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## **Order of Appearances**

### **Government of Canada Panel 1**

Dr. Caroline Caza	Dr. John Cassidy	Dr. Barry Smith
Dr. Andrée Blais-Stevens	Ms. Coral DeShield	Mr. Bradley Fanos
Ms. Ailish Murphy	Mr. Michael Engelsjord	Mr. Paul Gregoire
Ms. Tracey Sandgathe	Mr. André Breault	Mr. John Clarke
Ms. Lucy Reiss	Mr. Alasdair Beattie	Ms. Manon Lalonde
Dr. Judith Beck	Ms. Laura Maclean	Dr. Bernard Vigneault
Dr. Douglas Maynard	Ms. June Rifkin	Dr. Elizabeth Campbell
Dr. Donna Kirkwood	Mr. Steven Taylor	

Examination by Ms. Jennifer Griffith for the Haisla Nation (continued) 3692

Ms. Catherine Nielsen      Mr. Steven Virc

Introduction of two new Government of Canada panel members by Ms. Dayna Anderson 3820

Examination by Ms. Griffith (continued) 3848

Examination by Mr. McCormick for the Haisla Nation 4072

### **ForestEthics Advocacy, Living Oceans Society and Raincoast Conservation Foundation - “The Coalition” - Panel 2**

Mr. Nathan Lemphers      Mr. Anthony Swift      Ms. Nikki Skuce

Introduction of the Coalition Panel 2 by Mr. Barry Robinson 4282

Examination by Mr. Keith Bergner for the Cdn Assn Petroleum Producers 4477

Examination by Ms. Laura Estep for Northern Gateway Pipelines 4707

### **Examination by Ms. Jennifer Griffith for the Haisla Nation (continued) 3692**

Ms. Griffith’s first question was, “On Friday, we had discussed that DFO would assess watercourse crossings and authorizations for proposed HADDs on a case-by-case basis. ... How long does that take and how much work does that entail for each watercourse crossing?” Mr. Engelsjord of DFO replied that it is quite variable and depends on the circumstances.

#### **Reorganization at DFO will eliminate staff in Kitimat**

Ms. Griffith asked about the elimination of several regional positions in DFO including the region that includes the Kitimat River system. Mr. Shaw for the Government of Canada objected, but the Chairperson said the Panel was interested and allowed the question. Mr. Fanos of DFO replied that Kitimat “may not have an identified person in that area. However the department still has resources to do these activities and will be organized in a manner to make sure that we can conduct the activities, particularly on the highest risk projects that are coming out of the department.” 3695

#### **Power line crossings and operational statements**

Ms. Griffith noted that the Proponent originally proposed to complete 158 power line crossings in accordance with DFO’s operational statement for overhead line construction but has subsequently indicated that the lines will exceed the threshold for an operational statement. She asked whether this will create a significant additional workload for DFO. Mr. Engelsjord said, “operational statements define low risk activities that won’t require review by DFO and don’t require an authorization. Just because an operational statement can’t be followed doesn’t necessarily mean that the project won’t be low risk. There could be specific mitigation measures applied to keep it low risk to avoid HADDs. ... The effort that will be involved for DFO will depend on what’s actually proposed.” 3708

### **Baseline data gathering**

Section 32 of the Fisheries Act prohibits killing fish, Section 35 prohibits the harmful alteration or disruption, or the destruction, of fish habitat, and Section 36 prohibits the deposit of substances that are deleterious to fish. Ms. Griffith asked about the necessity “to have an understanding of the state of fish or fish habitat prior to the potential offence.” Mr. Engelsjord said, “That’s my understanding.” Ms. MacLean of Environment Canada (EC) said baseline data would not be necessary to establish whether there had been a deposit of a deleterious substance. There is additional discussion about determining if a substance is deleterious. 3718

Ms. Griffith refers to [Exhibit D80-64-3](#), which is Haisla Nation evidence, and is “the framework for aquatic baseline monitoring oil pipeline development in the Kitimat River Valley, by Dr. Peter Hodson. [It] identified important biological data that a baseline study in the Kitimat River and its major tributaries should include.” She asked if DFO or Environment Canada would be reviewing and providing any comments to the Joint Review Panel on the report. Mr. Engelsjord said that DFO will not. Ms. MacLean said EC would if the JRP asked them to. Mr. Shaw objected to questions about other parties evidence, and the Chairperson generally supported his objection. 3746

Ms. Griffith’s next questions began as a somewhat detailed examination of what might be assessed in compiling baseline information until the Chairperson constrained her to asking questions on evidence which has been filed. 3777

A similar outcome followed Ms. Griffith’s subsequent attempts to ask questions relating to streamflows. 3849

### **Introduction and Examination of two new Government of Canada panel members by Ms. Dayna Anderson 3820**

Ms. Anderson introduced new panel members Ms. Catherine Nielsen and Mr. Steven Virc. Ms. Nielsen is an expert in boreal caribou with Environment Canada. Her resume is in [Exhibit E9-53-2](#). Mr. Virc is an expert in the area of Federal Recovery Strategy for the woodland caribou boreal population with Canadian Wildlife Services (CWS). His resume is also in [Exhibit E9-53-2](#).

### **Examination by Ms. Griffith (continued) 3848**

Ms. Griffith introduced some questions about streamflow by first asking if the Government panel had reviewed Northern Gateway’s Ecological and Human Health Risk Assessment (EHHRA). None of the panel members had. 3849

With respect to a recommendation by Environment Canada that “the proponent provide final estimates of design flood values to EC in order to review design flood methodology and values.”, Ms. Griffith asked, “So once EC has reviewed design flood methodology and values, what will EC do with that review or how will it act on that review?” Ms.

Lalonde of EC said that “[It] would depend on recommendations that we get from the Panel.” 3867

What role does Environment Canada anticipate playing with respect to watercourse crossings?” Dr. Caza of EC said, “EC does not have a specific regulatory role with respect to water crossings, with the exception [of] our role in the enforcement of section 36(3) of the Fisheries Act.  
3881

### **Diluted bitumen**

Ms. Griffith said that Northern Gateway has stated that ... it agrees to participate in a collaborative government industry academia research effort into the environmental behaviour and fate models for diluted bitumen.” EC stated that it is the Proponent’s responsibility to provide information on the hydrocarbons to be shipped. Ms. Griffith asked whether EC has “expressly agreed with Northern Gateway that this additional spill modelling is not required to assess the project at the Joint Review Panel stage.” Dr. Caza said that “EC has not indicated whether it agrees specifically or disagrees with ... Northern Gateway’s characterization of the timing for this information.”. 3898

With respect to the establishing of a Scientific Advisory Committee and research on diluted bitumen, Ms. Griffith asked if EC had the capacity to participate. Dr. Caza replied that EC had recommended such a committee and would participate. “I cannot answer your question about capacity.” 3918

### **Federal departments’ role in risk assessment and spill response**

Ms. Griffith said that “a number of federal departments stated that they do not play a role in risk assessment for the project.” Referring to [Exhibit E9-21-12](#), she mentioned NRCan, DFO, EC, and noted that Transport Canada has a role in the marine environment. She asked if EC has a mandate related to spills from the pipeline. Dr. Caza said that EC has expertise in a number of areas, but “it is our understanding that that responsibility lies with the NEB for the terrestrial component of the project. So we did not assess that aspect of the project.” 3941

Ms. Griffith’s next questions continued to explore the nature of EC’s involvement in a spill, particularly in a freshwater environment. Dr. Caza said it would be in providing expertise, not execution and not as the lead agency. Some questions were referred to the Marine Panel in Prince Rupert where EC will represent its role with respect to a marine spill.

Ms. Griffith asked, “Why does Environment Canada differentiate between spills to the marine environment and spills from a pipeline into the freshwater environment?” Dr. Caza said that EC doesn’t make that distinction, but because when EC reviewed the Proponent’s information, prior to December 2011, the EHHRA had not been filed for review, “plus recognition that the marine spills component of the project was an area of particular concern for this project Environment Canada focused its review, at that time, on the marine spill information.” 3995

### **Changes to Section 35 of the Fisheries Act**

Ms. Griffith spoke about the second part of the Section 35 amendments to the Fisheries Act enacted in Bill C-38, and the introduction of the term “serious harm” which means, “death of fish or any permanent alteration to or destruction of fish habitat.” Mr Fanos said that the serious harm provision would require updating of the policy for DFO’s management of fish habitat. 4031

With respect to a fish hatchery which DFO operates on the Kitimat River, Ms. Griffith asked how the hatchery would operate in the event of a spill. Canada was given an undertaking to report on how long the hatchery could operate without a river water supply from Kitimat River. 4038

### **Valve placements to limit spill volumes**

Noting that Northern Gateway’s valve placement strategy is intended to reduce volumes of spills from the pipeline to 2,000 cubic metres, Ms. Griffith asked if, “in light of the Pine River spill in which less than 500 m<sup>3</sup> of oil caused acute lethality, do DFO or Environment Canada endorse” the NGP design? Ms. MacLean said that EC did not file evidence on this question and would not have since “issues relating to pipeline design are a matter for the NEB.” Mr. Engelsjord said that DFO had “made a recommendation to the Proponent that they consider the use of shutoff valves to reduce the risks of spills as much as possible. DFO doesn’t have a particular threshold and we certainly don’t have the expertise.” 4059

Ms. Griffith asked EC if “a release of 2,000 m<sup>3</sup> of oil would be ... deleterious to fish? Ms. MacLean replied, “In a general sense, it would be hard to disagree that a spill of that volume into fish bearing waters could conceivably be deleterious, yes.” 4068

### **Examination by Mr. McCormick for the Haisla Nation 4072**

#### **Forest fires**

Starting with [Exhibit B41-4](#), Mr. McCormick quoted, “Direct exposure of infrastructure to high-intensity wildfire is likely to be an on-going issue during and after the construction of the project. Many fires burn under high to extreme conditions during which direct fire suppression is impossible. [Historically], several dozen fires have intersected the proposed pipeline route.” NRCan had asked Northern Gateway to explain how it has considered the possibility of a high-intensity fires in its operational planning and procedures. NGP had replied that “Forest fires do not present a threat to buried pipelines.” 4075

Mr. McCormick put questions about this to Mr. Taylor of NRCan. Mr. Taylor said “heat flux into soil is fairly minimal,” that fires travel underground only in organic soils such as peat lands, and the travel rate is “very, very slow” in the order of “centimetres per day.”

Mr. McCormick asked if heat can impact above-ground, exposed portions of a pipeline. Mr. Taylor said that is possible, depends on distance from the fire front. He said the greatest heat intensity “is resident at any particular point for a period of time of perhaps

Minutes.” NRCan will have will have someone on its next panel who can speak to pipeline integrity. 4092

Mr. Taylor agreed that a forest fire could impact delivery of electricity to the pipeline, access by land or air. When asked if a forest fire might ignite hydrocarbons that had been released during a spill, he said that without knowing about the flammability of the material, he could not comment on that. 4108

According to Mr. Taylor, NGP’s position is that “the risk of forest fires would be taken into account in the design and operational plans.” Mr. McCormick asked, “Would NRCan anticipate that the pipeline will be exposed to a forest fire at some point over the life of the project?” Mr. Taylor replied, “There is a good likelihood that the right-of-way would be exposed, that a fire might intersect the right-of-way.” 4116

### **Grizzly bears**

Mr. McCormick asked a set of questions about grizzly bears, noting that they have been assessed under COSEWIC in May 2012 as of special concern. He noted that Northern Gateway is using linear feature density as a surrogate for grizzly bear mortality, and asked whether EC had advised that this would be appropriate means of assessing effects on grizzly bears. Ms. Murphy of CWS said EC has provided no advice to Northern Gateway, “It’s not species for which we hold any expertise. The expertise for that species would lie within the Province.” 4133

### **Acid rock drainage**

Mr. McCormick asked about acid rock drainage (ARD) and NRCan’s role with respect to providing expertise on the subject. Mr. Clarke for NRCan said it will provide expertise but has no regulatory role. Ms. MacLean said “in our evidence ... we’ve said acid rock drainage and metal leaching potential is the key water quality issue,” and ED too will have no regulatory role. Mr. McCormick asked then who will regulate ARD for the project? Ms. MacLean replied, “The Proponent is not proposing a discharge so there is no permit that would be contemplated.” 4184

## **Introduction and Examination of the Coalition Panel 2 by Mr. Barry Robinson** 4282

(ForestEthics Advocacy, Living Oceans Society and Raincoast Conservation Foundation)

Mr. Robinson introduced Mr. Nathan Lemphers, Mr. Anthony Swift, and Ms. Nikki Skuce. Ms. Skuce was in Prince George, the others called in remotely.

Mr. Lemphers is a senior policy analyst with the Pembina Institute. His evidence is Part 4 of the “Written Evidence of ForestEthics” [[Exhibit D66-3-2](#)], “Pipelines and Salmon in Northern British” [[Exhibit D66-3-6](#)], “Pipeline and Tanker Trouble” [[Exhibit D66-3-10](#)]. His resume is [Exhibit D66-13-3](#).

Mr. Swift is a policy analyst with the Natural Resources Defence Council. He co-authored Part 4 of [Exhibit D66-3-2](#) and [Exhibit D66-3-10](#) with Mr. Lemphers, and Tar Sands Pipeline Safety Risks [\[Exhibit D66-3-11\]](#). His resume is [Exhibit D66-18-2](#).

Ms. Skuce is a senior energy campaigner with ForestEthics Advocacy. Her evidence is Part 5 of the “Written Evidence of ForestEthics” [\[Exhibit D66-3-2\]](#), “Enbridge Infractions Table” [\[Exhibit D66-3-12\]](#) and Exhibits D66-4-1 to D66-4-42, and Exhibits D66-3-14 to D66-3-16. Her resume is [Exhibit D66-18-6](#).

On September 25, [Volume 81](#), Mr. Lemphers was “qualified to give evidence, but not to provide opinion evidence,” following arguments by Northern Gateway Pipelines and other parties. Today, Ms. Estep for NGP and Mr. Bergner for CAPP argued against qualification for Mr. Swift. The Chairperson said, “we will proceed ... without having him qualified as an expert and he can provide evidence and respond to questions but not provide opinion.” 4444

The transcript does not indicate that Mr. Robinson asked to have Ms. Skuce qualified.

### **Examination by Mr. Keith Bergner for the Canadian Association of Petroleum Producers 4477**

Mr. Bergner asked who prepared which parts of Part 4 of the Written Evidence of ForestEthics” [\[Exhibit D66-3-2\]](#) and questioned Mr. Lemphers’ experience as an expert witness which the Chairperson stops as not relevant. 4477

He quoted the statement that “the transportation of diluted bitumen carries with it additional safety considerations that regulators and pipeline operators need to adequately consider,” and asked if Mr. Lemphers understands that diluted bitumen has been transported in pipelines since the 1970s. Mr. Lemphers said that “the volume has changed significantly over that time.” Mr. Bergner said he is trying to determine whether the quoted statement implies that the regulator does not adequately make those considerations, then leaves the question when Mr. Robinson objects to it. 4547

### **Correlation between temperature and corrosion**

Mr. Bergner quoted a statement from the evidence that the friction created by flowing dilbit heats the mixture, thins the dilbit, and increases its speed. The rate at which acids and other chemicals corrode the pipeline increases with the rising temperature. He went to the source which was cited and determined that it concluded that operating temperature is not statistically related to internal corrosion. Mr. Swift said that was because that study was looking at only 496 miles of pipeline over three years and “That study also mentioned that the sample set was too small to make broad extrapolations.” However, it contained a reference to a 1993 study of 7,800 miles of pipeline miles over 10 years where there was a direct correlation between increases of temperature and pipeline failures due to external corrosion. Mr. Bergner said, “Which was not my question.” 4615

## **NRCan press release**

As an aid to questioning (AQ), Mr. Bergner displayed a press release from Natural Resources Canada dated November 14, 2012 which states, “bitumen-derived crude oil is no more corrosive in transmission pipelines than other crudes.” Mr. Swift stated that study NRCan is referring to does not establish NRCan’s conclusion. 4688

## **Examination by Ms. Laura Estep for Northern Gateway Pipelines 4707**

### **Questions to Ms. Skuce about ForestEthics Advocacy**

Ms. Estep’s first questions are about the formation of ForestEthics Advocacy on April 17, 2012 and the change in name of the intervenor from ForestEthics,. Ms. Skuce explained the main reason for that was to remove the risk that ForestEthics would lose its charitable status. She said that ForestEthics Advocacy spends 100% of its time on environmental and political advocacy. Ms. Estep asked about the difference and asked a number of questions which tried to characterise ForestEthics Advocacy and its work. 4730

Ms. Estep asked if Ms. Skuce considers herself to be a lobbyist. Ms. Skuce for ForestEthics Advocacy does is “lobbying.” Ms. Skuce said,” No. ... Enbridge has met 145 times since July of 2008 with federal government officials, whereas we have been unable in the couple of times that we've been able to make a trip to Ottawa to be able to meet with [many] Conservative Party members and other political representatives.” 4800

Ms. Estep: “I understand from some public statements you've made in the media that it's your position that changes to the Fisheries Act are being made to make it easier to get Northern Gateway approved.”

Ms. Skuce: “A number of the changes that happened in Bill C-38 were in efforts to try to make the building of pipelines such as Enbridge Northern Gateway easier.”

Ms. Estep: Do you have any actual evidence of that or is that speculation?”

Ms. Skuce: “I definitely don't have any direct evidence because I definitely don't have the ear of the Prime Minister or Mr. Oliver.” 4810

Ms. Estep examined the outreach activities of ForestEthics Advocacy, including helping people to sign up to participate in the Joint Panel Review of Northern Gateway. She mentioned other groups doing similar work and asked if they share their lists. Ms. Skuce said, “No.” Ms. Estep: Do you “take credit for more than 4000 people and groups registering to speak at the oral hearings?” Ms. Skuce: “ I doubt that it's entirely due to all of our organizations, but it probably did help. ... We had over 600 people sign up through our site and over 4,000 letters submitted” 4829

Ms. Estep put up the Pipeline and Tanker Trouble report ([Exhibit D66-3-10](#)), the Tar Sands Pipeline Safety Risks report ([Exhibit D66-3-11](#)) and the Written Evidence of ForestEthics ([Exhibit D66-3-2](#)) and asked a number of questions about the provenance of each of them and Ms. Skuce’s role until Mr. Robinson objected, and the Chairperson told Ms. Estep to move to her next question. 4852

### **Questions about credentials, authorship, report release activities**

Ms. Estep asked many questions about the credentials of Mr. Swift and Mr. Lemphers, which reports or parts of reports they had authored, and the ways in which ForestEthics Advocacy had released reports which are in evidence. Eventually, Mr. Robinson objected again, and the Chairperson again directed Ms. Estep to move along. 4926

Ms. Estep noted some phrases and statements in common between the Pipeline and Tanker Trouble report ([Exhibit D66-3-10](#)) and the Tar Sands Pipeline Safety Risks report ([Exhibit D66-3-11](#)). The first was originally produced for an American audience with reference to US pipelines. The second was produced with reference to the Northern Gateway project. Mr. Swift said that the information didn't change between the reports so there is no difference between the conclusion on the physical and chemical characteristics of diluted bitumen in the United States and Canada. 5046

Readers with an interest in the details of this discussion should follow it in the transcript, perhaps from paragraph. We are able only to provide a few key points here. 5046.

### **Comparison of two reports**

Ms. Estep said that a number of intervenors in this proceeding have cited the Tar Sands Pipeline Safety Risk report in their own evidence. Then she turns to a table of diluted bitumen characteristics which gives a sulphur content in dilbit of 3.3%. "What is the source for this information," she asked. Mr. Swift said it is a data sheet for Western Canadian Select and confirmed that the source was not the Northern Gateway application, where the average sulphur content is given as 2.7%. Ms. Estep had more of this: Mr. Swift's report said the pipeline temperature is 60°C, an NGP IR reply gave a highest design temperature of 50°C. 5087

The Pipeline and Tanker Trouble report says "Diluted bitumen contains organic acid concentrations 15 to 20 times higher than conventional crudes." Ms. Estep said that through the IR process that NGP had referred to four reports relating to the corrosive nature of diluted bitumen "all of which indicate that there is no evidence that diluted bitumen is more corrosive than conventional oil." Mr. Swift said, "I am not contesting that Enbridge has made that statement." 5157

### **Diluted bitumen: more corrosive or not**

Ms. Estep continued with the corrosivity of dilbit and its characteristics in comparison to conventional crude. She included an AQ of two studies which examined the question specifically and according to Ms. Estep confirmed the Alberta Innovates conclusions, and showed that "when comparing four types of dilbit with seven other types of oil that the dilbit ... was amongst the least corrosive.". The papers reporting the two studies were called, "The Comparison of Corrosivity of Crude Oils Using the Rotating Cage Method" and "Corrosion Conditions in the Path of Bitumen from Weld to Wheel." 5254

Ms. Estep read into the record a finding from the second study that, "The possibility of corrosion in oil transmission pipelines is low. This is due to the fact that the majority of corrosive and erosive materials are removed upstream of the pipelines as part of achieving transport quality specifications." 5297