Enbridge Northern Gateway Project
JRP Hearing Notes

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Enbridge Northern Gateway Panel 5

Shipping and Navigation

Mr. John Carruthers	Mr. Jerry Aspland	Mr. Jens Bay
Mr. Audun Brandsaeter	Mr. David Fissel	Mr. Al Flotre
Mr. Keith Michel	Mr. Steven Scalzo	Mr. Thomas Wood
Mr. Michael Cowdell	Mr. Henrik Kofoed-Hansen	

Examination by Mr. Chris Tollefson for BC Nature & Nature Canada (continued) 31475

[Note: The Marine Shipping Quantitative Risk Analysis (QRA) [Exhibit B23-34] is an important document in Northern Gateway's evidence relating to shipping. It was published by Det Norske Veritas (DNV) and Mr. Audun Brandsaeter is one of its authors.

Incident types

Mr. Tollefson said he intended to talk about incident types. The QRA looks at four incident types: grounding, collision, foundering, and fire/explosion. He asked about other incident types that can lead to an oil spill. Mr. Brandsaeter mentioned other types during berthing and loading. Mr. Tollefson said the Lloyd's Registry includes "hulled and machinery damage." Mr. Brandsaeter said it was considered in TERMPOL 3.8 [Exhibit B23-9] but for double-hulled tankers it was not significant enough to warrant being identified as a specific type, though it is included in the overall spill totals. 31475

Mr. Tollefson asked about "non-accidental structural failure" (NASF). Mr. Brandsaeter said that these type of failures are in the foundering category of failures. They are a type of hull failure, small cracks that for a double oil tanker will not be significant in terms of oil spills to the environment. "Maybe oil spills to the neighbour tank, but not from the cargo area out to the environment." 31493

OPA '90 and the mandatory introduction of double-hulled tankers

Mr. Keith Michel put up "the ITOPF plot" which shows data from 1970 to 2008 to demonstrate that "there have been very few incidents of double-hulled tankers having oil spills". [Exhibit B23-9, Adobe 14]. He pointed to the reduction in spills since the seventies, but especially since 1990. That is attributable to the passage of the Oil Pollution Act (OPA '90) in the US in 1990 which required phased-in double-hulled tankers in the US, and in 1992 the International Maritime Organization (IMO) passed Regulation 13F which expanded the double hull requirement in the international fleet. "That was the beginning of many, many regulatory changes that improved the environmental performance of tankers." Mr. Tollefson interrupted, and said that was not the question he asked. The Chairperson asked him to repeat the question, then added, "There are times when the witnesses need to provide additional information and it can be helpful to the Panel." Mr. Michel continued: "There has not been a single double-hulled tanker that's foundered since 1990." Mr. Michael Cowdell said that NGP had discussed this in an IR response, Exhibit B38-9, Adobe 71. 31496

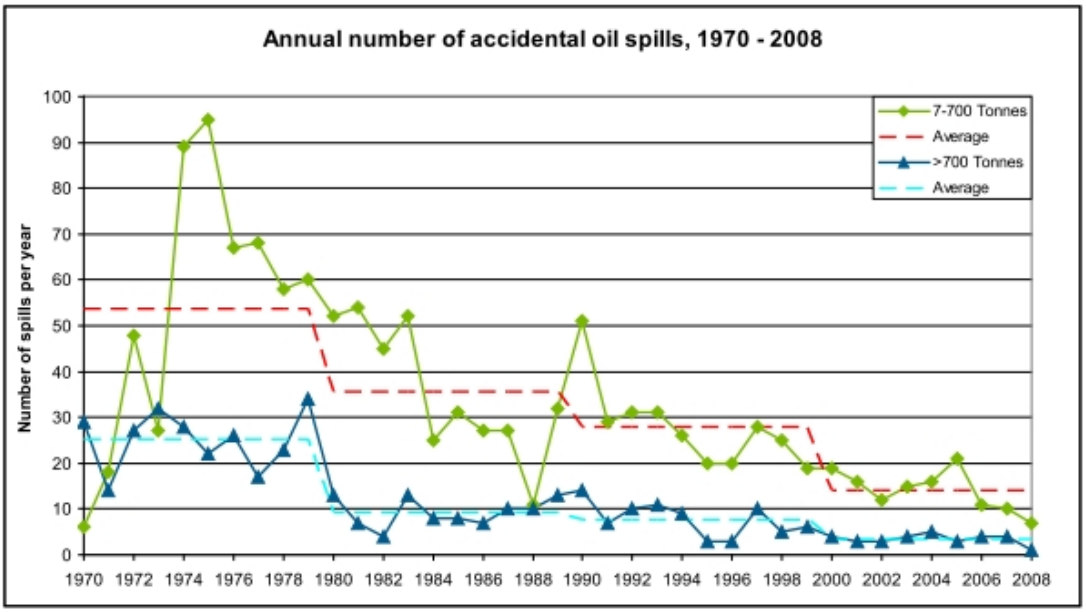

Figure 4-4 Annual Number of Accidental Oil Spills Worldwide over the Period 1970 to 2008 (Source: ITOPF 2009)

Mr. Tollefson put up a report, "Assessment of Safety of Crude Oil Transport by Tankers" (Papanikolaou et al, 2009) [Exhibit D35-21-1, Adobe 29]. Looking at page 32, he said that the report identifies "six categories of accidents that could potentially lead to ship's loss of watertight integrity (LOWI) and to accidental oil pollution. … These events are collision, contact, grounding, fire, explosion and NASF." Mr. Michel repeated Mr. Brandsaeter that NASF were included as foundering in the QRA, and said, "There have, in fact, been numerous examples of foundering that have resulted in the loss of tankers over the last 30 years. Those have been by far the biggest spills that have occurred. Every one of those was a single-hulled tanker." 31521

Referring to Table 1 "Casualty data, covered period 1990-2008", Mr. Tollefson said it shows that 18 percent of the total accidents "are attributable to NASF." Mr. Michel said that these are accidents, not oil spills which is what the QRA studied. Structural damage is of interest to insurers, which is why it is included in the Lloyd's Register database. "There have not been any major failures of double-hulled tankers." 31548

Mr. Tollefson put up Papanikolaou et all [Adobe 34] to note that "102 accidents were reported leading to an environmental pollution by an oil spill" for 1990 to 2008, and that NASF are the cause for 37% of them. He asked if Mr. Michel agreed with this. Mr. Michel agreed, and said, "Every one of them has been a single-hulled tanker." 31562

Coating inspections

In reply to a question from Mr. Tollefson, Mr. Michel said that, "Since 1990 there have been no single-hulled tankers built. Once OPA '90 was passed, it was not economically viable to build a single-hulled tanker and they've all been double-hulled." Mr. Tollefson said, "Professor Papanikolaou concludes that about 78% of all NASF accidents are

reported for ships older than 10 years." Mr. Michel said he thought a majority of these were single-hulled tankers. He described the IMO coating inspection regime for tankers whereby they all get "an up close visual inspection" every five years, dropping to every 2.5 years after ten years, and if the coating is found to be not in good condition, inspections are required annually. 31591

Mr. Tollefson described Papanikolaou's finding that ships 11-15 years old had the worst performance, that older ships seem to perform better than intermediate age tankers.. He asked Mr. Michel why that might be. Mr. Michel said he has his theories which are in the transcript starting at 31607.

Mr.Cowdell said that Transport Canada's Port State Control inspections take into account older vessels and NGP will have its own Tanker Acceptance Program. Mr. John Carruthers explained that NGP's own requirement is that "tankers of 15 to 20 years require further CAP (condition assessment program) inspection (of coatings) to ensure their structural integrity." Mr. Michel explained that CAP ratings range from 1 (good) to 4 (poor) and NGP will require CAP 1 or 2, irrespective of the age of the vessel. 31614

The reliability of data

A complex discussion on the reliability of data and statistical methods begins at 31628.

Mr. Tollefson refers to Figure 14 in Papanikolaou et al [Adobe 34], a chart that shows the spike in accidents for tankers by vessel age. Bars at the top show the "95% confidence interval". He asked Mr. Brandsaeter to explain what those represent. Mr. Brandsaeter said they indicate the reliability of the data. Mr. Michel said "In risk assessment, we study reliability of data in a number of different ways. We'll do uncertainty analysis and … we'll also do sensitivity studies." He said that Dr.Papanikolaou's estimate of the range of accuracy is consistent with my own experience with oil spill data." He referred to the "Oil in the Sea III" report of the National Academy of Science in 2005. 31628

Mr. Michel said that in the standard data sources "The number of incidents are significantly under-reported, … [by] about a ratio of 2:1, about 50 percent. But the QRA uses the number of incidents only to get the proportions of groundings to collisions to fire and explosion -- the relative percentages. It uses the probability of an oil spill, the conditional probability to get the likelihood of spills which is really what we're interested in here, a return period of spills." 31644

Mr. Michel said that in the QRA, DNV began with oil spill data that they believed was under-reported, as he did when developing the National Academy report. The National Academy added 25% to the reported numbers, to get incident numbers that would be closer to the actual number of incidents. In the QRV, however, Mr. Michel said DNV did not add 25%, and instead used averages over the period from 1990 to 2006, which he said "overestimates the likelihood of a spill by more than a factor of three."

Mr. Tollefson asked whether confidence interval is the gold standard for testing the reliability of data. Mr. Michel replied, "No, I don't believe it is." 31649

A clear warning about the quality of modern double hulled tankers

Mr. Tollefson went to the conclusions in Papanikolaou et al [Adobe 38]. Noting that the report was written in 2009, at the time, 83% of the world fleet are double-hull. The author says, "The phase out process [of single hull tankers] has a significant impact on the age structure of the world fleet. And as of 2009, the average age of the double-hulled fleet is six years." Mr. Cowdell said that tankers are built with a design life of 25 years and IMO's "gold base standards" now calls for a 25-year design life. "Sometimes they're retired sooner; … some double-hulls are being retired today at 21, 22 years old -- … ones built immediately after OPA 90. … There's a surplus of tankers at the moment." 31653

Mr. Tollefson said that Papnikolaou "is predicting … that there will be NASF failures with these double-hulled tankers and that we'll start seeing them in a significant number after 2020; do you agree?" Mr. Cowdell said "I don't agree at all. I strongly disagree with him on that item." 31672

Mr. Tollefson said there is one other part of Papnikolaou's conclusion. "I'm guessing, just guessing, you'll disagree with as well. It's Adobe 39." Mr. Tollefson quoted, "It is remarkable, however, that already some very young double-hulled ships, zero to five years suffer surprisingly of NASF accidents, a clear warning for the quality of some of the recent new buildings."

Mr. Michel said it is helpful to understand structural failures of ships and he describes three types, which happen at different ages of the tankers. The first, design or construction shortcoming, happens zero to five years. The second, fatigue fractures, will reveal themselves in 10 to 15 years and out to 25 years. The third category, which is the one that primarily leads to catastrophic loss foundering is corrosion and that happens if the ships are not properly coated or properly maintained. "I do not believe that corrosion and massive structural failure due to corroded plate will occur in the future and that's both because of the enhanced coatings required by IMO but, more importantly, by the enhance survey inspection program that's working well." 31686

Mr. Tollefson said, "My closing question on Papanikolaou, sir, is: In light of our discussion today, is it not a little surprising that, in the QRA, there is no discussion of NASF? " Mr. Brandsaeter replied, "I don't agree with your statement that we haven't included NASF just because we haven't called them by that name but they are included in the founderings, certainly." 31699

Mr. Al Flotre added a closing comment that "The statistics that were presented were international statistics and international practice has tankers loaded with oil transiting in heavy traffic areas and near underwater hazards without [an] assist tug. … Note when considering those statistics that the Northern Gateway Project will not only have one assist tug but a second assist tug -- high powered tug capable of mitigating, to a great degree, the number of risks of collision, grounding and elision." 31710

Mr. Tollefson asked "What percentage of the world fleet will not be allowed to Kitimat Terminal because it is more than 20 years old?" Mr. Michel said that today it would be about 5% of the world fleet, and in 10 years "it will be a much higher number." 31709

Scaling factors

Mr. Tollefson asked about scaling factors. Mr. Brandsaeter put up the QRA [Exhibit B23-34, Adobe 21] and explained that analysis is based on global data because if they limited it to a local area, it would not be sufficient data for an analysis. Scaling factors are used to adjust the base information "so that we get as good as possible picture of the operation that we are assessing. Just applying average world-wide data would give us, of course, average world-wide results." Mr. Cowdell added that "As discussed in TERMPOL 3.8, [Exhibit B23-9] certain incidents haven't occurred off the B.C. coast or not in a number that you can derive any statistical significance from. That was one reason to go to the international data and then …back … to the local conditions." 31720

Mr. Tollefson put up Table 5-3, "Scaling factors for incidents considered along the marine tanker routes" [Adobe 65]. He noted that the incident types considered were powered grounding, drift grounding, collision and foundering. Mr. Brandsaeter said fire and explosion were not included because they do not change based on local conditions. He confirmed that a factor of 1 means local conditions do not influence the probability of an event. A factor less than 1 means that the probability of an event inside is lower than the world average. 31727

Development of the scaling factors

Mr. Tollefson asked how DNV derived the scaling factors. Mr. Brandsaeter replied that it is explained in Chapters 4 & 5. Mr. Tollefson noted that "one of the early inputs into this process was views collected from experts who met in Vancouver for one day in April of 2009." [Adobe 52] Mr. Brandsaeter said the participants were presented with a chart of potential hazards, for each incident type, for each of the nine segments on the routes to the terminal. On a spreadsheet, they would collectively rank each hazard/type/segment with a scaling factor. The results of that exercise is presented in Figure 4-4. 31742

Mr. Tollefson asked if the spreadsheet still exists, if there is an intervening document (leading to the results in Figure 4-4), any notations? Mr. Cowdell said it was a group exercise, detailed comments were not taken and recorded. Mr. Tollefson said that this sounded like a subjective exercise, not a quantitative exercise. Mr. Brandsaeter agreed with that, but preferred to call it "a qualitative assessment by professionals." 31763

Mr. Tollefson asked about the next stage in the process, which involved interviews with local stakeholders [Adobe 58]. "Who identified these stakeholders and what process was used for that identification?" Mr. Cowdell said, "the participating members of the QRA working group assisted us in identifying people that we could meet to complete the local interviews, and those interviews were scheduled by NGP." 31772

For more detail, Mr. Cowdell put up an IR response [Exhibit B43-4, Adobe 2] which said that 1 person from Prince Rupert, 9 from Kitimat, and 4 from Vancouver were interviewed. Mr. Tollefson said, "In terms of a developing scaling factors, can you simply confirm that you didn't talk to any First Nations, organizations or individuals?" Mr. Cowdell replied, "We invited them to participate and they may or may not have participated. … We weren't forcing people to participate, we invited them to participate." 31784

Mr. Tollefson asked about these discussions, the topics discussed. Mr. Cowdell said "We were interested in any feedback. … There was no set agenda. … Detailed minutes of those meetings were not kept." 31823

Mr. Tollefson asked if "At any time in your consultation with your group of experts or in any of the individual consultations with local stakeholders, was the concern raised that an incident could arise by virtue of a tanker having to take evasive action to avoid a fishing vessel?" Mr. Cowdell replied, "That topic was discussed. The feedback we got from the users of the local waterways that avoiding commercial shipping was not a problem and that people were familiar with the regulations, and that they did not foresee that being an issue." 31842

An actual freighter – fish boat grounding incident

Mr. Tollefson put up a newspaper article , "Freighter runs aground off Prince Rupert, stoking oil spill fears", Hume, The Globe and Mail, November 21, 2012 as an aid to cross examination (AQ). Mr. Flotre said he had firsthand knowledge of the incident, and described it as a large ship confronting a non-responsive fishing vessel in a very limited channel, with a sharp turn to port. "It came to a situation where [the pilot] had two options; run over the fish boat or go aground." Mr. Flotre said, "None of those conditions, with a very limited channel, a sharp turn to port exist on the tanker routes." Mr. Cowdell added the use of escort tugs also suggest "the chances of something like this repeating are very, very small." 31850

Mr. Tollefson said, "You do acknowledge that there is a risk of grounding associated with a tanker having to take evasive action to avoid a small vessel?" Mr. Brandsaeter said, "That hazard is inherent." Discussion continued about fishing boats and larger vessels. 31859

Mr. Tollefson returned to the scaling factors table in the QRA [Adobe 65], and noted the column entitled "traffic density" where the range is between 0.01 and 0.6. He asked how those factors were obtained. Mr. Brandsaeter referred to Tables 3-2 and 3-3 in the QRA. This discussion is developed extensively, a key point being Mr. Brandsaeter's statement that the traffic density factors "are qualitatively set, and it's not a direct mathematical formula." 31877

Referring to the three collision factors in the scaling factors table - traffic density, measures, and navigational difficulty, , Mr. Tollefson asked "How do those three numbers combine?" Mr. Brandsaeter replied, "Those numbers are simply multiplied together to get the total scaling factor. … They … give a factor to multiply by the base frequency in order to get probability of incidents per nautical mile." 31903

Increase in traffic density due to LNG

Mr. Tollefson explored the traffic density data used to develop scaling factors, and asked about the potential impacts in terms of traffic density associated with development of LNG facilities in this part of BC. Mr. Cowdell said it was considered, but the study was done in 2005 and the number of proposals has changed since then. He cited TERMPOL

Exhibit B23-3, Adobe 108. This was incorporated into the QRA in Table 7-3, "Increase in factors affecting traffic density" [Adobe 112]. 31910

Mr. Michel described two approaches to risk assessment, one of which works with a point in time and the other which attempts to forecast out over a period. Mr. Carruthers spoke about proposed legislative and policy changes in Canada, over Mr. Tollefson's futile attempts to obtain a ruling from the Chairperson. Mr. Cowdell said of the planned projects that the overall increase to shipping, that they might add another ship a day to Kitimat and two to four ships in the Prince Rupert MCTS area. Mr. Flotre sad that improvements in navigation equipment and instruments have "virtually taken the surprise out of traffic situations." 31938

Mr. Flotre also said that Triple Island pilot station off Prince Rupert has slightly more than 900 boardings and disembarkings of pilots per year, compared to Brotchie or Victoria with slightly over 6,000. Most of these vessels go past East Point on Saturna Island, "where the channel narrows to one mile and where the currents are much stronger than anything you would see in the inland waters or the confined waters in the Kitimat proposed routes. … Those transits in and out of Vancouver … are completed with no traffic-related incidents. … Accidents that have happened with ships are not related to dealing with other traffic." 31971

Mr. Tollefson asked specifically about the two LNG projects with natural gas export licences, Kitimat LNG and Canada LNG Partners. The latter project is proposing to transport between 1.7 billion cubic feet up to 5 bcf of natural gas per day. Mr. Tollefson asked about the witnesses familiarity with the project and whether they can "advise the JRP as to … what the tanker traffic associated with that project would be." Mr. Cowdell said "We're generally aware of the scale of [the] project … that it could lead to traffic increases beyond what was contemplated in the sensitivity analysis that we've been talking about in the QRA. … However, … it's a very small number, perhaps another ship a day, something in that range." Mr. Tollefson: "The evidence in your possession doesn't really tell you … how many ships a day are going to be travelling in that area; does it? You're guessing." Mr. Flotre: "It would be very hard to make an estimate." 31986

Mr. Tollefson noted that in the QRA they used a range of 25 to 50 percent expansion in terms of traffic density [Adobe 112]. He asked, "What was counted in that … estimate?" After considerable discussion, the witnesses agreed with Mr. Tollefson that "it was a general estimate." Mr. Brandsaeter said, "That was an increase we thought, at that point in time, that was relatively realistic. So that's why we used that number." 32004

Mr. Tollefson asked about baseline numbers of large vessel calls to Kitimat and Prince Rupert. He is referred to Table 3-3 in the QRA [Adobe 29] which is not specific as to port or vessel type and the witnesses cannot answer his question about numbers of large vessels. Mr. Cowdell then put up Table A.5.8 in TERMPOL [Exhibit B23-3, Adobe 163] which are Kitimat Marine Terminal Statistics. Mr. Flotre said none of these vessels would have exceeded 40,000 tonnes deadweight (DWT). 32037

Mr. Tollefson said "We had a look at the District of Kitimat website which reports that currently … they are having between 250 and 300 calls by vessels between 40,000 and 50,000 DWT." Mr. Flotre said those do not sound like the right numbers. "There'd be the odd vessel that may reach 40,000 DWT but there certainly wouldn't be that number between 40,000 and 50,000." Mr. Cowdell said that Exhibit B23-6, Adobe 11, says the largest vessel on record in Kitimat was 50,000 DWT. 32061

Mr. Tollefson: You've not done the same detail of analysis for the Port of Prince Rupert? Mr. Brandsaeter agreed, as "as we are not going into Prince Rupert." He said "they're still relatively wide and open areas so they have therefore estimated a scaling factor of the order of .2 taking account both of the traffic to Prince Rupert and also all the traffic in that area." 32066

Return periods – probability of a spill

Mr. Tollefson asked about return periods in the QRA. [Adobe 106]. The QRA explains, "The return period is another way of stating the annual probability of an incident or spill along a given segment or route. A return period is the likely time (in years) between events." In response to Mr. Tollefson, Mr. Brandsaeter explained the formula used to calculate a spill return period. Mr. Tollefson asked, "How do you correct for underreporting of up to 70%? How do you fix that defect in the data through conditional probabilities?" The discussion at this point becomes quite difficult, dealing with the complexity of formulae, and cannot be reliably summarized. It begins in the transcript at 32075.

Mr. Michel illustrated some of what the discussion was about: "Say you had an average of one spill every 250 years, so a 250-year return period, you can express that spill in a number of different ways. You could express it as a four-tenth of one percent probability of a spill in a given year. Those two expressions are the way that risk people normally look at it. You could also calculate a spill over a proposed lifetime. … you get about a 16% probability of a spill over that 50-year life." 32174

Mr. Tollefson said his "learned associate" just did the calculation and came up with 18%. Mr. Michel said that 16% was his estimate, and "it's probably 16 or 18. Mr. Tollefson asked if "it is not more intuitive to express the risk in terms of a probability over a fixed period of time, instead of a return period?" Mr. Cowdell said the QRA was completed as a requirement for Transport Canada's TERMPOL review process, and not for a layperson to read. "This subject was canvassed quite extensively" in JRP IR11.3 [Exhibit B101-2, Adobe 8] 32179

Mitigation techniques

Moving on to mitigation techniques, Mr. Tollefson raised questions about the need for datasets involving base cases, prompting Mr. Brandsaeter to state, "the only mitigation measures we did calculate for [in the QRA] was the introduction of tugs, as well as the closed loading systems in the terminal, because [those] are systems that are not widely used". A discussion around the use of escort tugs ensued, establishing that they are a "new prevalent prevention application" around the world, in a voluntary or regulatory context, and how this relates to the calculations made in the QRA. 32191-32243

Sensitivity Analyses

Mr. Tollefson then asked Mr. Brandsaeter to provide a definition and a rationale for conducting a sensitivity analysis, to which Mr. Brandsaeter spoke about checking the influence of qualitative assessments, to "check out further possibilities not exactly aligned with the first assumptions we had made". Mr. Tollefson reviewed the four inputs that merited sensitivity analyses in the model employed in the QRA, as confirmed by Mr. Brandsaeter. 32245-32257

Noting that mitigation effectiveness (through the use of escort tugs), was not a factor through sensitivity analysis in the QRA, Mr. Tollefson asked if it would have been a useful factor to measure, given that the use of tugs was indicated to reduce the frequency of incidents in the QRA so significantly. Mr. Brandsaeter, Mr. Scalzo, and Mr. Cowdell discussed the context of escort tug operations, with Mr. Cowdell stating that for the purposes of this QRA, running a sensitivity analysis using mitigation effectiveness would not change "the conclusions that the Project came to in terms of risk mitigations". Mr. Keith Michel reiterated that the QRA was a "very conservative study", but that it is "meant to assess mitigation measures", not the probability of a spill. 32258-32296

Further questioning of potential sensitivity analyses that could have been included in the QRA to "confirm the reliability of the data", was presented by Mr. Tollefson, with the witnesses reiterating that they "could have done a sensitivity analysis on a variety of factors" but that the ones they "felt were of interest" were chosen. 32305-32315

Projected tanker types to be used

Mr. Tollefson asked about the projected mix of tanker types visiting the Kitimat Terminal, referring to the table on Adobe 116, in Exhibit B23-34. He established that the tanker size averages used were supplied by NGP to Mr. Brandsaeter, for his Request For Proposal. Mr. Cowdell confirmed that these numbers were "a forecast that would be subject to change… dependant on what the markets were at that time." Further discussion on these hypothetical changes ensued, with Mr. Cowdell stating that "the volume to be carried is fixed", and Mr. Carruthers stating that it wasn't "a realistic scenario" that an increase in tankers would be needed at the Kitimat Terminal. 32336-32351

Similar discussion on potential sensitivity analysis scenarios took place, with Mr. Tollefson referring to Adobe 112, and asking Mr. Brandsaeter if the combined results of a sensitivity analysis on increased tanker traffic and on traffic density scaling would cause a "significant reduction in the return period" and whether or not this would have been an interesting scenario to test. Mr. Brandsaeter explained his disagreement that a combination of the two sensitivities would create an increase in risk or reduction in the return periods. Mr. Cowdell provided further explanation for not combining sensitivity analyses and further deliberation on the subject took place. 32355-32399

Related to the above question, Mr. Tollefson simplified his questioning to ask if "increasing the number of tanker calls to Kitimat is going to increase the traffic density in this region". Mr. Michel replied that the comparison was "like comparing apples and organs" giving similar rationales to those above. 32433

Bringing up Exhibit B32-2, Adobe 7, Mr. Tollefson read out the estimated transfer of 525-850 thousand barrels of diluted bitumen per day, at 100 percent capacity, and proceeded to question what the sensitivity analysis would look like with a significant increase in tanker traffic. After a fair amount of discussion as to the relevance of such an undertaking would be to the Panel and to the current application, Mr. Crowther indicated that the witnesses were declining to "provide that undertaking." 32442-32484

Examination by Mr. Chris Jones for the Province of B.C. 32512

Mr. Chris Jones began by bringing up Exhibit B38-2, Adobe 29, which discusses inspection of tankers and tanker acceptance programs. Mr. Jerry Aspland explained various components of the acceptance program and the type of inspection program tankers could be subject to, in Canadian ports, which he described as "very, very good". He went on to give detailed descriptions of the ship vetting systems which he indicated "would prevent substandard operation coming" to the Kitimat terminal. 32515-32543

Turning to Exhibit B3-24, Adobe 13, Mr. Jones asked more about who could be undertaking the inspection referred to in the text. Mr. Aspland indicated that it is not yet known "who the inspector will be". Mr. Jones asked for clarification on when and by whom, inspections would be required by NGP. Mr. Aspland explained the need for incoming tankers to be vetted, and spoke about his view that the vetting process with "major oil companies is to the highest it can be that the tankers just are not running around here that are not to the highest standard." 32554-32570

Mr. Aspland continued to discuss the merits of the vetting system, indicating that NGP will have to set the requirements for it. Speaking about the tanker acceptance program, Mr. Cowdell added that NGP has talked about "canvassing other major oil tanker operations and terminals to see what criteria they're using" and ensuring "our criteria would be to the similar standards." 32587