

Clearly, I would not want the quarrying of basalt to begin here and then, inevitably, move into an expansion mode, creeping along and digging up the North Mountain.

I would not want it in my backyard, for the same reasons that many of the citizens of this region do not want it, for the same reasons that the scientists, the environmentalists, the fishermen and all who have explored and informed themselves of the potential negative impacts do not want it.

The potential for cumulative negative effects are overwhelming and must not be ignored to satisfy the voracious appetite of Clayton Concrete of New Jersey.

For those 34 residents, plus or minus, who would hope to be employed by the Proponent company, I am

sympathetic, but quarrying along the Neck is not the right way.

You, along with everyone else who lives within range of this Project, will be vulnerable to the most immediate of the negative consequences, for example noise and air pollution, threats to the natural ecosystems of the region, as well as the consequent impact on tourism.

The main point I wish to raise before the Panel today is my concern about the amount of weight that will ultimately be given by Government to the results of these public hearings.

I understand that the Federal Government's Department of Fisheries and the Provincial Governments Department of the Environment are ultimately responsible to give the final go or no to the Proponent's Project.

Are these two ministries, coming from different levels of government, ready, willing and able to hear the voices of the people?

Those voices are those of the scientifically, environmentally educated and informed, as well as those of the local citizens who live here and will be most impacted by the Project.

I do not expect an answer today, that will come some time in the future.

I raise this point because I recently attended and I've been following a few public participation hearings from the municipal level of governments, hearings which are dealing with requests to give permits to develop housing projects on farmland.

The responsive trend by municipal democratically elected officials is currently appearing to be one which is ignoring the public's voice.

As well, I am aware through the media that public voices are arising, asking to be heard by politicians at the Provincial and Federal levels over issues concerning our environment, our health, our quality of life, to name a few.

So are our governments, who hold the power of yes or no, ready and willing to give substantial weight to the voices of the people? Are they in fact able to do so?

This questions comes to mind following a recent meeting held in Wolfville when Mark Parent, Nova Scotia's Minister of the Environment, who was invited to answer questions of concern coming from the public.

While Mr. Parent was forthright and honest in his responses, the answer he gave to the question about how independent he is to influence the Government on environmental issues startled me.

He described his Department of the Environment as one that cuts across many other departments, for example Health, Agricultural, Natural Resources. All this sounded very reasonable to me.

However, he went on to day that because government departments tend to work in silos, they are separate vertical units which work up. There is little cross contact between departments.

Startled by such an image? You bet I am. How can one grasp the bigger picture if one works in a silo, a windowless, airless structure surrounded by many other silos with limited communication lines between?

I wish to close today with three things. Number one, a question. Will the governments, Federal and Provincial, give more than token response to the presentation being made through the public participation component of this Review Panel?

Number two, a belief that the Whites Point Quarry Project as proposed by Bilcon of Nova Scotia is not about progress, but about destruction.

And finally three, a thank you for allowing me the opportunity to speak today.

THE CHAIRPERSON: Thank you Ms. O'Neil. I think I heard you say, correct me though, but I think you said that the Minister of Fisheries? It's actually the

Minister of Environment nationally, who is the responsible Minister, and the Minister of Environment and Labour in this Province. So it's the two Ministers of Environment, and here it is Environment and Labour, not fisheries, okay?

Ms. LINDA O'NEIL: Thank you. I was not properly informed, thank you.

THE CHAIRPERSON: You're welcome.

Ms. JILL GRANT: You suggested that... One of your last questions was about Government. Obviously, we can't necessarily transmit this to Government. I presume they will read the transcripts of the sessions and hear the kinds of concerns voiced, but thank you for brining them to our attention.

THE CHAIRPERSON: Any questions?

Mr. PAUL BUXTON: Thank you, no questions Mr. Chair.

THE CHAIRPERSON: Any questions from the audience? No? Okay. Thank you very much ladies.

There's one final thing. I think Mr. Dittrick wanted to read something into the record, and I gave him my word we would let him do that.

Mr. MARK DITTRICK: Just a point of correction, I have actually talked to the DFO person involved, and it's settled as far as DFO was concerned, but there was a correction made on the Right Whale fatalities in

2006, and he said that it was 2005. He again repeated that it was 2005 later on.

That fatality, in fact, that whale was brought in at Campobello on July the 24th, in 2006, and it was 11 days before the deadline for the comments on the EIS from 2006, and I indicated that to him and he saw that and he said: "Well you know, you can make mistakes."

So I just wanted, for the record, and for the fact that somebody from the Panel was corrected on that, that that fatality was indeed in July of 2006.

THE CHAIRPERSON: Thank you for that correction Mr. Dittrick. I believe unless there's anything else, we are adjourned until tomorrow morning at 9:00.

--- Whereupon the matter concluded at 5:26 p.m. to be resumed on Thursday, June 21, 2007, at 9:00 a.m.