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. Jesse McCormick for the Haisla Nation 5550
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Examination by Mr. Jesse McCormick for the Haisla Nation 5550

Sources of information regarding spill return periods at the terminal

Mr. McCormick said he would be questioning on TERMPOL 3.15 "General Risk Analysis" [Exhibit B23-15] and the Quantitative Risk Analysis (QRA) [Exhibit B23-34] by Det Norske Veritas (DNV). He turned first to Table 5-1, "Mitigated Return Period of a Spill from a Tanker at Berth by Cargo Type and Release Volume" [TERMPOL 3.15, Adobe 65]. He explained that on the record now are two different explanation for the source of Table 5-1, and he asked Mr. Brandsaeter to explain how it was derived. 5553

Mr. Brandsaeter said that Table 5-1 in TERMPOL 3.15 and Table 7-11 in the QRA are based on the same information, but in Table 7-11, some information is merged, so it is not possible to develop Table 5-1 from Table 7-11 alone. For that, Exhibit B205-1, refers to the other sources in the QRA. 5576

QRA methodology

Mr. McCormick put up Figure 2-1 from the QRA, Adobe 20, which displays the QRA report methodology. He asked if the methodology is sequential, and if the system definition is the foundation for the subsequent steps. Mr. Brandsaeter said that frequency assessment and consequence assessment could swap order, or could be done in parallel. But system definition and hazard identification must go first. 5586

Mr. McCormick asked, "If key ingredients are missing from step one, then each subsequent step may be compromised in terms of accuracy and dependability?" Mr. Brandsaeter's reply appeared to imply that this statement would be correct, 'if there are system definitions that are completely wrong -- and I emphasize "completely" here because there's a lot of information available that has some impact but not necessarily crucial impact on the further part of the study.' To illustrate, he said that you couldn't give it the characteristics of a "tropical area versus arctic,' but you could have different wind speeds or wave heights without having a significant impact. 5599

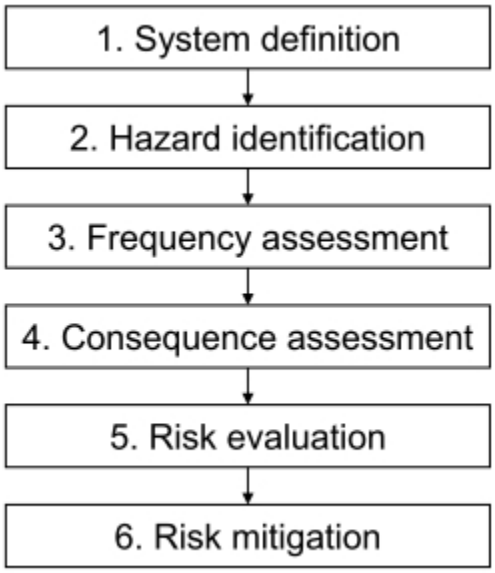

Figure 2-1 Steps performed in the QRA

Visibility

Mr. McCormick asked about visibility data. Mr. Brandsaeter said that has a limited impact depending on its severity. "With today's modern navigational equipment, the visibility isn't that important." 5618

Turning to Table 3-7, "Visibility North Route" [QRA, Adobe 51], Mr. McCormick noted that it does not provide visibility information for Douglas Channel, and asked why. Mr. David Fissel said the table was taken from the "Weather and Ocean Conditions" technical data report (TDR) [Exhibit B17-18] based on data from Environment Canada (EC). EC has a weather buoy at Nanakwa Shoal in the southern end of Kitimat Arm as you exit Douglas Channel and approach Kitimat, but it does not measure visibility. It has a second, the Fawcett Point weather station that is south of Douglas Channel, which does measure visibility. 5627

Mr. McCormick asked how NGP "reached the conclusion that … in terms of navigation, visibility is not important in the Douglas Channel?" Mr Al Flotre replied, "We often experience zero visibility. … Ships all over the world travel and operate safely in zero visibility, and that's to back up Mr. Fissel's statement … that visibility is not a high priority issue when you're studying risk assessments for ships." 5657

Queen of the North

Mr. Brandsaeter confirmed that "grounding is more likely in confined channels, such as Douglas Channel, … rather than open seas." He said, "In open seas the probability of grounding is extremely close to zero." Mr. McCormick cited the grounding and sinking of the BC Ferry Queen of the North in 2006. Mr. Michael Cowdell said, "there is a number of factors that were significantly different in the case of that incident than anything that could be contemplated with a tanker calling at the Northern Gateway terminal." He listed: improper bridge management, no tug escorts, no pilot on board, MCTS did not then have the ability to monitor the vessel's movement. 5663

Mr. McCormick put up Table 5-3 "Scaling factors for incidents" [QRA, Adobe 65] and asked whether the scaling factor for Douglas Channel does not include visibility concerns. Mr. Brandsaeter referred to Table 5-13, "Assessment of scaling factor" [QRA, Adobe 76] and noted that visibility was a factor in only three of the nine segments. He said the main inputs for these factors was "the HAZARD ID workshop where [the experience of pilots from B.C.] was the main background." 5681

Scientific weather data vs experienced opinions

Mr. McCormick asked if "the scaling factors in Table 5-13 relating to visibility are not based on scientific weather data." Mr. Brandsaeter said, "You're correct." Mr. McCormick: "Would you agree with me that information provided regarding visibility from pilots is less reliable than actual scientific weather data?" Mr. Brandsaeter replied, "That is quite dependent on what [you] use those data for. With regard to [navigating] safely in the area, … I think the experience knowledge from the pilots, in fact, gives better value, better information than if [I] should try to interpret just the statistical data." 5702

Mr. McCormick asked, "Has any portion of the DNV report used actual statistical weather data to reach its conclusions?" Mr. Brandsaeter replied, "We have not used statistical weather data as numerical input in any of the calculations." 5729

No emergency anchorages

Mr. McCormick put up Table 5-9, "Assessment of Scaling Factor for Emergency Anchorage" [QRA, Adobe 71]. He noted that a 1.2 value has been assigned to all 10 segments, and asked if "this table informs us that for seven of the nine segments, there is no emergency anchorage?" Mr. Thomas Wood said, "It says there no emergency anchorage in water depth greater than 100 metres. However, if one looks at the TERMPOL studies, there is a section on anchorage which shows that there are possibilities of anchorage in certain areas along these segments." 5732

Mr. McCormick asked, "Would you agree … that this table is not necessarily a reliable and accurate indication of what emergency anchorage is available?" Mr. Wood said, "I would not comment on its accuracy or reliability of looking for a place for anchorage. I do not think that that is what this table is about." 5736

Mr. Cowdell said, "Emergency anchorages are not a prerequisite to safe navigation when you have the escort tugs in attendance." Mr. McCormick questioned whether 1.2 was a maximum scaling factor for emergency anchoring and sought to understand what influences the scaling factor. Mr. Brandsaeter said, "We haven't included any possibility for emergency anchorage in the [QRA]. … Emergency anchorage is not a necessary prerequisite for safe navigation." Mr. Cowdell confirmed that NGP has no intention of creating any new emergency anchorage. 5741

Cargo overloading & closed systems at the terminal

Mr. McCormick put up Table 5-19, "Probability of cargo release per loading/discharge operation" [QRA, Adobe 87]. Mr. Brandsaeter said that the "Overloading of cargo tank" probability should actually say "tanker." Mr. McCormick noted that "one of the mitigation strategies is to employ a closed loading system with vapour return system for loading and unloading." Those systems "redirect excess oil into alternate or empty ship tanks." Mr. Cowdell said that was correct. Mr. Jerry Aspland and Mr. Wood described some aspects of closed systems. Mr. Brandsaeter confirmed that the data in Table 5-19 was all from terminals without closed systems. 5793

First Nations participation

Mr. McCormick referred to Transcript Volume 156, para 31798 and the statement by Mr. Carruthers that First Nations were invited to participate and the observation by Mr. Tollefson that "it appears … they chose not to." Mr. McCormick asked, "Can you please confirm that First Nations have not participated in the assessment of what constitutes an acceptable risk level for the transportation of oil and condensate as part of the project?" Mr. Carruthers replied, "There was participation by Aboriginal peoples in the QRA, at least initially, and some more direct and some in an observation role. … First Nations people participated in the entire process. It goes well outside the quantitative risk assessment." Mr. McCormick asked how that has been integrated in the QRA. Mr. Carruthers said, "The QRA assessment was … to understand the risks and the potential mitigation. I would not see a distinction … between Aboriginal and non-Aboriginal people in having a good assessment. … The assessment is also not specific to Aboriginal people." 5850

Mr. Brandsaeter confirmed that the tug escort plan in the QRA [Abobe 131] which concluded the effectiveness of tugs, was based on the confidential DNV 2002 study which itself was the result of simulations, not real-world incidents. Mr. McCormick put up the Escort and Docking Tug System report [Exhibit B44-3, Adobe 57] for a discussion about escort and docking tugs and their capacity to provide first responder service. Mr. Steven Scalzo said, "The study confirmed cycle times sufficient for utilization of the tugs to meet the demand requirement [escort and docking] and, in that cycle time, there was sufficient opportunity to respond to incidents as a first responder." 5866

VTS and radar as a mitigating factor

Mr. McCormick asked if "the benefit of VTS and radar may already be reflected in the unmitigated incident frequency." Mr. Brandsaeter said, "Yes, I can agree to that, and that's one of the reasons why we did not assess that specifically and quantify an additional benefit of having it in this area." 5919

Mr. McCormick asked if there is an "instance in the QRA report where the frequency reduction effect of a specific mitigation measure has been reduced to account for the presence of the proposed mitigation measure in the incident data used to assess the unmitigated risk?" Mr. Brandsaeter said there is not. Discussion continued on this question. 5943

Spills from loading & discharge: forecast versus actual specs in the QRA

Mr. McCormick turned to Table 8-4, "Probability and Return Periods for Spills from Loading/Discharge with Risk Mitigation Measures Applicable to Closed Loading Systems" [QRA, Adobe 144]. He asked whether NGP provided actual design specifications for the Marine Terminal and, more specifically, for the loading arms, equipment vessel piping systems and pumps noted in this table. Mr. Brandsaeter said there were no detailed engineering drawings or detailed specifications available at that time. The QRA was done in 2009/2010 and there were no specs from the May 2010 application. 5973

The discussion continued, focussing on details provided to DNV by NGP as inputs to the studies related to the terminal, and other factors assumed by DNV.

Referring to Table 6-14, "Distribution of Spills from Loading/Discharge Incidents" [QRA, Adobe 104]. It divides spills from loading or discharge incidents into small and medium, (10 cubic metres or less, and above 10 m^3 -1000 m^3.) The distribution of releases from loading arms is 90% small spills and only 10% medium spills. Mr. Brandsaeter said this distribution was from data available to DNV, and it must not be assumed that all the spilled oil ends up in the environment – other design features at the terminal are likely to catch the oil. Mr. Wood named some of these: curbing of the decks around the jetty, drip trays and sumps under the loading arms. Mr. McCormick said, "The only possible way to fully avoid the risk of these types of accidents occurring would be not to generate the risk associated with the Project by not constructing the Project." Mr. Brandsaeter said, "That was quite a hypothetic," but agreed. 6046

Mr. McCormick noted the formula for calculating the volume of spill (Transfer rate * (Detection time + Emergency shut down time)) [Adobe 104]. Mr. Brandsaeter said it was useful for estimating volume "at a high level, typical for an early phase of a project." It might not be appropriate for estimating spill volumes elsewhere in the loading and unloading system, "but that was outside our scope." 6081

Changed the terminal, but the loading rates are unchanged

Exhibit B182-2, filed on 28Dec2012, described additions and changes to the storage tanks at the Kitimat Terminal (Layout: Exhibit B184-9). Referring to his aid to cross examination (AQ-78A), Mr. McCormick pointed out that the average takeaway flow rate per tank for oil tanks was changed from 190,800 m^3 to 381,600 m^3 per day – a 100% increase. Mr. Cowdell interjected: "The average takeaway flow rate per tank is not a parameter that's applicable to the marine terminal and the loading rates. … The loading rates for oil at the marine berth has not changed." Mr. McCormick also noted that the condensate tank injection rate has doubled from 133,500 m^3 to 267,120 m^3 per day. 6081

Mr. Crowther objected to questioning related to the tanks and said it should have been done with an earlier witness panel. Mr. McCormick noted a number of paragraphs from Transcript Volume 142 in which he was directed to this panel for specific questions. Mr. Crowther maintained his objection and the Chairperson appeared to support him in that. Mr. McCormick questions were thwarted by discussion about what was permissible with this witness panel. He said, "I won't trouble you to belabour the point." 6112

Automatic shutdown

Mr. McCormick referred to Exhibit B3-22, Adobe 111 which provides approximate volumes of oil and condensate that could be released before automatic shutdown occurs. He asked if "The emergency shutoff time of 47 seconds for oil and 60 seconds for condensate" includes detection time. Mr. Cowdell said it does not include detection time but the spill volumes given (of 250 m^3 for both diluted bitumen and condensate) do include detection time. Mr. McCormick said "for condensate the application of a three-minute detection time on top of the emergency shutoff time would bring the total spill time to four minutes." Mr. Cowdell said, "Yes, I believe that's correct."

Referring again to AQ-78A, Mr. McCormick said it is a reworking of information in evidence relating to loading and discharge rates at the Kitimat Terminal. Mr. Brandsaeter said he could not answer any questions about its findings, because he doesn't know the assumptions behind the report, and it is outside the scope of the QRA. 6191

Methods for estimate spill probabilities

Coming back to "Conditional Spill Probabilities" in the QRA [Adobe 88], Mr. McCormick said, "It provides a description of two methods used to estimate the conditional spill probabilities for groundings and collisions." Method Number 2 used vessel damage information, which Mr. McCormick asked about. Mr. Keith Michel said this is "a methodology that's supplied in the IMO regulations for evaluating accidental outflow and it's a probabilistic approach in which it utilizes damage extents." These are the expected penetration given an accident, the expected length and height of damage, both for bottom and side damage. "This approach has been extensively benchmarked

against actual spill data … it's conservative by more than a factor of two. It significantly over-estimates the spill volume." Mr. McCormick asked if the information has been filed with the JRP. Mr. Michel said the methodology is published in MARPOL. 6213

Longitudinal bulkheads are a tanker requirement

Section 3.2.1, "Hull and Cargo Tank Components", [QRA, Adobe 43], recommends "that cargo tank arrangements extending the width of the tanker minus the ballast tank should not be accepted." Mr. McCormick asked if "only those tankers with a longitudinal bulkhead" will be accepted at the marine terminal.. Mr. Michel said that is correct. 6241

Mr. McCormick put up [Exhibit B23-10, Adobe 20] which contains diagrams of the tanks and superstructure arrangements of various tanker classes. Discussion expanded on these designs. Mr. McCormick asked if NGP has assessed the availability of double-hulled tankers in the Aframax, Suezmax and VLCC categories offering oil tight longitudinal bulkhead configurations?" Mr. Michel said that most tankers operating today were built to the required design. 6249

Mr. McCormick asked if he is correct that tankers not in the SIRE system - Oil Companies' International Marine Forum (OCIMF) Ship Inspection Report Programme (SIRE) – will not be permitted at the Kitimat terminal. Mr. Aspland said that is correct. He added that if a better system than SIRE comes along, NGP may change to that. 6259

Examination by Ms. Carrie Humchitt for Heiltsuk Tribal Council 6317

Ms. Humchitt began by introducing herself in her traditional name, Takvagila'avgva, and acknowledging the Gitxsan people. 6317

Incorporating traditional ecological knowledge in navigation assessments

Ms. Humchitt called up Volume 37, paragraph 27329, and noted Chief Peter Mason's comments about the dangerous and treacherous marine conditions along NGP's proposed tanker route. She noted testimony indicating that the Panel doesn't consider the conditions to be treacherous, and asked where the Chief's comments, or traditional ecological knowledge (TEK), has been incorporated into the navigation assessments. 6319

Mr. Cowdell stated that NGP's marine route studies "explains how they are viable for the designed tankers that would call at Kitimat". Ms. Humchitt asked again about the use of TEK in the assessments and Mr. Cowdell spoke about advice having been sought from marine experts such as BC Coast pilots, in the preparation of the assessments. Ms. Humchitt again asked about input from First Nations mariners or fishermen and Mr. Cowdell stated that First Nation input was sought "through initiatives like the QRA working group". 6332-6339

Ms. Humchitt asked where the invitation to the Heiltsuk Nation for the working group could be found and Mr. Carruthers called up Exhibit B38-2, Adobe 209, subsequently establishing that a direct invitation to Heiltsuk was not given, but that an invitation was sent to the Coastal First Nations. 6340

Navigation plans for hazardous areas

Ms. Humchitt referred to a discussion about ocean peaks near Moor Island, in Volume 37, at line 27333, and asked the Panel if they considered tanker interaction with such peaks. Mr. Cowdell spoke about a study on hazards navigation in the submission. Ms. Humchitt asked if the particular area and conditions in question were specifically addressed and discussion continued around how NGP plans to navigate through low fathom areas. Mr. Flotre spoke about the use of navigational aids and escort tugs as well as avoidance of Caamano Sound in severe weather. 6352

Ms. Humchitt asked if it were true that in severe weather, the navigational aids become dysfunctional. Mr. Flotre stated that to be false. 6374

Ms. Humchitt asked about alternate routes when avoiding Caamano Sound in severe weather. Mr. Flotre spoke about the use of Browning Entrance and Ms. Humchitt followed up with questions around bollard pull for the tugs. Mr. Scalzo spoke about design and capabilities of tugs and bollard pull strengths. 6377

Presenting information to First Nations in an understandable format

Discussion moved on to whether NGP's tug study is understandable to a without a technical understanding of the material, and Ms. Humchitt asked there were any meetings with First Nations to discuss the report. Mr. Carruthers spoke about many meetings and discussions, and stated NGP's interest in further discussions with First Nations. Ms. Humchitt asked if the Panel realizes the lack of capacity to "go through scientific and detailed reports" for many First Nations. Mr. Carruthers spoke about attempts to prepare easily understandable reports and again spoke about willingness to have further conversations and make reports more understandable. 6405-6417

Mr. Scalzo spoke about his experience working on committees with First Nations groups to present information related to the project. Ms. Humchitt asked if he had met with any of the Coastal First Nations and he answered that he had not, while Mr. Carruthers mentioned that NGP had had meetings with them and welcomed a meeting with Heiltsuk. 6418

Use of, and experience with, escort tugs

Ms. Humchitt sought further details related to planned tug operations. Mr. Scalzo explained the rationale for their plans, noting the many years of experience informing their strategies. Mr. Flotre added his thoughts, which were in disagreement with a report she was referring to in regards to escort tug utilization strategy. Upon also hearing his disagreement with the report, Ms. Humchitt asked Mr. Scalzo about his experience with tethered tugs in BC, no response was given. 6426

Mr. Flotre discussed his experience with tethered tugs while piloting tankers from Vancouver to Victoria. Ms. Humchitt learned that the size of the vessels he worked with was 100,000 tonnes, while the VLCCs for this project are 240-300,000 tonnes. 6444

Ms. Humchitt asked how many fathoms deep a fully-loaded VLCC would go. Mr. Cowdell referred to the TERMPOL submission and mentioned the tug escort study

simulations, which speak to effectiveness of using escort tugs with the tankers. Ms. Humchitt asked if he recognized "simulations do not represent real world situations". Mr. Scalzo spoke about the verity of the models. Exhibit B23-10, Adobe 17 was pulled up to illustrate tanker characteristics. 6456-6469

Tanker parameters and the tug escort study

Discussion continued around draft depths of the various ships and Ms. Humchitt asked about the potential for collision with land, noting the tendency for extreme weather conditions in the area occurring with little warning. Mr. Cowdell stated that he thought the issue had already been responded to in Exhibit B101-2, Adobe 4-5. 6470

Ms. Humchitt questioned whether tanker dry runs would take place along the route before fully loaded tankers run. Mr. Cowdell pulled up Exhibit B101-2, Adobe 3 and discussed plans to do so in the year prior to operations. Further discussion around training and other preliminary projects ensued. 6480

Mr. Cowdell stated his confidence in the tug escort study report and simulations, indicating NGP doesn't "foresee there being issues to navigating tankers up to VLCC size to Kitimat." Ms. Humchitt asked if it were true that the study involved tankers that were only 50,000 tonnes. Mr. Cowdell confirmed that to be true, but added that the study's purpose was to describe Kitimat's viability for the larger tankers proposed. 6492-6496

Ms. Humchitt referred to a report suggesting that tankers should only be used to a maximum of ten years old, and noted NGP's plans to use tankers up to 20 years old. Mr. Michel spoke about his confidence in the safety of tankers of that age, given proper maintenance. 6515

Shipping diluted bitumen

Ms. Humchitt noted that diluted bitumen is a new substance to be travelling by oil tanker, asking if comparison had been made to the shipment of conventional crude in terms of corrosivity. Mr. Michel answered, "crude oils have a wide range of properties and tankers are designed to carry those". Mr. Cowdell pointed out that dilbit is currently being shipped off the West Coast. 6528-6532

On tanker traffic moratoriums and First Nation declaration

Ms. Humchitt asked if the Panel is aware of the moratorium on oil tankers since 1972, and Mr. Cowdell and Mr. Carruthers stated that there isn't a moratorium, which they stated has been verified by the Canadian government and others. Ms. Humchitt asked if the Panel is aware of Heiltsuk Nation's declaration banning tanker traffic in their territory and Mr. Carruthers indicated that she had "mentioned that for the last panel" and that it is in her evidence. Ms. Humchitt asked if new members on the current panel are aware of the declaration. No response was given. 6534-6546

Ms. Humchitt spoke about an oil spill response vessel hitting an unchartered sandbar in March 2013. She asked if the incident poses questions about the abilities of such vessels. Mr. Cowdell stated that there wouldn't be uncharted navigational hazards for the

proposed shipping routes. Ms. Humchitt noted that Heiltsuk fisherman with extensive knowledge of the area have informed her that there are "numerous hazards" such as the one in question, and asked if NGP is planning to map uncharted hazards. Mr. Cowdell stated that the Canadian Hydrographic Service "has undertaken a multi-year program to update the nautical charts for the Kitimat area." Mr. Flotre spoke about his experience in the area since 1967 and stated that he "is not aware of any uncharted sandbars anywhere along the routes". 6549-6559

Hazards of tanker traffic on traditional boats, small vessels, and fish populations

Ms. Humchitt asked about the hazards posed by tanker traffic wake to the many people in Heiltsuk territory who fish in traditional boats and travel in canoes for tribal journeys. Mr. Hansen described a study conducted by NGP on wake heights, which indicates 10-15 centimeter high wake near the shore, found in Exhibit B83-23. Ms. Humchitt pointed out that even such a height "could impact a canoe specifically a tribal journey canoe which does not have a motor on it." 6561-6570

Mr. Flotre responded by stating that in his experience in the area, "the tribal canoe would be experiencing that height of wave just from the afternoon breeze"; adding that he has seen larger wakes as a result of ferries, cruise ships and high-speed tugs in the area. Ms. Humchitt pointed out the conditions in the study on wake height were simulated, and Mr. Hansen spoke about the models used for the simulations. 6571-6575

Ms. Humchitt mentioned previous testimony about the impact of tanker noise on spawning populations- which she stated her people are dependant on- and asked about alternate tanker routes during fisheries openings. Discussion continued around the spawning location in relation to tanker routes and the expected increase in traffic. Mr. Carruthers mentioned using a fishing liaison committee to "communicate about the fish openings and minimize the negative interactions we might have". 6576-6590

Ms. Humchitt asked if NGP had considered a cumulative impact assessment on spawning populations from tanker traffic and Mr. Crowther stated that the question wasn't relevant to the current Panel, which doesn't speak about impact assessments. 6592

Ms. Humchitt moved to questions about NGP's plans for accommodating small vessel traffic that is unreported and doesn't have VHS or AIS radar systems signalling their locations. Mr. Flotre stated that in other areas on the BC coast with larger traffic volumes, "other than a couple instances… it's been a very successful relationship… the issue is minimal, if any, it's been handled very well up to now." Discussion continued on estimated percentage of traffic without AIS radar. 6597-6603

Ms. Humchitt asked about the distance required for tankers to come to a full stop and Mr. Flotre discussed the various methods of stopping tankers and the amount of space required for manoeuvring. Discussion continued around communications to tankers of fisheries openings. 6604

The subject of a Fishing Liaison Committee was again discussed, with Ms. Humchitt asking why NGP had not reconsidered allowing for each of the Coastal First Nations to

have representation on the committee. Mr. Carruthers indicated that no changes had been made to the original rationale previously discussed with her. 6615

Further details on proposed operations

Mr. Flotre indicated that radar systems could detect small vessels and Ms. Humchitt asked about expected dry runs to test this. Mr. Carruthers indicated that the details of dry runs had not yet been worked out but indicated that NGP already knows that despite her questions, large vessels can pick up radar signals from smaller ones. 6625.

Ms. Humchitt asked about the number of pilots scheduled to be on a tanker's bridge at a time and Mr. Flotre indicated that the number hadn't yet been decided, but that "there is a team watching the navigation of the tanker that will cover discrepancies in the pilot's actions". 6638-6640

Ms. Humchitt asked if NGP would be interested in funding a monitoring station in Heiltsuk territory, to enable them to monitor tanker traffic themselves. Mr. Cowdell answered that he didn't understand the value of such an initiative, pointing out that all the traffic would be monitored by the Prince Rupert MCTS station, and that the information is available anywhere in the world. 6641

Ms. Humchitt questioned how NGP tankers would seek assistance from the coast guard if need be. Mr. Scalzo explained the role of escort tugs, which can be dispatched for emergency response at any time and can coordinate with the coast guard. Ms. Humchitt followed up with questions about capacity of the coast guard. 6654

Ms. Humchitt referred to Mr. Flotre's comments at line 2944 in Volume 159, and asked whether tugs would be tethered to tankers at all times, Mr. Flotre provided details related to the circumstances under which tethering would take place. 6766

Ms. Humchitt then asked about the hazards associated with fuel switching, drawing upon the testimony of Dr. Vigers in Volume 64, Adobe 44. The witnesses provided details on the requirements and operations for fuel switching. Continuing with the same Volume, discussion moved to locations of and circumstances for using, deep-water anchorages, which Mr. Cowdell indicated are described in Exhibit B23-6, Adobe 88. 6772

On large and rogue waves

Referring to Volume 37, paragraph 27332, Ms. Humchitt noted Chief Mason's comments about witnessing 30 feet high waves. She asked if this number was not far higher than the numbers given in the Quantitative Risk Assessment. Mr. Cowdell indicated that the wave data could be found in Exhibit B23-34, Adobe 49, and pointed out that such heights are reflected in the data NGP was working with, but that such heights are very rare. 6817

Ms. Humchitt asked the witnesses about their experience dealing with rogue waves. Mr. Wood spoke about such waves happening in conditions that would be "well forecasted", which would be planned around. He also indicated that tankers could handle such weather. Ms. Humchitt asked if rogue waves could suddenly appear, without warning.

Mr. Fissel answered that such waves are very unusual and made similar comments about a tanker's ability to run in such conditions. 6830-6839

Ms. Humchitt asked if the panel was aware of damage to a cargo ship dry beam in February 2012 off the coast of Vancouver Island. Discussion continued with the witnesses speaking to the regularity of large waves, and Ms. Humchitt indicating that traditional fishermen have often experienced rogue waves throughout the years. Mr. Cowdell and Mr. Fissel explained the difference between large group waves and rogue waves. The witnesses also described the abilities of tugs in rogue wave situations. 6840

Ms. Humchitt asked if NGP has "anticipated any issues with rogue waves" and Mr. Fissel answered that comprehensive data has been looked at which is the "best way of dealing with these kinds of projects". Discussion continued on the subject. 6874-6902

Again referring to testimony from Chief Mason, Ms. Humchitt asked about NGP's thoughts on difficulty of navigation through Hecate Strait, which has shallow water areas. Mr. Flotre indicated that the tanker routes do not include any shallow areas of concern. Discussion moved to whether or not a tanker could be forced to hit a shallow water area as a result of being thrown off course, with Mr. Wood speaking about his confidence in the navigation of the vessels, indicating that any deviation from an expected course would be detected and corrected. 6903

Bringing up the sinking of the BC ferry in Hartley Bay, Ms. Humchitt asked about ability to navigate during the night, and the witnesses spoke about their confidence in the navigation equipment and escort tug system. 6918

Additional questions

Further discussion around navigational concerns ensued, and Ms. Humchitt asked if NGP would consider alternative routes in regards to proximity to open ocean, rather than using Kitimat. Mr. Carruthers and Mr. Cowdell spoke about other factors having been considered in choosing Kitimat over Prince Rupert or other locations for the marine terminal. 6941

Ms. Humchitt asked if Enbridge had ever declined a tanker owner because of spill history. Ms. Aspland spoke about the vessel vetting system, stating that if the company thought it was important to ask about spill history, it would. 6954

Ms. Humchitt asked if NGP has considered an event happening in Kitimat similar to an oil tanker crash incident in San Fransisco Oakland Bay Bridge. Mr. Aspland spoke about the differing conditions of the particular incident with that in the area in question, stating that "it's very hard for me to contemplate it but I'm not going to say it wouldn't happen [at Kitimat]", and elaborated on his confidence in NGP's planned operations and the use of escort tugs. 6964-6970

Ms. Humchitt asked if the panel was aware "that the Heiltsuk Nation considers this to be an infringement on our sovereignty to have tankers in our territory", and Mr. Carruthers indicated that he believed that testimony had already been tabled. 6973-6974