

INTERNATIONAL MARITIME ORGANIZATION (IMO)

AREA TO BE AVOIDED

OFF THE WASHINGTON COAST

Effective December 1, 2012

In order to reduce the risk of a marine casualty and resulting pollution and damage to the environment of the Olympic Coast National Marine Sanctuary, all ships and barges that carry oil or hazardous materials in bulk as cargo or cargo residue, and all ships 400 gross tons and above solely in transit should avoid the area bounded by a line connecting the following geographical positions:

- 1 48°23'.30N 124°38'.20W
- 2 48°24'.17N 124°38'.20W
- 3 48°26'.15N 124°44'.65W
- 4 48°26'.15N 124°52'.80W
- 5 48°24'.67N 124°55'.71W
- 6 47°51'.70N 125°15'.50W
- 7 47°07'.70N 124°47'.50W
- 8 47°07'.70N 124°11'.00W

Contact Tofino Traffic on VHF-FM Channel 74 when inbound and crossing longitude 127 W and latitude 48N

CANADA

Vancouver Island
British Columbia

Strait of Juan de Fuca

Tatoosh Island

Cape Flattery

Cape Alava

La Push

Destruction Island

Queets

Cape Elizabeth

USA

Washington State

PACIFIC OCEAN



NATIONAL MARINE SANCTUARIES™

OLYMPIC COAST

KEY

- OLYMPIC COAST NATIONAL MARINE SANCTUARY
- AREA TO BE AVOIDED
- TRAFFIC SEPARATION SCHEME

NOT FOR NAVIGATION

Grays Harbor

The ATBA off of Washington State's coast was established to reduce the risk of a marine casualty and resulting pollution and damage to the environment of the Olympic Coast National Marine Sanctuary.

Why does the IMO establish ATBAs?

- The IMO establishes ATBAs in defined areas where navigation is very hazardous or where it is important to avoid casualties.

Why is it very important for vessels to remain offshore and avoid this area?

- Reduces risk of vessel grounding on shore
- Reduces risk of collision with small vessels traveling close to shore
- Allows more time for assistance to arrive to help a disabled vessel
- Increases protection of coastal resources
- In the event of an oil spill:
 - Allows more time for spill cleanup and containment crews to arrive
 - Decreases the chance of spill impacts on the shoreline
 - Increases spill evaporation and degradation time

How were the boundaries of the ATBA chosen?

- The boundaries were chosen to protect Sanctuary resources most at risk from vessel casualties.
- The boundaries are compatible with the Traffic Separation Scheme

How was the vessel applicability chosen for the ATBA?

- Vessels greater than 400 gross tons were selected because of the substantial amount of bunker fuel that they carry and the risk that a spill would pose to sanctuary resources
- Vessels that carry oil or hazardous materials in bulk as cargo or cargo residue were selected due to the risk that a spill would pose to sanctuary resources
- The applicability of the ATBA applies to vessels solely in transit and does not include naval vessels or vessels that are engaged in an otherwise allowable activity that occurs predominantly within the Sanctuary, e.g. fishing or research

Natural characteristics of the Olympic Coast National Marine Sanctuary:

- 128 species of seabirds within the Sanctuary
- 29 species of whales, dolphins, and other marine mammals visit the area
- Washington State's only sea otter population
- Many species of fish and shellfish commonly eaten by people, including salmon, surf smelt, razor clams, rock scallops, and abalone
- Over 300 species of resident intertidal invertebrates, aquatic plants, and fish
- Nutrient rich waters
- Diverse habitat types supporting complex food chains, including kelp communities, intertidal zones, beaches, and offshore rocks

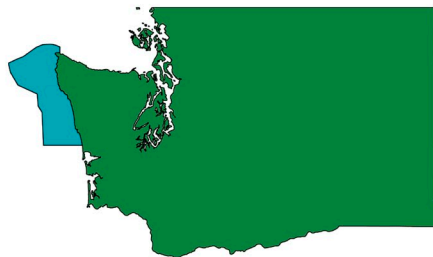
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Phone: 206-217-6045
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**JOINT REVIEW PANEL FOR THE ENBRIDGE
NORTHERN GATEWAY PROJECT
COMMISSION D'EXAMEN CONJOINT DU PROJET
ENBRIDGE NORTHERN GATEWAY**



**Hearing Order OH-4-2011
Ordonnance d'audience OH-4-2011**

**Northern Gateway Pipelines Inc.
Enbridge Northern Gateway Project
Application of 27 May 2010**

**Demande de Northern Gateway Pipelines Inc.
du 27 mai 2010 relative au projet
Enbridge Northern Gateway**

VOLUME 115

**Hearing held at
Audience tenue à**

**Chances Prince Rupert
240 West, 1st Avenue
Prince Rupert, British Columbia**

**December 14, 2012
Le 14 décembre 2012**

**International Reporting Inc.
Ottawa, Ontario
(613) 748-6043**

Canada

LIST OF EXHIBITS/LISTE DES PIÈCES

(i)

No.	Description	Paragraph No./No. de paragraphe
AQ58-A	Douglas Channel Watch - Kitkatla and Compania Conservancies	14611
AQ58-B	Douglas Channel Watch - IMO ATBA Marine Sanctuaries Dec 1 2012	

**Enbridge Northern Gateway Panel 1 - Prince Rupert
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14516. **MR. JEFFREY BROWN:** I've answered this question on numerous occasions during this cross-examination. It has not been ignored. It's been given the appropriate level of attention it requires, given the types of effects between routine operations of this project and the estuary.

14517. And I've said it, that we did assess in the area of the terminal, not just the PDA but in the project effects assessment area that extends on both sides of the PDA and that includes, in your definition, the estuary. So work has been done.

14518. We did not study the delta portion of the estuary because there's no interaction between this project under routine activities and the delta. We have recognized in Panel 3, that emergency response does have to take that area into consideration and that was discussed at some length in -- I'm sorry, I used our panel numbers, it's the Emergency Response for Pipeline Panel that sat in Prince George discussed that during those proceedings.

--- (A short pause/Courte pause)

14519. **MS. BROWN:** Okay, we will move onto Dave Shannon. We might have further questions regarding this.

14520. **MR. SHANNON:** It's about 10 to 10; I probably have about an hour left. Would you like to take a break at the moment?

14521. **THE CHAIRPERSON:** Thanks for checking, Mr. Shannon. Why don't you begin with your questions and let's aim to take a break around 10:15 or so.

14522. **MR. SHANNON:** Okay.

14523. **THE CHAIRPERSON:** Thank you.

--- **EXAMINATION BY/INTERROGATOIRE PAR MR. SHANNON:**

14524. **MR. SHANNON:** At the risk of travelling over some well-worn territory, I'd like to start with some questions about marine conservancies on the tanker routes.

14525. First of all, I'm a bit confused by the state of existence or not of

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- marine conservancies in two of the reports presented by Northern Gateway.
14526. Can we turn to B16-2, Adobe page 9?
14527. Okay in front of you, you see as part of technical data report coastal operations and sensitivity mapping for the confined channel assessment area; this is a report dated 2010 and the first paragraph suggests that as of 2008 many of the conservancies identified are not included on sensitivity maps in Appendix D because they were only in the proposed stage; is that correct?
14528. **MR. JEFFREY GREEN:** I need to orient you to what this report is. This is the Polaris Report that was developed as part of the marine emergency response component. So it's actually not evidence for this panel but I'll answer the question nonetheless.
14529. This is a -- this is not the definitive document for protected areas. If we're going to speak about them, we should be speaking to either 6B or 8B or portions of 6C. This was an oil spill response report and I don't think it's reasonable to assume that they would have all these sites.
14530. The second thing is that this is an older report, I believe dated ---
14531. **MR. SHANNON:** Two thousand ten (2010).
14532. **MR. JEFFREY GREEN:** Yes, but they're referring to here is a database. I've said this a number of times, is that the database for the environmental sensitivity atlases comes from the provincial government and it's somewhat dated and that's been recognized. So this is not current and it's not there that we should be looking at in terms of completeness.
14533. **MR. SHANNON:** Can we turn to B18, Adobe page 78. Sorry, B3-18, Adobe page 78.
14534. I just had a book slide. Okay.
14535. The maps shown here identifies the conservancies which provincial records show were designated in 2006 and that's four years earlier than the TDR that we were previously discussing. I understand that the previous report was somewhat dated but I'll carry on anyways.

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14536. To illustrate my conundrum, I have a question -- if you put B16-3, Adobe page 11 up, please. Down a touch, please. No, sorry, on the view of the map. Thank you.
14537. This map shows the top half of Campania Island where a marine conservancy exists which was designated in 2009. You will note that there's no yellow crosshatching which would indicate the presence of the marine conservancy. Would you agree with that?
14538. **MR. JEFFREY GREEN:** I have to give you the same answer. This is the same report series; it's the Polaris series which is based on a dated provincial database that was not updated. The only thing that was updated in the Polaris information was the shoreline classification.
14539. We've indicated in the appropriate reports for marine emergency response that the biological, social, and cultural database that underlies these maps that came from the Province of British Columbia will be updated. So these maps are not meant to be used as current ecological or protected area maps. They're dated. I believe the data comes from some time in the 1990s so it will not include features that are -- were created in 2009.
14540. **MR. SHANNON:** That would explain why Jesse Falls would be the only area on the map that shows a protected area, I guess because of the earlier date. Okay, I understand.
14541. Will these sensitivity maps for the confined channel assessment area be upgraded -- updated to show most of the conservancies that do not exist in the region?
14542. **MR. JEFFREY GREEN:** Absolutely.
14543. **MR. SHANNON:** Okay. Can I please have B12-40, Adobe page 99?
14544. This shows Table A24 showing the conservancies parks, protected areas, and reserves in the CCAA. By my count, I see the top two, Kitkatla and Banks conservancies as the only two that I can count in the confined channel assessment area. It seems there is five missing. Those would be Turtle Point, Fin Island, MacDonald Bay, Campania and Moncton. Can you explain the reason for that?

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14545. **MR. JOHN THOMPSON:** I believe that if you jump to page 101 you will find that Turtle Point and Moncton conservancies listed.
14546. **MR. SHANNON:** I missed that. So that makes the seven counting from the top of Gil Island, I believe -- that makes seven conservancies on the confined channel, okay.
14547. **MR. JEFFREY GREEN:** I think it's important to point out here that we attempt to make these maps as current as we possibly can. As time moves on new conservancies will likely be established. Those will be added to the information base and that will inform both the operations of the project and the types of mitigation measures we might use.
14548. We talked yesterday that really the cut-off point for the CA was sometime in mid to maybe late 2009, depending on the information base. So it's not unreasonable to expect there may be oversights on more recently established reserves.
14549. **MR. SHANNON:** It's just a little difficult, even with reading what's available, to identify what report -- what dated reports refer to, such there's tons of information here. Just having trouble with that.
14550. Getting back to the vessel wake study for a bit; can you tell me what shoreline type was used as the basis for the vessel wake study?
14551. **MR. DAVID FISSEL:** In the vessel wake study that was conducted this -- by DHI enforce, the vessel wakes were examined in particular, for the Dixon Island in Principe Channel and in Douglas Channel -- let me just find it here -- at Kitkiata Inlet.
14552. **MR. SHANNON:** What were the shoreline types there, please?
14553. **MR. DAVID FISSEL:** They were embayments. I'm not quite sure what you're referring to in shoreline types but it was more defined on the basis of bathymetry and the embayments or areas, inlets off the main channel.
14554. **MR. SHANNON:** The reason I'm asking -- I would imagine a -- the wake from a vessel would react differently on the sides of a steep cliff than on a sandy shore which slopes to the water?

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14555. **MR. DAVID FISSEL:** Yes, that's right.
14556. **MR. SHANNON:** That's what I mean by shorelines.
14557. **MR. DAVID FISSEL:** Yes, okay, yes. Well -- and I would characterize that then by bathymetry. So the detailed wake wash modelling included both the steep cliffs which typically occur along the -- adjacent to the inlets and then the shallower, more gradual sloping bathymetry within the inlets themselves, off the main shipping channel.
14558. **MR. SHANNON:** Would the wakes -- vessel wake height be different on a sandy beach than on a steep cliff?
14559. **MR. DAVID FISSEL:** Yes, the detailed wave model takes into account the rate of change of the seabed or the water depths and that does have an effect on the wakes. And those results are shown in the report.
14560. **MR. SHANNON:** Could I please have the first aid to cross which shows a brief description of Kitkatla and Campania conservancies?
14561. I've highlighted several passages on this, and the first one -- well the first one is the name of the report, Kitkatla -- I'm sorry, "Campania Conservancy" and the second highlight shows that marine features include a rare, sandy beach near McMicking Inlet.
14562. My concern is that with a steeper gradient of water on the beaches such as this, which are not all that common but do occur, could be prone to some erosion because of the different wave heights which would occur on a sandy beach than a steep rocky cliff. Do you have any comment on that?
14563. **MR. DAVID FISSEL:** The detailed wave modelling wasn't done, as you know, in this particular area. I think if you look at the areas where the wake wash modelling was conducted, which is in the exhibit that I referred to from DHI, you will see that the -- you will see the differences in the response of the wake waves to the bathymetry along the steep sides and in the inlets.
14564. And it does not -- generally speaking, the wake waves are greatly reduced right along the shoreline in both types, whether it's in the more shallower inlet area or in the -- along the steep, open facing sides of the islands along the main tanker route.

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14565. **MR. SHANNON:** What I'm taking issue with I guess, is the statement that because of the -- okay, it's on B3-26, Adobe page 100.

--- (A short pause/Courte pause)

14566. **MR. SHANNON:** Okay, it's somewhere -- a little bit further down on 7.3.1. That's it, stop there.

14567. First bullet point:

“Because of the relatively deep and open channel, primary wave heights resulting from VLCCs and escort tug traffic are minimal [.25 metres -- sorry] 0.025m and are not expected to be measurable at the shoreline.”

14568. To me that sounds like an average condition which doesn't necessarily reflect on all shoreline types, but is rather a more or less, a broad brush statement. Would you agree with that?

14569. **MR. DAVID FISSEL:** Yes, this part of the environmental assessment is referring to the -- an earlier wake wave study that was conducted prior to the additional work that was done basically last spring and summer, and subsequently tabled for this Joint Review Panel.

14570. So the results here -- and that was in response to intervenor comments and so on. So I don't think these results are fully representative of the knowledge that we have in this project now.

14571. **MR. SHANNON:** The reason I have a problem with this is that it's used as justification for the only reason to be concerned with a passing tanker, is the visual effects of it going by. And I have -- I'll bring that passage up in a minute.

14572. **MR. JEFFREY GREEN:** If I could just add to that though, the area you're looking -- or the site you're looking at is in the area that we define as the core humpback whale area. And the vessels that will, in the summer period within this area, will be going 8 to 10 knots and in the winter they'll be going a maximum speed of 10 to 12 knots.

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14573. The simulations and the estimated heights that we're discussing here were estimated, again, to be conservative at a speed of 15 knots. So the 5 to 10 centimetre increase we're talking about for VLCC is a VLCC travelling at 15 knots and wake is proportional to vessel speed. So in this particular area in the summer, Northern Gateway's vessels will be travelling substantially slower than any other commercial vessel in this area.
14574. I've been told by the marine transportation and navigation experts that many of the other vessels in this area, freighters, are travelling at speeds of 14, 16, even 18 knots and passenger ships that come through area can be going as fast as 22 knots. And wake is, again, very proportional, and Mr. Fissel can speak to that. So our effect is not unique our mitigation is.
14575. **MR. SHANNON:** The vessels that are historically travelling through the Douglas Channel don't have the same draft as would a VLCC. So I'd like some clarification on your statement please.
14576. **MR. DAVID FISSEL:** Yes. The -- Mr. Green is correct that the main factor that determines how large a wake wave is from a travelling vessel, by far the most important factor, is vessel speed.
14577. The difference between the wake wave that's generated by a vessel, say travelling at 16 knots and one at 12 knots, is more than a reduction of a factor of 2. So it's less than half just by reducing the speed by that amount.
14578. The other characteristics of the vessel, which is gone into in considerable detail in the documents on the wake-wave analysis, but the ones you refer to such as total mass and displacement, those are important but much less important than the vessel speed itself.
14579. **MR. JEFFREY GREEN:** I'd also just like to point out that the sandy beach you're referring to is on the west side of the island and it's -- so it's in Estevan, and we're in Squally Channel on the east side. So the vessels are travelling on the other side in this area so...
14580. **MR. SHANNON:** Except from the southern approach?
14581. **MR. JEFFREY GREEN:** No, the southern approach is up Squally Channel.

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14582. If you have specific questions on things like draft, we're not the best panel to be asking those questions. The panel that will sit next spring on marine transportation and navigation is -- will have people that can speak to vessel wake and the specific modelling. Mr. Fissel's been referring to that report but that's where those people will be available to be cross-examined.

14583. **MR. SHANNON:** I was only getting into it because it was related to wake, to some extent, I think. You might agree.

14584. Could I please have the third aid to cross, which shows the area to be -- ATBA around the Olympic Peninsula?

--- (A short pause/Courte pause)

14585. **MR. SHANNON:** I'll read the -- oh, it doesn't come through highlighted on that. Sorry about that. It's the top part of the page. This is in effect of December 1st, 2012, so it's relatively new.

14586. This is a directive through the International Marine Organization, in conjunction with Washington State and other conservancy organizations, which defines an area around a marine sanctuary off the Olympic Peninsula of Washington. And it declares that ships, barges and any oil carrying vessels greater than 400 gross tonnes should avoid this area bounded by the -- well it's a mauve area shown on the map. It extends about 1 or 2 kilometres into -- sorry, 1 or 2 nautical miles into the Strait of Juan de Fuca as well.

14587. On the second page of this, which is further down, is made reference to a particular concern of Washington State's only sea otter population. So that appears to be the only threatened species in this area which although there was just one gave rise to the agreement of the area to be avoided.

14588. So this question might better go towards the Government of Canada, but some state authorities and the national authorities south of us have taken great pains to clarify where tankers ought not to go, while at the same time we have a host of conservancies in the confined channel assessment area where we have many of them. How does Enbridge react to this?

14589. **MR. PAUL ANDERSON:** Well I'll begin and my colleagues can certainly join in as we go.

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14590. I'm not sure about your assertion that there may not be other species -- sensitive species in the area. There are -- as you can see, there are a lot of species that are listed -- or sorry, their numbers are listed there, so we're not sure if there is listed species or species of concern generally -- generally speaking.

14591. But one of the main reasons that we believe that this is in places around the nature of the navigation through this area as well. So if you go to the first page, they're difficult to see, but the water depths are listed in behind the colourations within this map, and you can see -- and I'm going to have to assume that these are in feet.

14592. **MR. SHANNON:** Fathoms.

14593. **MR. PAUL ANDERSON:** They're in fathoms, okay.

14594. **MR. SHANNON:** Seventy-six (76) fathoms being typical -- sorry, where am I seeing it?

14595. **THE CHAIRPERSON:** Let's just let the witnesses answer the question.

14596. **MR. SHANNON:** Okay.

14597. **THE CHAIRPERSON:** Thank you.

--- (A short pause/Courte pause)

14598. **MR. PAUL ANDERSON:** So my point was around water depths, and one of the main concerns, as you see on the second page, is why it is very important for vessels to remain offshore in this area, and one of their main concerns is around grounding. So with our channel and our navigation the water depths are very deep so grounding through the channel is not one of our -- one of the concerns that we have from that perspective.

14599. We have a lot of mitigation in place. We've talked and will talk quite a bit in the Shipping and Navigation Panel about the mitigation around escort tugs and tethered tugs to ensure groundings and collision with the shorelines do not occur. So that's some of the differences with respect to our project then this area that you're showing us here in this aid to cross.

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14600. A lot of discussion around navigation through areas of difficult navigation will be addressed in the Shipping and Navigation Panel which will be up later on in these proceedings.

14601. Does anyone else have anything they'd like to add to my comments here?

14602. **THE CHAIRPERSON:** Mr. Shannon, when the panel finishes answering the question that you've posed at this point perhaps that would be a good time to take a break.

14603. **MR. SHANNON:** That would be great.

14604. **THE CHAIRPERSON:** Did the witness panel have anything else to add?

14605. **MR. PAUL ANDERSON:** I think that covers our answer.

14606. Thank you.

14607. **THE CHAIRPERSON:** Thank you.

14608. Let's take our morning break now and come back at 10:30, please.

--- Upon recessing at 10:18 a.m./L'audience est suspendue à 10h18

--- Upon resuming at 10:32 a.m./L'audience est reprise à 10h32

14609. **THE CHAIRPERSON:** I believe we're ready to get underway again.

14610. Ms. Gilbert, could we get an AQ number please for Douglas Channel Watch?

14611. **THE REGULATORY OFFICER:** AQ58.

**--- AID TO CROSS-EXAMINATION NO./AIDE AU CONTRE-
INTERROGATOIRE No.: AQ58**

Douglas Channel Watch - Aids to cross-examination

14612. **THE CHAIRPERSON:** Thank you.

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14613. And the Panel has decided we'll sit 'til 12:30 today instead of noon just to continue to be able to move forward this morning.

14614. And so with that, Mr. Shannon, please finish the questions for Douglas Channel Watch.

JOHN CARRUTHERS: Resumed

ANDREA AHRENS: Resumed

DAVID FISSEL: Resumed

JEFFREY GREEN: Resumed

DAVID HANNAY: Resumed

JOHN THOMPSON: Resumed

TOM WATSON: Resumed

PAUL ANDERSON: Resumed

PETER REID: Resumed

MALCOLM STEPHENSON: Resumed

**--- EXAMINATION BY/INTERROGATOIRE PAR MR. SHANNON:
(Continued/Suite)**

14615. **MR. SHANNON:** Okay. Thank you.

14616. I presume AQ58 includes the two aids to cross?

14617. **THE CHAIRPERSON:** It will include the whole package that you gave to Ms. Gilbert.

14618. **MR. SHANNON:** Okay. Thanks.

14619. Just before we leave conservancies, I had one final point I wanted to ask. Could we get back to my first aid to cross -- Kitkatla? Go to the second page please. Thank you.

14620. What's highlighted here is some considerations and worries why the conservancy was devised. It protects a wide-range of marine and terrestrial resources that have a long history of use by First Nations peoples. Marine resources include seaweed, cockle, salmon and herring, roe on kelp harvesting, high value water habit -- and the point I really wanted to hone in on was a grey whale rubbing beach.

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14621. So this area is a particularly sensitive region, I would imagine. And I think grey whales are not all that common in the north, so this area would -- because it's a critically endangered species, might indicate a particular concern with many of the conservancies.

14622. Can you understand why the First Nations, in particular, might be concerned with the tanker traffic in the confined channel?

14623. **MR. PAUL ANDERSON:** Yes, we certainly understand and we feel the same way about the sensitivities of the areas within the marine environment. And that's why we're taking such measures to -- with respect to the mitigation we're proposing to ensure that they're -- that these areas are protected.

14624. **MR. JEFFREY GREEN:** I'll just add that this protected area, as well as 16 other protected areas, were listed in the environmental assessment in B12-40. There's a series of tables -- we looked at some this morning from page 99 to 107. The language in that table reflects very similarly to what's seen there.

14625. And the -- these are protected areas; they're currently exposed to vessel traffic like Northern Gateway. We recognize that. And again, we're the only project that's undertaking any sort of mitigation to reduce effects like vessel wake and underwater noise.

14626. So if -- you know, if other vessel operators were to adopt exactly the same measures as Northern Gateway, many of these effects of concern would be reduced.

14627. **MR. SHANNON:** Thank you.

14628. **MS. ANDREA AHRENS:** Also, if I could just add a moment directly to reflect your concern over grey whales. We have had conversations with marine mammal experts at DFO concerning grey whales transiting during their migration to Hecate Strait. And as such Northern Gateway has committed to expanding the vessel strike analysis to do a sub-analysis explicitly looking at grey whales and potential effects. So grey whales are certainly being considered in the mitigation planning.

14629. **MR. SHANNON:** Thank you. I'll get off conservancies now, we've hammered that one.