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## **Order of Appearances**

### **Haisla Nation Panel 1**

Project Effects on the Haisla Nation  
Chief Councillor Ellis Ross

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Economic and Informed Decisions  
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### **Introduction by Mr. Jesse McCormick for Haisla Nation 10551**

## **Haisla Nation Panel 1: Project Effects**

[Note: The Haisla Nation presented three panels dealing with Project Effects, Environment & Toxicology, and Spill Response.]

Mr. McCormick introduced Chief Councillor Ellis Ross, who has been Chief Councillor since July 2011 and a Councillor since 2003. Evidence for which Chief Councillor Ross is responsible is [Exhibit D80-51-2](#), the Haisla response to Northern Gateway Pipelines (NGP) Information Response (IR) No. 1 and [Exhibit D80-50-2](#), the Haisla response to the Joint Review Panel (JRP) IR No. 1. Also filed as late evidence, and accepted by the JRP this morning are Exhibits [D80-92-3](#), [D80-92-4](#) and [D80-92-5](#). Chief Councillor Ross's personal affidavit is [Exhibit D80-24-02](#).

### **Opening statement by Chief Councillor Ellis Ross 10590**

Chief Councillor Ross read a short opening statement [[Exhibit D80-96-2](#)] which spoke to historical infringements of the Haisla's aboriginal rights and title, and the Haisla's determination that history will not repeat itself.

Chief Councillor Ross concluded, "If, after this review process has been completed, the Crown is still considering authorizing this project, we will expect government-to-government engagement process with both the federal government and the provincial government about the impacts of the proposed Northern Gateway project on our Territory, and on our aboriginal rights and title." 10599

"Caselaw tells us we do not have a veto over this project. But caselaw also says that unjustifiable infringements of our aboriginal rights and title cannot lawfully proceed. What happened in the last 60 years without our consent is not going to happen again."

### **Examination by Mr. Richard Neufeld for Northern Gateway Pipelines 10607**

#### **Haisla Nation has a million dollar from Canada and Northern Gateway**

Mr. Neufeld asked if the Haisla Nation was representing its own interests and is no longer represented by Coastal First Nations. Chief Councillor Ross said that is correct. 10611 Mr. Neufeld referred to funding for the Haisla participation in this proceeding, which Haisla had received in part from the Government of Canada and from NGP. He asked if the combined Canada and NGP contribution be in the range of a million dollars. Chief Councillor Ross said it was in that range, "but it's the deficit that we're incurring ... that's got us most worried." 10616

#### **Risk and perception of risk**

Mr. Neufeld asked about the Haisla's interest in three LNG projects: Kitimat LNG (Chevron and Apache), BC LNG (a floating liquefaction factory), and the project proposed by Shell. Mr. McCormick objected, the Chairperson allowed Mr. Neufeld to continue with his questions. Mr. Neufeld asked, "You indicated that you ... have really focused on education and getting facts out into the community around the issue of risks

of natural gas. Can you just expand on that?” Chief Councillor Ross replied, “We did that through flyers, ... public meetings. And we also did it at the council table where we actually viewed actual video of natural gas characteristic and properties.” 10625

Mr. Neufeld: “And that addressed all of the safety issues that might -- people might have with respect to those products?” Chief Councillor Ross: “No, it just basically busted the myths around natural gas volatility and flammability.” 10663

### **Collaboration between project developers and the Haisla**

Mr. Neufeld asked if “there needs to be better collaboration amongst project developers, your community and the District of Kitimat regarding environmental management and assessment of future projects.” Chief Councillor Ross replied, “I could agree with that but only in relation to the pollution and degradation that the District of Kitimat puts into our region. ... And that goes as well for the project developers.” Mr. Neufeld: “What sort of common issues do you see that need to be worked as between project developers?” “Environmental or social effects of the pace of development in the area would be an example.” Chief Councillor Ross said, “Environmental? Basically we covered that off through funding from the project developers to actually fund our environmental department.” 10673

Mr. Neufeld asked, “Would it be helpful for project developers, your community and the District of Kitimat to have a process to share information?” Chief Councillor Ross said, “I don’t understand the reference to District of Kitimat. Why are they being lumped in here? We never said that we have to collaborate with the District of Kitimat. In fact, they’re part of the problem. In fact, their diking of the river and their sewage being dumped into the river is something we’ve been trying to address there. I’d lump them in with all of the industrial development that’s happened at our region for the six years as well. So I don’t understand the connection with project development and collaboration.” Mr. Neufeld: “Sorry, let’s leave them out of it then. I’ve obviously hit a sore point with the District of Kitimat.” 10684

Mr. Neufeld asked, “Does the Haisla have any difficulty or do you have any objection to discussions taking place between Northern Gateway and other project developers regarding issues -- common issues such as infrastructure requirement and management of environmental and socio-economic effects?” Chief Councillor Ross said, “We’d question that initiative. The other project developers are a lot further along than Northern Gateway. ... They’ve actually done the Aboriginal engagement to a level where the Haisla have actually appreciated, and Northern Gateway is not even out of this Joint Review Panel process yet.” Mr. Neufeld: “So you would object to Northern Gateway discussing environmental management issues with those other developers?” Chief Councillor Ross: “Yes.” 10693

Mr. Neufeld asked, “Would you express that objection to those other developers, to tell them not to talk to Northern Gateway?” Chief Councillor Ross said, “I’m not sure. That’s the first time that’s ever been asked of me.” He said he has not expressed that objection and doesn’t think the Haisla Nation Council has either. 10698

### **Programs that NGP has put forward for consideration**

Mr. Neufeld asked about NGP's proposed Fisheries Liaison Committee, whether the Haisla believe it a worthwhile program, and whether the other project developers have proposed anything similar. Chief Councillor Ross said the value of the Fisheries Liaison Committee would depend on whether it had authority. As for the other project developers, "their environmental technical people have a very good relationship with our environmental technical people and we really push for proactive work before an issue comes up. And right now we're okay with them actually responding to our request for the environmental work that has to be done in preparation for their projects." 10703

Mr. Neufeld said, "To the extent that there are more than one pipeline projects proposed for the Kitimat River Valley in the same area and more than one marine terminal project proposed, ... would [it] make sense for industry and your community to collaborate on these environmental effects monitoring plans to the extent that we can?" Chief Councillor Ross agreed "for the projects the Haisla approve." 10724

### **Haisla have earmarked NGP Kitimat Terminal site for LNG**

Mr. Neufeld put up [Exhibit D80-51-2](#), the Haisla response to NGP IR 1, and turned to the Haisla's comments about the construction effects of the marine terminal [Adobe 10] and specifically that the Haisla had identified the same site as an LNG terminal. Mr. Neufeld pointed out that developing the site for any kind of terminal will have some environmental impacts, and Chief Councillor Ross agreed. 10727

Mr. Neufeld asked, "You view LNG liquefaction facilities as being more consistent with environmental stewardship and am I correct in my understanding that the Coastal First Nations Great Bear Initiative is less enthusiastic about the environmental effects of LNG development?" Chief Councillor Ross said he can't speak for the Coastal First Nations. 10741

### **NGP asked Haisla what to tell other First Nations about risks**

Mr. Neufeld noted that "First Nations in the area have taken positions in opposition to LNG projects; such as the Gitxaala, the Gitga'at." "Are you aware that the Gitxaala commenced legal review of the NEB export licence for Shell last week?" Mr. McCormick objected. His objection was not acknowledged and Mr. Neufeld continued: "As a co-sponsor of the B.C. LNG project, Chief Councillor Ross, what would you tell or what would you tell groups such as the Gitga'at or the Gitxaala regarding the risks that are associated with spills from those tankers or explosions of those tankers?" Mr. McCormick objected again: "We may be into an entirely different environmental assessment if we continue along this line." The Chairperson overruled the objection and said it would like to hear Chief Councillor Ross's answer. Chief Councillor Ross said, "We'd develop a communication plan similar to the one that we use for our own membership to dispel the myths around natural gas. [But] I wouldn't recommend the First Nations use anything that we did in respect to your project, Northern Gateway's." 10750

### **What about oil spill risk from LNG tankers**

Mr. Neufeld asked, "What about the ... oil spill risk from these [LNG] tankers?" Chief Councillor Ross insisted that Mr. Neufeld be specific about the oil he is referring to.

Chief Councillor Ross replied to Mr. Neufeld's repeated questions about the heavy fuel oil: "Does it float on water? I mean, there's specific issues that we address when we're looking at different products in terms of risk. And from what we can understand, a refined product, the first thing we look at is, okay, whether or not it floats. So if we're going to talk about risk, then we've got to talk about the different products we're talking about and the different characteristics and properties." 10784

Mr. Neufeld said, "The evidence is that the specific gravity of intermediate fuel oil is heavier than the specific gravity of diluted bitumen." Chief Councillor Ross: "Does it float or not on the water?" This discussion continues with some agreement that when communicating with communities that it is important to share accurate information. 10804

### **An appropriate time to start**

Mr. Neufeld referred to some operational measures that the Haisla said it would require of NGP relating to a "spill response organization based in Kitimat, with the full participation of the Haisla Nation" [[Exhibit D80-51-2](#), Adobe 19, No. 3], Mr. Neufeld asked what that would look like. Chief Councillor Ross explained that it would include Haisla "at the table, if not actually leading, directing this organization." Mr. Neufeld asked, and Chief Councillor Ross agreed, that the requirement extended to the development of various response plans. Mr. Neufeld, "When would you see that starting? ... Following approval of the project ... or following completion of this hearing?" Chief Councillor Ross said, "I'm not too keen on that word approval." Mr. Neufeld: "We are." Chief Councillor Ross said, with respect to timing, "I'd say it's upon community approval, member approval." 10827

Dealing with the Haisla requirement that NGP carry sufficient insurance [Adobe 19, No.4] Mr. Neufeld noted the concern with losses of a cultural nature which are difficult to quantify. Chief Councillor Ross said it is very difficult, but possible, to quantify these, but "I don't think we're ever going to get an answer that pleases everybody." 10870

Mr. Neufeld asked about harvesting studies. Chief Councillor Ross said the Haisla would participate in these, "if your project got to a point where it got approved." 10892

### **A better project because of Haisla input**

Mr. Neufeld asked, whether or not the Haisla support the NGP project, will it be a better project because of the input from the Haisla. Chief Councillor Ross said he couldn't answer that question. Mr. Neufeld followed that question with a similar one: the Haisla have said that they expect much more than "token economic opportunities." Would it be a better project considering that it would have better economic opportunities for the Haisla? Chief Councillor Ross said he can't speak to the economics. He hasn't even looked at them. They look at the economic packages in the final stages. 10905

### **Re-examination by Mr. McCormick 10937**

Mr. McCormick hoped to clear up a possible misunderstanding from the foregoing questioning. "Mr. Neufeld asked you a question around timing of oil spill response planning and Haisla Nation participation in oil spill response planning. ... When you

responded that this could not happen until after the project was approved, you didn't mean that Northern Gateway itself should not be engaging in detailed planning at this point, did you?" Chief Councillor Ross: "No, no." 10937

## **Introduction by Mr. Jesse McCormick for Haisla Nation** 10968

### **Haisla Nation Panel 2: Environment and Toxicology**

Mr. McCormick introduced Dr. Peter Hodson and Dr. Tracy Collier. Dr. Hodson's personal direct evidence is [Exhibit D80-93-5](#) and his CV is [Exhibit D80-91-3](#). Dr. Collier's personal direct evidence is [Exhibit D80-93-6](#) and his CV is [Exhibit D80-91-2](#). An errata documents for both witnesses is [Exhibit D80-93-2](#).

## **Examination by Mr. Richard Neufeld for Northern Gateway Pipelines** 11020

Mr. Neufeld identified the evidence for which the witnesses are responsible. Dr. Hodson and Dr. Collier co-authored the TDR (technical data report) on toxicology of oil to fish [[Exhibit 80-27-05](#)]. Dr. Hodson and others authored "A Framework for Aquatic Baseline Monitoring" [[Exhibit D80-64-3](#)], and "Review of Technical Data Report, Ecological and Human Health Risk Assessment for Pipeline Spills" [[Exhibit D80-83-3](#)]. 11020

Mr. Neufeld focussed on Dr. Hodson's "Review of Technical Data Report, Ecological and Human Health Risk Assessment for Pipeline Spills" [[Exhibit D80-83-3](#)] which is a review of a number of the volumes of the Ecological and Human Health Risk Assessment (EHHRA). At Adobe 4, the authors state that time constraints limited the analysis to "only a subset of the assumptions, methods and conclusions of the ecological risk assessment relevant to the Kitimat River." Mr. Neufeld asked how long they had to prepare the report. Dr. Hodson said "two or three months," as part of a longer explanation about the limitation on their ability to provide a critique of the complete EHHRA, which, Mr. Neufeld noted, is on the order of 10,000 pages of material. 11033

### **Critique didn't contain compliments of NGP's work**

Mr. Neufeld asked if the assignment included identifying any positive aspects of the report. Dr. Hodson said, "There was no explicit request that we do so." He mentioned use of the SIMAP model because it is a "world-class model." Mr. Neufeld asked: "I noted that one compliment, were there any others in the report that I missed? ... Would you describe your critique as a one-sided document?" Dr. Hodson: "I have not surveyed it to look for compliments. ... It's an analytical document." 11051

After criticizing the report for containing no references, Mr. Neufeld noticed a few pages of them. Then he criticized them for not referring to past environmental assessments. Then he criticized them for not citing specific sources. He asked whether Dr. Hodson's report "would qualify as an ecological risk assessment in its own right." Dr. Hodson replied, "No, we were not doing an ecological risk assessment. We were commenting on the work presented." 11059



### **SIMAP model not appropriate for issues related to rivers**

Mr. Neufeld said, “You don’t believe that that [SIMAP] model can be adapted for river environments?” Dr. Hodson replied, “No,” and explained that they had created a table “which identified some of the assumptions that were behind this model as published by the author of the model. And the assumptions seemed to rule out many of the issues that are related to rivers. ... It was the right model for some circumstances, but it appears from this analysis that this is not one of those circumstances.

Mr. Neufeld pointed out that Dr. Matthew Horn who was associated with the SIMAP work for NGP, had been a witness in these hearings and had spoken about the applicability of it. Dr. Hodson explained that the rivers in Dr. Horn’s examples were very large rivers, and the estuaries for these are close to the sea. “They’re not in a structural sense like the fast flowing rivers on the west coast.” There was also no explanation of the criteria for applicability or peer-reviewed validation of SIMAP in an NGP context. 11091

Mr. Neufeld quoted from Dr. Hodson’s report that “Models of toxicity developed for conventional oils may not apply to this ERA (environmental risk assessment).” [Adobe 13] This discussion goes into complex aspects of organic chemistry, possible differences between diluted bitumen and synthetic bitumen, and interested readers should read it directly, from paragraph 11117.

Dr. Hodson said “We don’t have any data on toxicity of diluted bitumen or of the synthetic crude. I have not been able to find any studies that have looked at the chronic toxicity of these materials.” 11135

### **Toxicity is a function of total PAH in oil**

Mr. Neufeld asked Dr. Hodson to explain this quote from the TDR, “Ultimately, it’s the concentration of TPAH (total polycyclic aromatic hydrocarbons) and water that determines toxicity, and existing data do not demonstrate wide differences among oil in the toxicity of their PAH.” [[Exhibit 80-27-05](#), Adobe 63] Dr. Hodson replied, “When you look at the toxicity of whole oils, you can usually rank them by their concentration of total PAH.” 11137

Dr. Hodson continued, “The heavy oils are at one end of the spectrum in terms of their unique characteristics because they are so highly weathered naturally. [Bitumen] was originally equivalent to conventional oil ... geological processes ... weathered it and a lot of the low molecular weight material disappeared.” 11143

### **Oil remains toxic as long as it is soluble**

Mr. Neufeld: “As the number of rings increase, ... its solubility decreases; right?” Dr. Hodson agreed, but said that these materials continue to be bioavailable as long as they are soluble. “If you can actually measure them in solution, you find that within the limits of their solubility, they are still taken up [in tissue] and they’re still toxic.” 11145

Dr. Hodson discussed testing of molecular size and the ability of the molecule to cross the biological membrane. He called this the “octanol-water partition coefficient”. In the



De Toro studies in 2000, the cut off was around 5.3 and that has since been raised to “the mid-sixes, 6.3, 6.4.” 11150

Mr. Neufeld put up Table 5-4 “Comparison of PAH” in various hydrocarbons, [[Exhibit B80-2](#), Adobe 75], “so we can dumb this down.” He asked Dr. Hodson to confirm that “the PAHs are markedly lower in diluted bitumen as opposed to Alaska Slope crude.” Dr. Hodson agreed, but said, “We have no knowledge of what compounds are included in each one of those categories, nor what their toxicity is, nor what their contribution to the overall impacts of those oils.” 11172

Mr. Neufeld turned to [[Exhibit D80-83-3](#), Adobe 12] and noted a statement about the similarity between PAH in weathered crude oil and PAH in bitumen and which says, “the toxicity of diluted bitumen could be equivalent to or greater than that of crude oil, depending on the mix of residual PAH.” Mr. Neufeld’s question about numbers of benzene rings provoked the comment from Dr. Hodson about “a rather silly debate ... Is weathered oil more toxic or less toxic?” 11219

“Each side looks at one answer only and there really are two answers. The first is that weathering reduces the overall amount ... of toxic chemicals that are present. So there’s no question that the overall threat decreases, particularly for acute toxicity. But the residual material ... is much more concentrated than the parent material and, therefore, if you take a unit mass, a kilogram of each, the residual weathered material is clearly more toxic. Ultimately, even that material will become non-toxic because ultimately it does weather but it takes years as opposed to months.” 11224

Discussion continued about these and related questions, in enough detail that it should be read in the transcript. 11227

To a question from Mr. Neufeld about whether more research needs to be done before any conclusions can be drawn related to risks of diluted bitumen, Dr. Hodson replied that is not the case, that the EHHRA has drawn conclusions that under some circumstances “this material” will cause acute lethality and chronic toxicity is expected. 11250

### **Criticism of spill modelling in ERA**

Dr. Hodson had criticized the Ecological Risk Assessment because it had not modeled spills “under conditions that would inhibit response operations” [Adobe 27] Mr. Neufeld asked how many scenarios should a proponent undertake. Dr. Hodson said, “There’s no magic number,” but it would require consultation with people who are knowledgeable about the area. Mr. Neufeld said one approach is “to take a conservative approach and assume that no response occurs immediately after a spill as opposed to an inhibited response?” Dr. Hodson said that was the case for the Hunter Creek scenario. 11283

### **Hyporheic flows as mechanism to entrain oil into sediments**

Dr. Hodson explained that “hyporheic flows are the flows underneath the bed sediments of a river and, in fact, can actually extend out into the land beside the river.” Dr. Hodson had been concerned that the SIMAP model did not model all the dynamics of hyporheic flows. More specifically the model had considered the effect of flows leeching

hydrocarbons from sediments, but did not consider “the other side of the story” whereby “oil droplets entrained into the water column through turbulence ... would also be entrained into the bed sediments by hyporheic flows, and then the bed sediments act like a giant filter medium.” He said that fish will choose to spawn where there are extensive hyporheic flows. 11296

Mr. Neufeld asked, “Are you familiar with the river and sediment model work that was done?” Dr. Hodson said, “Only peripherally because it was very difficult to decipher. There just wasn’t a lot of detail that was presented.” The discussion continued on the behaviour of oil in streams. Mr. Neufeld asked about the conclusion that “the overall impact of a spill on the fish community of the Kitimat River can only be guessed at.” [Exhibit 80-27-05, Adobe 67] Mr. Neufeld asked, “Would it be fair to say that that's also an accurate descriptor of your conclusion on oil spill impacts generally in the Kitimat River Valley?” Dr. Hodson replied, “It's probably a reasonable statement about any oil spill anywhere.” 11308-11348

### **Proposed monitoring program**

Mr. Neufeld turned to "A Framework for Aquatic Baseline Monitoring" [Exhibit D80-64-3, Adobe 3] Dr. Hodson said this was intended to be a framework, a list of important aspects of a monitoring program. “We weren’t specifically starting the process.” The first step is to review existing information – of which Dr. Hodson said the EHHRA is “a very good starting point.” Step 2 is conducting fieldwork. Mr. Neufeld asked how long that might take. Dr. Hodson said there is no time limit – and mentioned the long life cycles of some species, but, “that doesn’t mean that a monitoring program is kind of a license to print money for consultants for the rest of eternity.” Dr. Hodson also defended the idea of a governance board. [Adobe 5] 11349

Mr. Neufeld asked about the National Environmental Effects Monitoring Program “as a model for developing a program that could start off on a broader basis and then winnow down or narrow down to issues of particular concern.” The program started with pulp mills, then was extended to metal mines. Dr. Hodson said, “The real benefit of the ... program was to gather enough information that ... you could separate the pulp mill effect from the natural gradients in a river or lake.” 11437

### **Re-examination by Mr. McCormick 11481**

#### **When has enough information been gathered**

In his re-examination, Mr. McCormick asked, “Under the approach described in the framework for aquatic baseline monitoring, who would be the appropriate party to the make the decision of when enough information has been gathered?” Dr. Hodson replied, “I assumed that it would be the steering committee.” 11486

### **Introduction by Mr. Jesse McCormick for Haisla Nation 11511**

### **Haisla Nation Panel 3: Spill Response**

Mr. McCormick introduced Ms. Elise DeCola. Ms. DeCola's personal direct evidence is [Exhibit D80-93-3](#) and her CV is [Exhibit D80-91-4](#). An errata documents for the witness is [Exhibit D80-93-2](#).

### **Examination by Mr. Richard Neufeld for Northern Gateway Pipelines 11533**

#### **Maximum amount for a which a tanker owner can be held financially accountable**

Mr. Neufeld pointed to a statement in one of Ms. DeCola's reports, [Exhibit D80-50-8](#), Adobe15-16, about marine oil spills potentially exceeding the vessel owner insurance limits of \$1.33 Billion. He asked her where she got the information. Discussion ensued as to whether this amount covers the maximum amount for which a vessel could be held financially accountable to, with Mr. Neufeld stating that he believed there is insurance on a vessel owner, as well as national and international compensation funds. Ms. DeCola indicated that the \$1.33 Billion was additive of both the liability and the funds. 11562

Mr. Neufeld asked if Ms. DeCola viewed the amount as insufficient to which she responded, "I believe a spill could cost more than \$1.33 billion, yes". Further discussion on the amount and its sufficiency continued. Mr. Neufeld pointed out that the Government of Canada is currently reviewing the issue. 11582-11594

Discussion continued around service fuel spills, with acknowledgement that the Government of Canada also plans to introduce new measures to strengthen tanker safety systems. 11596

#### **The Canadian Government's new measures to improve tanker safety**

Ms. DeCola went through the measures highlighted in the recent Government of Canada announcement to "ensure a world-class tanker safety system", and compared them to her recommendations from her analysis of NGP's TERMPOL report. 11629

The first measure being tanker inspections, Ms. DeCola was glad to see, though noted this is already required under the *Canada Shipping Act*. She also noted that compliance of double-hulled tankers is "pretty much mandatory" on an international scale, so was "underwhelmed" by measures related to that. Ms. DeCola proceeded to discuss the various other initiatives announced by the government, including aerial surveillance, pilotage, public port designation, scientific research, and aids to navigation, some of which addressed her concerns. She questioned where the funding would come from for some of the initiatives and noted that she understood the announcement is so far only a policy intentions, rather than hard regulations that will be enforced. 11632-11654

Again referring to her report, Mr. Neufeld asked about Ms. DeCola's suggestions for approval criteria of NGP. Discussion ensued around provision of minimum tanking vetting standards, which Ms. DeCola thought could be provided through the SIRE program. She had also recommended government oversight measures including compliance and enforcement verification, which Mr. Neufeld discussed with her. 11656

### **Oil spill contingency planning**

Noting her expertise is oil spill contingency planning, Mr. Neufeld asked Ms. DeCola about her work and her company's expertise in general. Bringing up [Exhibit D80-27-09](#), Adobe 18, he questioned Ms. DeCola's qualification to review NGP's spill response plans, and the potential for the Project to cause irreversible adverse impacts, given that she isn't an environmental impact assessment specialist. Ms. DeCola established that she is commenting on mitigation as a reduction of adverse impacts. Discussion continued on the subject of her ability to comment on various reports. 11698

Mr. Neufeld asked further details of Ms. DeCola's reports and previous experience in relation to the current work, such as contingency planning. She explained that some of the examples she provided in her work, were to illustrate the level of planning she would expect to see for operational plans, in comparison to what she reviewed from NGPs submission documents. 11735

Mr. Neufeld continued with questions about Ms. DeCola's work on previous projects and discussion continued around details of response strategies. The witness provided explanations of various measures such as Geographic Response Strategy and Environmental Sensitivity Index mapping, which she had used in other projects in the US. 11767

Mr. Neufeld asked about requirements for emergency response plans in relation to commencement of operations for projects in the US, such as the Keystone XL pipeline. Ms. DeCola noted the importance of having knowledge of risk preparedness worked out in advance of approval stages of projects. 11803

### **Response planning around diluted bitumen**

Ms. DeCola confirmed that her report indicated a need for further research around the behavior of diluted bitumen. She indicated that more knowledge is needed on equipment for spill response around marine and watercourse areas, stating, "from a spill planning perspective, this stuff is almost an unknown". Discussion ensued around the need for proper training and drills around dilbit spill response. 11813-11822

### **NGP commitments on response plans**

Mr. Neufeld asked if Ms. DeCola agreed that NGP has agreed to undertake the necessary training and drill steps in advance of operations if approved. Ms. DeCola indicated that she wasn't sure if NGP's commitments are sufficient or not, because detailed descriptions of their commitments on the subject haven't been provided. 11824

Mr. Neufeld stated, "It's pretty difficult to do drills and exercises before you have an approved project; right?", to which Ms. DeCola disagreed, stating "you can write a plan and exercise it. You can develop a tactic and test it, absent an approved project. I could write a drill-up for tomorrow... You know, the principles of how you do spill response aren't going to change pending the approval or not of the project. You could certainly take preparedness activities -- you could begin them right now." 11828-11833

### **Behaviour and fate of spilled diluted bitumen**

Again referring to [Exhibit D80-27-09](#), in Ms. DeCola's analysis of NGP's spill preparedness submission, Mr. Neufeld asked about Adobe 80 which speaks to heavy oil response

challenges. He asked whether the norm for heavy oil (such as dilbit) is to sink in water. Ms. DeCola explained that most oil products float on water, but that some spills, such as the Selendang Ayu, result in oil submerging beneath the surface of stormy weather, which results in great difficulty for clean-up efforts. She noted that in this case, none of the oil in the water was recovered; only beach clean-ups recovered any of the spill. 11835

Discussion moved to the history of heavy oil spills, and Ms. DeCola spoke about the behavior of spilled dilbit, explaining, “because we don’t have any experience with diluted bitumen spilling in the marine environment, the closest analogue is heavy fuel oils. They seem to mimic what little we understand about how diluted bitumen might behave.” 11849-11851

Turning to page 63 of the same Exhibit, Mr. Neufeld asked about pipeline spill prevention and mitigation in terms of engineering procedures, which Ms. DeCola isn’t an expert at, but has experience with. She talked about her experience on other projects working with engineers and other experts on spill prevention programs using leading indicators, or “early warning signals”. 11859

### **Enbridge oil spill rates**

Mr. Neufeld turned to pages 44-48 of the report, where Ms. DeCola calculated spill rates and volumes, per kilometer of Enbridge’s pipelines, from 2005-2009, and compared the numbers to the rest of the industry in North America. 11885

Ms. DeCola answered questions about how her calculations were derived, and Mr. Neufeld pointed out that although she calculated 9.5 thousand kilometers of Enbridge pipeline, the actual number is 24 thousand kilometers. Mr. Neufeld also noted that the datasets she was comparing were derived very differently. Ms. DeCola agreed that her calculations were not meant to be “extensive or exhaustive” but were done to show calculations that hadn’t been done elsewhere. 11890-11914

Discussion turned to page 123 of Ms. DeCola’s report where she indicated spill incidents in Prince William Sound. Mr. Neufeld pointed out that the table includes spills that were in some cases 1 teaspoon in volume, or 1 cup. Ms. DeCola pointed out that such data is important because it may present cases where spill prevention measures were quite effective, and act as a case study for future planning. 11916

Mr. Neufeld brought up [Volume 94](#), paragraphs 16458 to 16486, where Mr. Kressick, an Enbridge executive testified that Enbridge’s leak history is actually below the industry average, in terms of frequency and size. Mr. Neufeld asked if that meant that the company should be less vigilant than the rest of the industry. 11933

Having not read Mr. Kressick’s statements, Ms. DeCola couldn’t comment on his statement, but did answer that of course the company shouldn’t be more or less vigilant than the rest of the industry. This brought Mr. Neufeld to question the reasoning for her calculations and she reiterated that Enbridge’s spill statistics were not reviewed in the documents she had looked at, and she was curious to understand what the numbers would be, so she ran them to the best of her ability given the data she could obtain. 11955

Ms. DeCola discussed a similar rationale for running a spill response gap and response capacity analysis for NGP operations, in [Exhibit D80-56-3](#), for the Haisla Nation. 11962

### **Spill response at night**

Turning to Adobe 16 of the same report, Mr. Neufeld asked about Ms. DeCola's comments on operating at night, and Ms. DeCola explained that she thought nighttime spill recovery is difficult and dangerous, and pointed to a recent study from industry and spill response operators that made note of this fact. 11973

Ms. DeCola added that at nighttime, only remote sensing on-water spill recovery is possible, which she noted is not a proven recovery technique. Mr. Neufeld asked if source control – being able to stop a spill from a container – is a proven technique at night, and Ms. DeCola answered that in some cases it is. 11985

Discussion continued around Ms. DeCola's second section of the report, the Spill Response Capacity Analysis, largely in regards to operations facilities and equipment. 12000

### **NGP's plans to use tugs for emergency response**

Turning to page 44, Ms. DeCola explained the equipment used in her simulations, the oil spill recovery vessels, and their capabilities, in comparison with other storage vessels such as barges. 12021

Discussion turned to NGP's plans to use barges, and Mr. Neufeld asked if Ms. DeCola was aware that NGP planned to have escort tugs available for emergency response. Ms. DeCola answered that from what she had read, using escort tugs for oil spill response is unrealistic because tugs are generally needed to assist the tanker that is experiencing an incident, meaning that it cannot focus on recovery efforts. 12035

Mr. Neufeld indicated that his question was misunderstood, and proceeded to walk Ms. DeCola through the spill response capabilities of barges. Ms. DeCola noted that barges are used in conjunction with skimmers, and questioned the formula for devising the capacities of such vessels. Discussion continued around Ms. DeCola's simulations. 12044

Turning to Ms. DeCola's Review of the National Transportation Safety Board Accident Report, [Exhibit D80-69-3](#), Mr. Neufeld asked about its relevance in relation to Enbridge's Marshall spill. He asked if Ms. DeCola could agree that the company has invested heavily in responding to that incident, which she agreed to. He noted the company has conducted reviews in an effort to learn from the incident for future operation planning. Ms. DeCola stated that she hasn't seen any such reviews. 12069

### **Sunken or submerged oils in rivers**

Turning to page 11 of the Exhibit, where Ms. DeCola has made recommendations for response strategy for sinking or submerged oil in the Kitimat River, Mr. Neufeld asked if she could agree that the company already has "standard procedures" for dealing with such conditions in its emergency response planning. Ms. DeCola disagreed, stating that she had never seen them, and indicated that there aren't standard procedures. She pointed out that the cleanup from the Kalamazoo river was "very ad hoc". Discussion continued around the need



for pre-defined tactics for dealing with spill. 12087-12102

**Ms. DeCola’s recommendations for strategy planning, from her experience**

Mr. Neufeld asked about Ms. DeCola’s recommendations at page 11, and how they should be implemented. Ms. DeCola spoke about the need to “memorialize” and standardize response tactics, as well as the need for good technology. 12107

Mr. Neufeld asked Ms. DeCola for her thoughts on requirements for drills and training on major pipeline projects, for inland spills. Ms. DeCola spoke about the need for proper equipment and repetition in training exercises, stating, “you want to get out in the environment using the equipment under a range of conditions.” She spoke about the difficulty of training for submerged oil scenarios. 12118-12130

**Limited understanding of diluted bitumen spill response**

Ms. DeCola again spoke about the limited knowledge base for responding to heavy oil spills, and diluted bitumen in particular, which the professional literature points to as well. Discussion continued on the uses of heavy oil. 12133

Mr. Neufeld noted NGP’s commitment to hire a third-party to review its emergency preparedness plan prior to operations; he asked if Ms. DeCola had seen such a commitment before. Ms. DeCola spoke about the regulatory requirement in the US for such a review, by the government, indicating that a third-party review is only as good as the conditions it is set upon, “it depends who the expert is and who’s paying them... and the criteria they’re going to be applying”. 12153-12162

**Examination by Ms. Rebecca Brown for the Joint Review Panel 12185**

Ms. Brown asked Ms. DeCola to speak about examples of contingency plans she has worked on in the past. Ms. DeCola spoke about her experience with tanker plans in Prince William Sound, Alaska. She compared the regulatory environment in the two countries, pointing out that in the US, there are more prescriptive regulatory requirements around contingency planning; whereas in Canada, there are more broad-based policy directives.

She explained, “contingency plans can be compliance documents that have no meaning or they can be meaningful, you know, descriptive, directive where appropriate plans”. She proceeded to describe elements of best practices and planning, such as the importance of drill and exercise routines, so that responders are prepared and can effectively apply the plan. 12195-12202

Ms. DeCola was asked about her involvement with testing and field verification of equipment. She indicated that she is typically more involved in facilitating and planning, and spoke to the components involved in testing programs. 12204

Ms. Brown asked Ms. DeCola about her experience working on actual response sites, rather than response plans. The witness spoke about her experience with the Selendang Ayu spill, and spoke about her colleagues’ experiences on the Exxon Valdez and Deepwater Horizon



spills. 12215

### **Realistic expectations of spill response**

Ms. DeCola, was asked to describe “what worked well, what didn't work well, what could be improved and what you might do to address to make those improvements” in relation to her experience and understanding of spill events and contingency plans. Ms. DeCola spoke about the importance of being as realistic as possible, noting that not everything can be protected, so certain areas need to be prioritized in the plans, noting that reasonable expectations will make plans more effective. 12221-12228

Ms. DeCola continued by describing the importance of logistics planning measures and ground-truthing. 12230

### **Re-examination by Mr. McCormick 12260**

Mr. McCormick asked if Ms. DeCola would like to provide any particular references which she referred to on the record. She pointed to the recent report from the Bureau of Safety Environmental Enforcement, which reviews the outcome of the Deepwater Horizon spill and speaks to the need for a new model for recovery efforts.

### **Introduction by Mr. Michael Ross for Gitga’at First Nation 12345**

#### **Gitga’at First Nation Panel 4: Economic and Informed Decisions**

Mr. Ross introduced Dr. Robin Gregory and Dr. Chris Joseph. Dr. Gregory is the primary author of the “Gitga’at Economic Impact Report” [Exhibit [D71-7-3](#)] and “Gitga’at Informed Decisions Report” [Exhibits [D71-7-9](#)]. He also contributed to the Gitga'at response to NGP IR No. 1 [[Exhibit D71-17-2](#)]. Dr. Gregory’s CV is [Exhibit D71-23-2](#), and Dr. Joseph’s CV is [Exhibit D71-23-3](#).

Mr. Neufeld will question Drs. Gregory and Joseph tomorrow, April 10.