Enbridge Northern Gateway Project
JRP Hearing Notes

Day 49 – February 4, 2013 – Prince Rupert – Vol 133

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Order of Appearances

Northern Gateway Panel 2

Marine Emergency Preparedness & Response

Mr. John Carruthers	Mr. Randy Belore	Mr. Jeffrey Green
Dr. Alan Maki	Mr. Owen McHugh	Mr. Greg Milne
Mr. Jon Moore	Dr. Edward Owens	Dr. Walter Pearson

Opening remarks by Ms. Sheila Leggett, Chairperson of the Joint Review Panel 1

Chairperson Leggett welcomed everyone to the continuation of the questioning hearings and reminded questioners, as she has done at the beginning of each session of the hearings, that "We're here to test the written evidence that has been filed on the public record, through questioning. … Those asking questions should not give long preambles with new evidence or attempt to make their final argument to the Panel. You do not need to repeat questions that others have already asked … Lastly, we would remind parties of the … appropriate and limited use of aids to cross-examination (AQs)." 1

Preliminary matters by Mr. Art Sterritt for Coastal First Nations 15

Problems with the proceeding

Mr. Sterritt stated that the Coastal First Nations (CFN) are experiencing "problems" with the proceedings which "undermine the legitimacy and authenticity of the process and our pursuit of the facts and ultimately a just result." Mr. Sterritt listed three issues. 17

CFN withdrawing from questioning this panel

First, he said, "We have simply not been provided with the funding necessary to engage in this process meaningfully or effectively." Because of this, CFN will not be able to question the Emergency Preparedness and Response Panel.

No equal playing field

"There is no equal playing field here today nor has there been since this proceeding began. … The only party that can afford this long and extended hearing process is Enbridge itself and perhaps the Crown. The average citizen can't afford to be here and certainly the Coastal First Nations can't afford it. There is clearly an access to justice barrier in this case. It is the elephant in the room." 19

From an initial funding application for $522,000, CFN were approved for $$220,000. Of this, only $10,000 was for legal counsel. Subsequently, another $15,000 was allowed. In mid-2012, CFN was told it could submit an application for additional funding. In January 2013, it was informed that no further funding was forthcoming. CFN has spent almost three times as much on legal counsel as it was given funding for.

Second, said Mr. Sterritt, the CFN is dismayed at the process itself: the Joint Review Panel (JRP) has allowed the process to continue without having necessary scientific studies performed; witnesses are asked questions that are not answered or are self-serving and non-responsive; Northern Gateway Pipelines (NGP) witnesses craft replies in

consultation with others sitting behind the witnesses who cannot be questioned; Enbridge engages in stonewalling. 27

Federal budget bill broke the covenant between us

Third, Mr. Sterritt said the federal omnibus budget bill "broke the covenant that we had between us." CFN "entered into this process in good faith thinking that, at the end, you (the JRP) would actually make a decision. To add insult to your injury, you have Cabinet Ministers out there already telling the world that they're going to approve the project." 30

Mr. Sterritt said that CFN will continue to monitor the proceedings, and will participate in future Panels as resources allow. "You may see us again, you may not. We don't know." 33

Preliminary matters by Mr. Dennis Langen for Northern Gateway Pipelines 52

NGP is at "end of our rope" with aids to cross-examination

Mr. Langen reviewed a number of outstanding undertakings for Northern Gateway Pipelines and provided filing dates for those. He then turned to the use of aids to cross-examination and criticized BC Nature specifically for what he described as its continued disregard for the JRP's procedural guidance with respect to AQs. 61

Mr. Tollefson for BC Nature: it's an issue of fairness

In reply, Mr Chris Tollefson, counsel for BC Nature, said that the issue of fairness is being "circumscribed by three of [the Panel's] procedural directives" relating to AQs. The Chairperson interrupted Mr. Tollefson.
80

Introduction by Mr. Langen of Northern Gateway's Panel 2 105

Mr. Langen introduced the panel members and the personnel supporting the witnesses and gave their corporate affiliations. The witnesses were sworn in, affirmed or reaffirmed if they had previously been sworn in. Mr. Langen then described and confirmed with each of them their roles and areas of expertise, evidence for which they are responsible, and their curricula vitae, beginning at paragraph 123 in the transcript. He referred to information listed in Adobe pages 12 & 13 of Exhibit B188-11, as well as errata contained in Exhibits B188-2 through B188-6, which lists the Northern Gateway Pipelines' witness panels, titles and responsibilities, issues and evidence, including the Application. 105, 123

The Chairperson was specifically interested to know Dr. Alan Maki's expertise with respect to toxicology, which he described by reading from his CV [Exhibit B91-4]. 273

Examination by Mr. Chris Tollefson for BC Nature & Nature Canada 386

Mr. Tollefson was accompanied by Ms. Naomi Novak, an articling student at Ecojustice of Canada, and Mr. Anthony Ho, a law student at the University of Victoria's Environmental Law Centre.

Risk equals probability times consequence

Mr. Tollefson's first question was, "Can we agree … that risk can be conceived of as equalling probability times consequences?" Mr. Owen McHugh agreed, "That is typically the accepted definition of risk," but added, "but the most important part is how that is applied into a specific scenario." Mr. Tollefson followed up by asking whether with the Northern Gateway project, "[there] is an absolute level of risk to the marine environment … that would be unacceptable and which would require this JRP to recommend against this project?" Mr. McHugh and Mr. Carruthers both disagreed. 388

Mr. Carruthers said that with mitigation, "We have driven the possibility of risk to a very low level, and we are going to address very quickly any potential incidents. So no, we do not agree." 399

Analyzing consequences through the lens of people who live here

Mr. Tollefson asked if it is important for an analysis "to be place based" when evaluating consequences, "for the analysis of consequences to be analyzed through the lens of the people who live with the risk here on the coast." Mr. McHugh replied, "We understand that everyone has a version of perceived risk, but as a project, what we've looked at is our science-based project case." Various panel members offered comments to the question, but Mr. Jeffrey Green brought it back to what "the Canadian Environmental Assessment Act and the Terms of Reference ask us to do" and concluded that "people's opinions … don't influence the outcome of the science-based assessment." 403

Quantitative Risk Analysis considered probability, not consequences

Mr. Tollefson asked about the Marine Shipping Quantitative Risk Analysis (QRA) written by Det Norske Veritas (DNV) [Exhibit B23-34]. "That study was commissioned to focus in on … the question of probabilities; is that right?" Mr. Carruthers replied, "That's correct." Moments later, Mr. Tollefson said, "The QRA identified increased risk areas … and those IRAs … were used as the basis for locating five and later six spill scenarios. Is that right?" Mr. McHugh replied, "I wouldn't say it's quite correct that they were formed just on the increased risk areas."

Mr. Tollefson quoted from Exhibit B41-2, Adobe 42: "The potential for adverse consequences on coastal and marine sensitivities does not influence the likelihood of a spill incident occurring and, therefore, was not considered when identifying the IRAs." He asked, "Where, in that answer, does it state or even allude to the possibility that anything other than risk and probability of a spill was a factor when you identified those scenarios?" 420

NGP concludes there would be significant adverse effects

From Exhibit B46-2, Adobe 190, Mr. Tollefson quoted, "Northern Gateway believes that the outcome of any assessment of the environmental effects of a major spill in the CCAA [which is the Confined Channel Assessment Area] and OWA [Open Water Area] would

arrive at a similar *conclusion of multiple adverse and significant effects to the marine biophysical environment and human use*." (italics added) Mr. Green agreed, "There's potential for that to occur."

He put it to Mr. Carruthers: "The main argument that you're advancing is that the probability of a major spill is so small that, despite the highly significant adverse consequences that such a spill would present, this project should be allowed to proceed nonetheless."

Mr. Langen objected to the term "highly significant" so Mr. Tollefson retracted the word "highly." Mr. Carruthers introduced benefits of the project, which Mr. Tollefson said, "That's a different equation. You're talking about a cost benefit analysis." 462

Mr. Tollefson asked, "With respect to a large spill … in the magnitude of 35,000 cubic metres that you've modelled, the Wright Sound scenario. Would you say that … spill … would have significant adverse consequences … regardless of how it was responded to?" Mr. Green replied, "It could have adverse and significant effects. … The where and the when is as important as the spill itself." "And yes, in Wright Sound during the summer, in particular, we think that … there is potential for adverse and significant environmental effects to occur." Mr. Tollefson referred to Exhibit B41-2, Adobe 43 where some of the factors are listed. 501

Effects of oil on birds

Mr. Tollefson said, "When it comes to birds … there are innumerable other factors that are in play that determine consequences, some of which we don't even fully understand." Mr. Green asked for some examples to help him respond. Discussion continued on the factors that determine consequence of a spill for birds, and the consequences. The discussion is quite detailed. 519

Mr. Green said, "Marine transportation is one of the most difficult systems in which to assess effects." Mr. Tollefson put up Exhibit B83-17, Adobe 68 where NGP lists a range of factors affecting bird mortality following a spill, and lists "the most vulnerable taxa" as birds which spend the majority of their time swimming and aggregate in flocks.

The discussion between Dr. Alan Maki and Mr. Tollefson about the effect of oil on birds is worth reading for those with an interest, beginning at paragraph 593

Modelling specific scenarios during the molting season

Having established the high mortality vulnerability of some birds during molting season, Mr. Tollefson asked whether any of the scenarios "address the situation … when birds are flightless during molting season?" He did not get a clear answer to the question. 637

In Exhibit B46-2, Adobe 183, NGP stated that the oil spill models were intended to inform spill response plans, and "are not intended for assessment purposes." Mr. Tollefson asked the Panel if they agreed with that. Dr. Maki said "that's one of the purposes of models" and described them as "cartoons of reality." Mr. Green said that other sections in the application are one of three methods that were used to look at oil

spill consequences. In addition, there are the spill scenarios and the ecological and human health risk assessment (EHHRA) 657

Documents discuss consequences only at a high level

Mr. Tollefson said, "The TERMPOL document that we'll be talking about, 3.15, and the oil susceptibility studies and these other documents that all address consequences in one way or another have one thing in common. They are addressing consequences at a very high and general level." Mr. Langen said this blanket statement is unfair, and asked that Mr. Tollefson be more specific. Detailed discussion of other documents continues in the transcript, including a map from the application [Exhibit B3-39, Adobe 40] showing Important Bird Areas (IBA) in the Open Water Area (OWA) and a list of those IBAs. [Exhibit D12-8-7, Appendix 2] 671

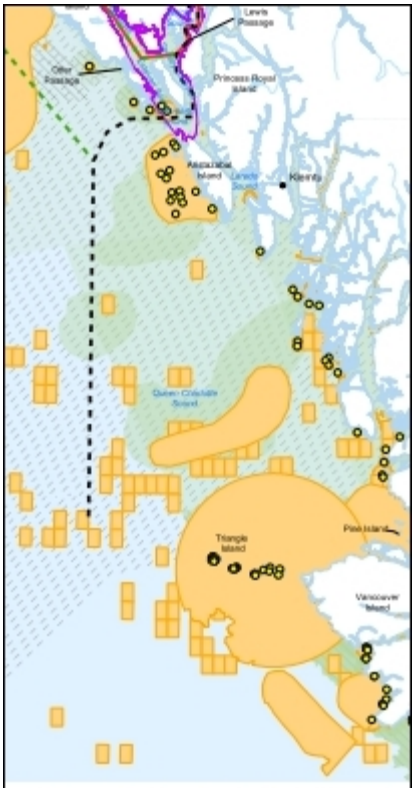


Fig 8-3 Important areas for marine birds in the Open Water Area (clip) B3-37

Mr. Tollefson discussed the importance for birds of IBA BC006, the Scott Islands, including Triangle Island. Mr. Green stated that the southern tanker route is in the order of 60 to 80 km from the islands. Mr. Tollefson also asked about BC122, Lucy Island in Chatham Sound west of Prince Rupert which is sensitive area for two marine bird species. 745

Cumulative effects & Tipping points

Mr. Tollefson asked, "Is there a cumulative analysis embedded somewhere in this consequences analysis that you've been talking about?" Mr. Green replied, "No, there is not and there is no direction under the Canadian Environmental Assessment Act or any associated guidance documents." He added that "one assumes that baseline does accumulate all of the other effects." 785

Mr. Tollefson also asked whether "the Proponent had turned its mind to, in terms of impacts on birds, the concept of a tipping point or a breaking point?" Mr. Green said no. 793

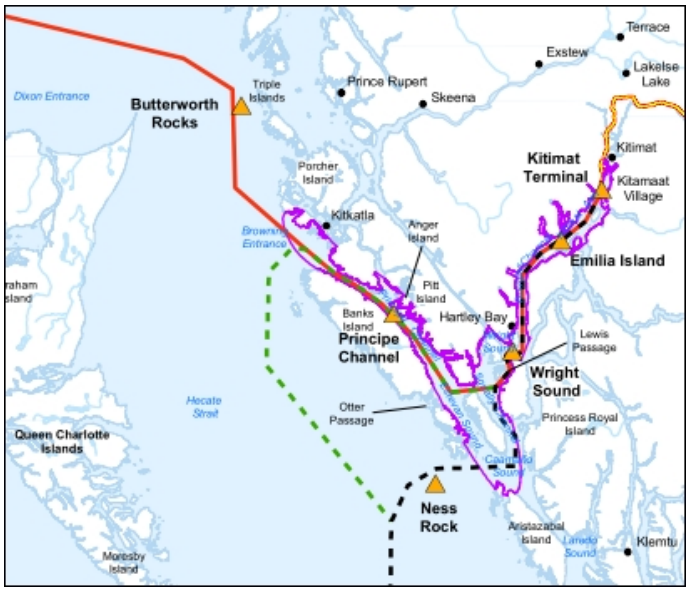
Increased risk areas and location of spill scenarios

Bringing up Exhibit B25-2, Adobe 11, Mr. Tollefson noted the statement that the spill locations were selected based on the Quantitative Risk Analysis (QRA). "You start with the IRA (Increased risk areas from the QRA) and then the specific location is a function of some other considerations that enter into the mix. Is that right?" Mr. Green said that because DNV, the authors of the QRA, will be available in the subsequent panel, "I don't want to go there." "Those scenarios did encompass a lot of other factors." 795

Some spill scenarios examined

The exhibit states, "There were seven simulated spills at six locations:"

- Kitimat Terminal: 250 m^3 spill of diluted bitumen; 250 m^3 spill of condensate
- Emilia Island: 10,000 m^3 spill of synthetic light oil
- Principe Channel: 10,000 m^3 spill of diluted bitumen
- Wright Sound: 36,000 m^3 spill of diluted bitumen
- Ness Rock in Caamaño Sound: 10,000 m^3 spill of diluted bitumen
- Butterworth Rocks in North Hecate Strait: 10,000 m^3 spill of synthetic light oil



Mr. Tollefson turned to the Butterworth Rocks scenario [Exhibit B25-6, Adobe 29], a set of "slides" which show the fate of the oil in stages to five days. He asked, "Why did you … stop running the model at five days?" Mr. McHugh replied, "The simulations … were stopped when, essentially, there was very little to no free-floating oil remaining on the surface. So it's either made landfall or it's moved into other components in the environment." Mr. Tollefson noted that the proximity of Lucy Island to several parts of the Butterworth Rocks spill is about 25 km. 805

Mr. Tollefson then turned to the spill scenario at Ness Rock [Exhibit B25-6, Adobe 21] for more discussion with Mr. McHugh and with Mr. Green. The scenario shows the oil arriving within one day to Dewdney Island and within three days north onto Trutch and Banks Islands, into Dewdney and Glide's Ecological Reserve. Mr. McHugh emphasized that the scenarios depict unmitigated examples. 842

Scenario-building and analysis of consequences

Mr. Tollefson asked about "the relationship between this scenario-building exercise and your analysis of consequences. You knew that this spill would impact -- this scenario would impact Dewdney and Glide's Ecological Reserve." Dr. Owens replied that these scenarios give them an idea of how quickly oil can reach a shoreline, and that "Geographic response plans are a very important part of what we call our extended responsibility over the whole area. The Project is taking responsibility for protecting environments like this even though it's not the project's responsibility. It's a shipper's responsibility. … We would be on site with our response equipment within six hours. This is in addition to the escort vessel which is at the site in the first place." But, he concludes, "There's no ability in these models to remove oil." 904

Referring to AQ60, a Skeena Region-Management Direction Statement dated March 2003 for Dewdney and Glide Islands Ecological Reserve, Mr. Tollefson noted the rare

bird species in the reserve, and two species for which it is important nesting habitat. He asked, "If a spill were to happen, within 24 hours, would a response calibrated to these species that are on this island be in place?" 917

Those plans are not written yet, and much of that work lies ahead

Dr. Owens said "Yes. Those plans are not written yet." He said that "At the time of first oil … [we] would have prepared geographic response plans." The first response would be to remove the oil, disperse it, use in situ control burning, or recover the oil on the surface. Mr. McHugh added that part of the development of the geographic response plans are development of environmental and sensitivity atlases. 942

Mr. Tollefson asked if it would be fair to say that "to actually inventory and identify specifically, in a quantitative way, populations, vulnerability, sensitivities much of that work lies ahead? " Dr. Owens replied, "There is no doubt." He added, "These geographic response plans … are the responsibility of the province." 958

High level and general

Mr. Tollefson put up Table 10-4, Important Bird areas … in the OWA and CCAA from Exhibit B23-15, Adobe 145. He said it was "high level and general" and asked "Does this table underscore that observation, that at this point, the data that you have, as depicted in this table, is mainly high level [and] general?" Mr. Green replied that "This is the TERMPOL document. … Volume 8C is the appropriate document. This is a high level summary document." 965

At this point, Dr. Owens wanted to demonstrate that the information they have is actually quite detailed and attempted to put up other evidence. A verbal scrum ensued, involving Mr. Tollefson, Mr. Langen, and the Chairperson who ruled that they should go to Volume 8C, as advised by Mr. Green. 965

Exhibit B3-39, Adobe 41 was displayed, as per Mr. Green's suggestion, and Mr. Tollefson promptly observed "It's the identical chart." To which Mr. Green replied, "This does not purport to be detailed. … There's no intent to be specific here." 997

Next, Dr. Owens did put up Figure D-19, Douglas Channel Sensitivity Map from Exhibit B16-9, Adobe 17, and said, "This is not high level at all.".Mr. McHugh describes it as not just a map, but a GIS system. 1006

Mr. Tollefson put up two other documents in evidence, continuing to examine why seemingly important information was missing. Exhibit B3-40, Adobe 25 is a "Summary of Vulnerable Areas" He noted that the description of Scott Islands does not list eight important species. Mr. Green said that it is a summary and is not intended to be a comprehensive list. 1021

Mr. Tollefson said, "Maybe there's something in between this table and what is being taken out into the field that I don't get." Mr. Green replied, "I'd say there's a great deal between this table and what would be the final product." "This is an impact assessment, it's not the spill response plan." 1029

Exhibit B137-4, Adobe 11 is a table entitled "Major Marine Bird Groups and Susceptibility to Oil." Mr. Green said the report reflects, "for this specific region of the central coast of British Columbia, what bird species are present and what's their relative vulnerabilities and sensitivities to exposure to oil." Mr. Tollefson asked about the Oil Vulnerability Indices (OVI) and why, for example, in the Alcids group, only two have OVI values listed. Mr. Jon Moore said, "These OVIs have been published elsewhere. They are very complex, use large amounts of data from worldwide and have not been calculated for those particular species."

Mr. Tollefson noted that this report was a response to a request from Environment Canada "for a more comprehensive assessment of the region-specific impacts including particular sensitivities for each of the spill scenarios for bird groups. [But] it does not do that." Mr. Green said it requires "extremely site-specific information on both the species and the behaviour, neither of which are available." Mr. Tollefson's reply suggested it was a decision the Proponent made not to do the necessary baseline studies to respond to Environment Canada Mr. Green: "For the purpose of the impact assessment … we have more than adequate information and you've already heard the commitment of this project to undertake additional surveys both in the CCAA and the open water area." 1037

General Risk Analysis

NGP prepared the General Risk Analysis and Intended Methods of Reducing Risk [Exhibit B23-15] for the TERMPOL review of the project. This report obtained information related to the likelihood of accidental hydrocarbon spills from the Det Norske Veritas (DNV) quantitative risk assessment (QRA) study [Exhibit B23-34].

Because the TERMPOL report drew its risk values from the DNV report, Mr. Tollefson's questions about the TERMPOL results often required an explanation about the precedent DNV work. Because DNV will not be available for questioning until the next panel, Mr. Tollefson's questions sometimes resulted in Mr. Langen and the Chairperson raising objections.

In the first of these discussions with the Chairperson, Mr. Tollefson explained that "This panel … looks at the risk of a marine oil spill along this coast. … Risk is a function of … probability and consequences. We've been talking a lot about consequences and now I want us to address our minds to probability. For this application, it is the QRA that supplies the data that answers that question."

Mr. Tollefson first established that DNV had used "a per-voyage methodology that looked at route length, local factors, including wind and other conditions, size of vessels and number of voyages per vessel class." He obtained a definition for "return-period" which in his words was, "the likely time in years between events," and in the language of the TERMPOL report, is "the estimated average recurrence interval (in years) between incident events." Mr. McHugh said that he does not agree with Mr. Tollefson's definition, but does agree with the report's. Mr. Tollefson replied, "If they agree with their own report then that's a big step forward." 1125

He next confirmed that vessel transits are being made by three classes of vessel, VLCC, Suezmax which is approximately half the size of a VLCC and Aframax, about a third the size of a VLCC. Mr. McHugh agreed. 1155

Referring to Table 4-2 in the TERMPOL report, Mr. Tollefson then verified with Mr. McHugh his reading of the table, that the total number of calls of all three vessel types arriving at the terminal is 220 per year. Mr. McHugh agreed, but said that DNV had done a sensitivity analysis within their report. Mr. Tollefson asked whether these numbers would be consistent with the volume of oil and condensate arriving at the Kitimat terminal – 525,000 bpd and 193,000 bpd respectively. Mr. McHugh agreed.

Table 4-2 Assumed distribution of ship traffic to and from the Kitimat Marine Terminal

	VLCC		SUEZMAX		AFRAMAX		TOTAL	
	Oil	Cond.	Oil	Cond.	Oil	Cond.	Oil	Cond.
North Route	45	0	28	0	0	0	73	0
South Route via Caamaño Sound	4	0	30	44	27	13	61	57
South Route via Browning Entrance	1	0	7.5	10.5	6.5	3.5	15	14
Total	**50**		**120**		**50**		**220**	

Sensitivity analysis

The TERMPOL report states, "The QRA results reflect the risk of incidents during passage from the OWA to and from the terminal, incidents at the terminal, areas of increased risk along the route and a model sensitivity analysis for validating the applied scaling factors." (Adobe 43) 1188

Mr. Tollefson asked, "What are the scaling factors?" Mr. McHugh replied that the risk calculations are based on a worldwide data set, which can be modified for local conditions. Each factor can be scaled up or down. Table 4-4 (Adobe 47) is a Summary of Scaling Factors used in the QRA.

Mr. Tollefson said that in the sensitivity analysis, DNV had looked at the scaling factors, "but they also looked at the number of tanker calls. … We've been working with a number of 220 calls per annum, but in the sensitivity analysis they looked at two other numbers, 190 and 250." He asked to put up the QRA report, Exhibit B23-34, Adobe 114, but Mr. Langen objected and the Chairperson advised Mr. Tollefson to proceed without it.

Mr. Tollefson argued that, "This document shows us, … how the spill return periods are affected by different levels of tanker traffic. … It shows that as tanker traffic goes up that the spill return period goes down, which is to say that there's a significant correlation between increases in tanker traffic and risk of spills." 1223

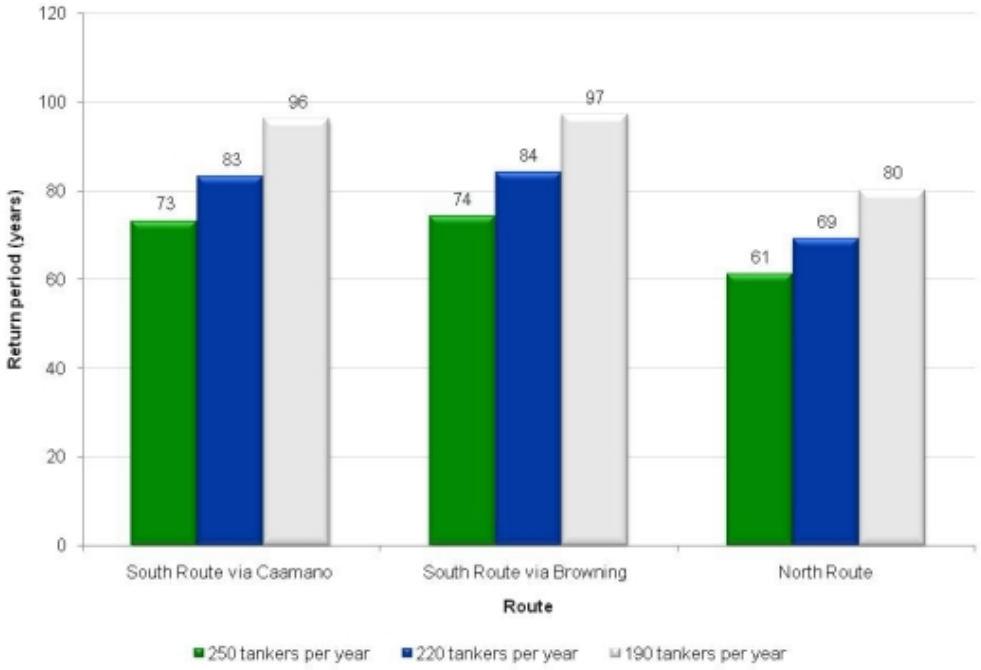


Figure 7-4 **Relative comparison of the effect of increasing or decreasing the number of tankers forecast to call at the Kitimat Terminal on the unmitigated spill return period for each route**

Mr. Tollefson asked, would you agree "that this north route is the route that is at most risk, for which there is the highest probability, the lowest spill return period of the three routes"? Mr. McHugh did not respond to the question and instead directed attention to Figure 4-3 (Adobe 58) which he said is "the chart that I look at out of DNV's work that I think is the most relevant to this panel." 1245

Mr. Tollefson returned to his point, "What jumps out for me is this, that … with an increase in the number of tankers, the probability of a spill increases in a very tangible fashion, almost in a one-to-one ratio at least for the sensitivity analysis that is shown here." Mr. McHugh disagreed.

Dichotomous positions re Exxon Valdez spill effects on marine birds

Exhibit 137-3 is entitled "Effects of the Exxon Valdez Oil Spill on Marine Birds: A Literature Review" It was at the request of Environment Canada and shows, according to Mr. Green, "a tremendous range of views even within a single species looking at different results." Dr. Maki called them, "dichotomous positions." 1269

Extinction is the concept of permanence

Mr. Tollefson put up Exhibit 83-7 and asked Mr. Green how it came to be produced. Mr. Green said "a common statement from a number of different sources [in evidence provided to the JRP] … is that spills … are inevitable and that the damage is permanent. … The Project disagrees with that conclusion and this report was a reply to that evidence." Dr. Walter Pearson, the author of the report, agreed with Mr. Tollefson that

the "this report ultimately deals more with the question of permanence as opposed to the inevitability of spills." 1287

Mr. Tollefson asked Dr. Pearson what his understanding was of the concept of permanence or permanent damage. Dr. Pearson replied, "That would essentially be an extinction, if you're talking about a fish or a bird. In the case of a physical part of the environment, like a beach, … you'd have to change it physically in some way in which case it wasn't a beach -- uplift during an earthquake or something like that." 1296

Discussion continued about what constitutes recovery, and whether recovery means "return to an equilibrium situation to one of what it would be but for the spill," in the words of Dr. Pearson. Dr. Maki discussed harbour seals in Alaska. Mr. Tollefson observed that the recovery period will be longer for longer-lived mammals. Dr. Pearson agreed: "The longer the generation time, the more likely that recovery time will be longer." 1303

Questions about VEC recovery status

From Adobe 5 in Exhibit 83-7, and taking into consideration subsequent corrections (errata), Mr. Tollefson cited the finding that "the average time to recovered status for the biophysical VEC's examined here was 2.3 years for freshwater environments and 5.2 years for marine, and that 81% were recovered or recovering. He asked, "What do we take from these numbers?" Dr. Pearson replied, "I think the important thing is, is that you can't automatically assume because there's a spill that there will be no recovery and that this is the state of life that you're going to live with forever. That's simply not supported by a reasonable look at the scientific literature." 1349

Mr. Tollefson explored recovery data in more detail with Dr. Pearson, using Exhibit B188-6, and one of its Appendices, Exhibit B83-17. For the Freshwater environment in Table A.5, there were 24 VECs in the sample. Six of those are recovered, 12 are in recovery, and six are not recovered. According to Table B.1 (Adobe 231) in the appendix, data was available for only three, and the average of the three was 2.3 years. Dr. Pearson offered to check the other three for which there is no data and the Chairperson asked him to take an undertaking (U65) to do that. 1391

Dr. Pearson said, "The information and the body of literature on marine spills is much greater and of greater depth and of greater length than it is for both the terrestrial and freshwater environment." Looking at Table A.5 again, Mr. Tollefson noted that in the Marine environment, of 87 VECs, 47 were recovered, 28 recovering, and 12 are not recovered. 1455

Recovery data omitted marine mammals

Mr. Tollefson asked if any categories of VEC left out of the Marine list? Specifically, he asked "In any of the studies listed in Appendix B for the marine environment, you did not look at any mammals or any reptiles?" Dr. Pearson replied, "I'm pretty sure we looked at both mammals and reptiles but they may … have been in recovering status rather than recovered status at the time of the study." "As soon as … people that are funding these

kinds of works see that the VEC is recovering, they stop the funding. … And that's a sad case but that's the case." Mr. Moore and Dr. Maki confirmed that. 1476

Mr. Tollefson asked again whether there were mammals in the Marine VECs. Dr. Pearson conceded there may not have been. Mr. Tollefson: "Isn't it problematic not to have mammals when we're talking about the marine environment?" Dr. Pearson: "Yes, sir." 1490