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**Order of Appearances**

**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. Brian Gunn and Mr. Chris Peter (continued) 2643

Examination by Mr. Barry Robinson for the Coalition 2866

**Examination by Mr. Brian Gunn and Mr. Chris Peter of C.J. Peter Associates (continued) 2643**

**Weather and oceanographic conditions used in the Quantitative Risk Assessment**

Referring to [Exhibit B17-18](#), Adobe 10-12, as well as [Exhibit 23-24](#), Adobe 49, and AQ4-AQ6, Mr. Gunn asked about the wind speed data used to develop oil spill

countermeasures. Mr. Fissel discussed the reasoning for the differences between data on Environment Canada's site, and that which was reported in the Exhibit, citing the difference in elevation in measurements from anemometer and buoy stations, which required DNV to use "very well-established principles that are in the ISO standards" to adjust the data to get common elevation in the wind speeds. 2643-2728

Mr. Gunn continued with detailed questions around data calculations and the implications on wind forces to tankers, with Mr. Fissel providing explanations at length. 2729-2771

Bringing up their aid to cross examination (AQ3), a report by MacLaren Plansearch and Oceanweather, Mr. Gunn cited a report which spoke of the difficulty of accurately predicting wind speed. Mr. Fissel pointed out the reasoning behind the information in the report and provided explanations of subsequent research which he contended provided insight into biased low wind speed findings, as referred to in the AQ. 2773

Mr. Gunn then asked about errors in data due to sheltering of anemometers in wave troughs. Mr. Fissel spoke about updated technology removing such errors. Mr. Wood added that the errors in question are "not really going to affect the operation of tankers and tankers are designed to operate in quite severe conditions." Mr. Cowdell also offered anecdotal information, speaking to the infrequency of marine traffic being interrupted by weather. 2799-2809

### **Confidence in meteorological and oceanographic data for marine navigation**

Mr. Gunn asked a final question about inaccurate wind readings in cases where wave heights are higher than anemometers on buoys. Mr. Fissel stated that he had already answered the question, but added that Environment Canada "has dealt with the issue and it's shown through its research that the bias is very small", and spoke about Canada's world class marine weather measurement program, also stating that "this marine weather is well known, it's accurate." Mr. Wood added "some practical experience" regarding Master Mariners having strong meteorological understanding. Further discussion surrounded the general confidence the witnesses have in the meteorological and oceanographic information from buoys for navigation. 2813-2837

### **Examination by Mr. Barry Robinson for the Coalition** 2866

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

#### **Forecasted tanker routes**

Mr. Robinson began his examination by bringing up [Exhibit B23-15](#), Adobe 44, asking about the import of condensate from Asia Pacific and the Middle East, via the North route around Haida Gwaii, as spoken by Mr. Carruthers earlier in the hearings. He questioned the table in the exhibit, which shows no tankers travelling via the North route. Mr. Wood indicated that outbound tankers from Prince Rupert would use the North route, and incoming tankers from Asia could use either the North or South route, dependant on weather. 2872

Discussion continued around the apparent inaccuracy of the table, with Mr. Cowdell indicating the table is a forecast only. Mr. Wood then clarified the most favourable routes

for tankers in each direction because of ocean currents, and agreed that despite what the exhibit's forecast indicates, incoming tankers could use both the North and South routes. 2881

Referring to [Exhibit 23-6](#), Mr. Robinson moved to questions around alternate tanker routes, and Mr. Flotre and Mr. Wood clarified certain routes that were not considered viable for tanker traffic. Upon request from Mr. Robinson, Mr. Carruthers committed that tankers would not use Laredo Sound, Grenville Channel or the inner passage as alternate routes, but that tugs may do so. 2896

### **Passage through Caamano Sound**

Mr. Robinson sought clarification of “moderate weather conditions”, from Adobe 46 of the same exhibit, for tankers using the south route through Caamano Sound. Mr. Flotre spoke about wind, current and wave conditions, and indicated that a ship's captain, the on-board pilot, and tug master would make decisions on an “individual basis” about the use of this route, which would require a tug to be tethered to a tanker. 2929-2932

Mr. Cowdell confirmed that additional navigational aids would be developed for the safe passage through Caamano Sound, during the detailed planning phase of the project, though couldn't confirm which aids would be required. 2933

Returning to the subject of tethered tankers, Mr. Robinson sought clarification of whether both laden and ballasted tankers passing through Caamano Sound would be tethered. Mr. Cowdell indicated that only laden vessels would be tethered. Mr. Robinson asked if pilots would board vessels before passing through Caamano Sound. Mr. Wood stated that under B.C. pilotage laws, a pilot would be required to be on board a vessel when passing through the Sound. Mr. Cowdell indicated the Pacific Pilotage Authority, not NGP, determines pilot boarding stations. 2942

Mr. Robinson asked about potential weather conditions preventing pilots from boarding tankers in Caamano Sound. Mr. Flotre drew on his own piloting experience, stating, “we've never boarded for Caamano Sound. We've always boarded at Triple Island if the ship was using Caamano Sound.” Mr. Robinson followed up by asking about pilot fatalities while boarding ships. Mr. Flotre indicated knowing of two such instances, stating that there had been no further fatalities since the introduction of mitigation efforts. 2957-2975

### **Aids to navigation**

Mr. Robinson moved to asking about NGP's commitment to covering costs for the installation of additional navigational aids in the event that the federal government does not cover them. Mr. Carruthers indicated his expectation that Transport Canada or the Coast Guard would cover such costs, but confirmed the commitment to do so if need be. 2985

Mr. Robinson asked who was responsible for deciding where new navigational aids would be located and Mr. Flotre explained that after stakeholder consultation, the Coast Guard makes such decisions. Mr. Robinson surmised that NGP would thus not be

installing navigational aids without Coast Guard approval. Mr. Flotre indicated that there is a process by which private aids can be installed, subject to approval by the Coast Guard. 3011

Mr. Robinson learned from Mr. Flotre that the Coast Guard is responsible for maintenance and operation of aids to navigation. Mr. Robinson asked whether the Coast Guard had committed to covering the maintenance and operating costs of new navigational aids, and Mr. Carruthers confirmed his anticipation that the federal government would commit to such costs. 3020

### **The use of recent announcements by the Government of Canada as evidence on the record**

Upon learning that Mr. Carruthers was referring to recent announcements from the Government of Canada regarding proposed initiatives for improved tanker safety in the area, subsequent discussion surrounded whether or not such announcements could be used as evidence on the record in the Hearings. Mr. Robinson pointed out that the documents Mr. Carruthers was reading from had been removed from the hearing registry. The Chairperson indicated that public documents could be read as evidence, and would be subject to final arguments, inviting Mr. Robinson to continue questioning the witnesses on the documents in question. 3030

Referring back to [Volume 156](#), lines 31946-31955 of the hearings, Mr. Robinson questioned Mr. Carruthers' statements about the recent announcements, inquiring about specific details of the proposed initiatives. Mr. Carruthers stated, "I do not have specific information of their proposed amendments...I have had no specific discussions with them about their plans." He also answered that he did not know about whether such proposals had been passed in Parliament, or had been approved in a federal budget. 3054-3069

### **AIS radar systems**

Mr. Flotre confirmed that radar installation and maintenance is done by the Canadian Coast Guard, and Mr. Carruthers again indicated NGP's commitment to cover such costs for the area in question, in the event that the Coast Guard does not. Mr. Flotre pointed out that the costs for radar and other navigational aids are paid for through a user-pay system by vessels transiting the coast, indicating that it is not a budget concern for the Coast Guard. 3084

Mr. Robinson asked about operational reliability of radar systems and Mr. Cowdell answered that he didn't have the information to answer the question, but mentioned the availability of back-up systems in instances of power failures. 3103

Referring to [Exhibit B23-23](#), Adobe page 27, Mr. Robinson asked about the status of the implementation of an *automated vessel traffic reporting system* in Prince Rupert. The witnesses couldn't speak to whether or not the system was operational yet. 3119

Noting Mr. Fissel's recent statement that AIS radar enables vessels to detect one another from 50 miles away, Mr. Robinson asked if commercial fishing vessels and recreational vessels were equipped with AIS radar systems. Mr. Fissel and Mr. Flotre indicated that

not all were required to have the systems, but that from their experience, many had them. 3128

### **Anchoring and berthing conditions**

Picking up on a discussion from earlier in the week, Mr. Robinson asked how many VLCC sized vessels could safely anchor at Anger Anchorage. Mr. Wood indicated that some would say three, but that he felt two vessels could safely anchor at the location. Mr. Robinson continued by seeking clarification around the conditions under which tankers would have escort tugs with them. 3159

Mr. Robinson asked about the holding capacity for VLCC tankers at Kitimat Arm and Mr. Flotre answered that “there wouldn’t be that many VLCCs as there is options for a VLCC to take” in the area. Discussion continued around hypothetical scenarios where the berths were full at the Kitimat terminal, with vessels unable to leave because of weather, while another tanker was scheduled to come in. Mr. Aspland then explained the scheduling of tankers for the project, indicating that scheduling of inbound and outbound vessels is done a month in advance, with large windows for ships to arrive and depart. 3175-3190

Picking up on a discussion from earlier in the week, Mr. Robinson asked how scheduling of berths and terminal availability could be done given that operational limits hadn’t yet been set for wave height, wind speed, current or visibility, which likely cause delay time. Mr. Cowdell stated that a “possible range of environmental operating limits... have been set out for the terminal and other...parameters. The only reason those haven’t been finalized is because the terminal hasn’t been designed in detail...but when you...take the range of... potential limits and compare it to the weather data...you can see that the project is feasible.” He added that current operations in Kitimat are very successful. 3202-3212

### **More on operating limits**

Following Mr. Cowdell’s previous response, Mr. Robinson questioned where in the application a range of potential operating conditions is given. Mr. Cowdell referred to [Exhibit B23-13](#), Adobe 39, for examples of ranges given. Mr. Robinson followed up with additional questions related to the ranges and implications for preliminary schedule planning, and also asked about different operating limits for different vessel sizes. 3213

Mr. Robinson sought to understand whether tugs or tankers are more constrained by operating limits. In the case of wave heights, Mr. Flotre explained that he did not foresee a problem for any of the areas in question, confirming that in the compulsory pilotage areas, a tug could safely operate in severe weather conditions. 3250

Mr. Robinson asked about Erratum 7, from [Exhibit B210-2](#), Adobe 4, which reduces operational visibility limits that were given in the original document. Mr. Cowdell confirmed that the reductions were made because of aids to navigation such as electronic aids and radar systems. Mr. Flotre discussed the ability for tankers to operate in limited visibility around the world because of improved technologies. Mr. Robinson asked if these assumptions were tested in the TERMPOL process, and Mr. Cowdell indicated they were not. 3289

Returning to the subject of alternate routes, Mr. Robinson asked whether or not vessels would be permitted to load or unload that had arrived at the terminal using an unapproved alternate route. Mr. Flotre explained that the scenario could not happen because tanker navigation would be taken over by pilots 50 miles from Haida Gwaii and they would use the designated routes. 3310

### **Fishing vessel traffic**

Referring to [Exhibit B23-34](#), Adobe 145, Mr. Robinson asked if the witnesses agreed “there is little to no experience with large tankers manoeuvring around recreational and fishing vessels in Douglas Arm and Kitimat Channel”. Mr. Flotre answered that “there is no issue there and hasn’t been for many years” and explained that “fishing in that particular area is very limited.” Bringing up [Exhibit B9-40](#), Adobe 28, Mr. Robinson presented evidence that there “could be 150-200 vessels in the head of Douglas Channel during the fishing season”. Mr. Flotre responded that in his experience the fishing traffic is now only minimal. 3318-3340

Mr. Robinson asked Mr. Flotre about his previous comments from [Volume 156](#), line 31854, regarding the grounding of a vessel at Prince Rupert in November 2012, and Mr. Flotre recounted his understanding of the incident which he learned of through a colleague, confirming his understanding that the incident involved a fishing boat captain not complying with options given by the pilot aboard the vessel. Discussion continued around whether this situation “could occur anywhere” and related safety implications. 3345-3383

### **Vessel size and nomination**

Mr. Robinson reviewed the proposed ship sizes in the Application, noting that the largest vessel that has travelled to Kitimat is 50,000 dead weight tons. Mr. Cowdell indicated that “the waterways are suitable for” 320,000 deadweight tonne vessels. Upon learning that tankers could be larger than 320,000 deadweight tonnes, Mr. Robinson asked if NGP was committing to cap the size of tankers using the Kitimat Terminal at 320,000 deadweight tonnes. Mr. Cowdell responded that that is not the intention of NGP. Mr. Robinson asked if simulations had been run with tankers larger than 320,000 deadweight tonnes, Mr. Bay indicated that there had been but indicated that plus or minus 20,000 tonnes didn’t make a big difference, and “doesn’t have a practical implication”. 3385-3414

Mr. Robinson sought clarification as to who was responsible for vessel nomination, drawing on a conversation from earlier in the week. Mr. Aspland stated that NGP “will not nominate the ship”, and confirmed that “the shipping company, the oil company will tell [NGP], this is the ship we wish to nominate and then NGP will make the request to OCIMF (Oil Companies International Marine Forum)”. 3416-3421

Noting new requirements for coated ballast tanks in [Exhibit B83-20](#), Mr. Robinson asked if NGP will require all tankers at Kitimat Terminal to have coated tanks, and Mr. Carruthers noted he would add this to his list of commitments. Mr. Robinson noted “standard practice to coat the tops and bottoms of cargo tanks”, questioning whether this

will be a requirement for tankers at Kitimat Terminal. Mr. Michel stated that NGP would not commit to such a requirement at the present time, noting that “tankers can safely carry cargo without the cargo tanks being coated... what’s important is that the steel be in good condition.” Discussion on the subject continued. 3423-3450

### **On tanker inspection process and requirements**

Mr. Robinson continued with questions about the tanker acceptance program and the SIRE (Ship Inspection Report) process. Referring to [Exhibit B83-20](#), Adobe 7, Mr. Michel gave details of tanker inspections, also referring to [B83-21](#), Adobe 12, speaking to VLCC components and implications for inspections. Discussion continued around inspection requirements, and conditions for coating of ballast tanks, with Mr. Aspland and Mr. Michel giving details of the SIRE inspection process at length. 3451-3547

### **Terminal regulations**

Bringing up [Exhibit B74-2](#), pages 18-19, Mr. Robinson asked how NGP would ensure that its terminal operations manual and port information book would be reviewed and understood by vessel operators. Mr. Cowdell stated “that the terminal regulations have to be followed and we will enforce compliance”. 3549-3557

Calling up [Exhibit B17-18](#), Adobe 42, Mr. Robinson asked Mr. Fissel about the location of the visibility data presented, and asked if there was any data available from within Douglas Channel. Mr. Fissel indicated that there is “not very much direct measurements of visibility along the Douglas Channel area”, pointing out that the closest weather station is at the regional airport in Terrace. 3559-3572

### **Use of tugs**

Mr. Scalzo confirmed for Mr. Robinson that escort tugs would be available during docking activities, as stated in [Exhibit B44-3](#), Adobe 48, as well as “harbour tugs or the ship assist tugs”. He also confirmed that NGP “could never have more than two laden tankers in the confined channel area at one time”. 3574-3589

Mr. Robinson asked about the proximity of untethered tugs to the tankers they escort, and Mr. Scalzo indicated that the tug placement would be up to the pilot and the tug master, “based on the best location of that tug during the area which it may be transiting”. Discussion on the subject continued, with Mr. Scalzo and Mr. Flotre describing the types of positioning scenarios escort tugs could have, with laden and ballasted tankers. 3591-3607

Mr. Robinson called up [Exhibit B44-3](#), Adobe 40, 42-44, seeking clarification of rudder failure scenarios. Mr. Scalzo, Mr. Flotre and Mr. Aspland provided information on the subject. Mr. Robinson asked Mr. Bay whether simulations were run with an engine failure on a tug assisting a tanker. Mr. Bay said they did not run such a simulation, stating, “we found that was totally unlikely”. Mr. Scalzo added background details related to tug capabilities. 3608-3640

Mr. Robinson asked if in the event that a ballasted tanker has a propulsion or steering failure, “the escort tug would attempt to attach a tether to the now disabled tanker.” Mr.

Scalzo explained that the tugs are to be “used as best appropriate...depending on the transit location, the speed and the conditions at the time”, citing a few types of strategies that could be used. He indicated that further handling strategies would be developed in an operations plan. 3641-3649

Mr. Robinson then asked about the Kulluk incident in December 2012, in which an oil platform was being towed by a tug which “suffered multiple engine failures”. Mr. Scalzo agreed that the tug was reported to have suffered multiple engine failures, and indicated it was difficult to know what caused the incident before the findings of the investigation were released. Mr. Cowdell added his thoughts that it is a “highly unlikely scenario” that such an incident should occur at Kitimat given the planned arrangements of tug and tanker quality, and the built in redundancies of engines and propulsion systems of tugs and tankers. Mr. Michel added that the probability of a tanker or tug losing power “is quite low”, and spoke to other details related to the safety management system. 3651-3670

Mr. Scalzo confirmed for Mr. Robinson that escort tugs would be outfitted for ocean rescue and spoke about the ability of tugs to operate anywhere in the world, “in excess of 14 days.” Mr. Robinson asked about the maximum speed that NGP tugs could achieve, and Mr. Scalzo indicated that subject to final design, “preliminary design shows a free running speed of approximately 15 knots.” 3672-3683

Mr. Robinson called up [Exhibit B38-2](#), Adobe 74-75, and noted information showing a response time of 6-12 hours required to reach Dixon Entrance or Queen Charlotte Sound. Calculating over 13 hours for 200 nautical miles to be travelled at 15 knots per hour, he asked if a disabled tanker could drift aground in the area for that amount of time. Mr. Michel reiterated NGP’s plan to perform a drift study, stating that there are “many factors involved with whether a disabled tanker will go aground”, which should be studied during the detailed design phase. 3685-3697

Mr. Robinson asked further questions about equipment aboard tugs and Mr. Scalzo spoke about salvage plans and how tugs are used for responding to incidents. Mr. Robinson asked about the preliminary tug designs as indicated on page 32 of [Exhibit B44-3](#), and Mr. Scalzo spoke about the tugs being “the most advanced escort tug that would be in existence”, and explained details of bollard pull capability in response to questions on the subject. Mr. Robinson asked how common 100 tonne bollard pull tugs were in BC, and Mr. Scalzo and Mr. Flotre indicated that they didn’t know of any tugs of that capacity in the province. 3698-3725

### **Coast pilots**

Mr. Robinson asked about the minimum training and experience level for coast pilots. Mr. Flotre stated that pilots must have “three years at sea as Master of a vessel in the pilotage areas” and provided details on licencing requirements. Mr. Cowdell also provided details about ongoing training and associated expenses of the Pacific Pilotage Authority, noting that in 2011, the Authority’s pilots had a 99.97 percent success ratio with ship handling. Mr. Robinson asked if pilots required special certification for certain



tankers, and Mr. Flotre indicated that additional experience is required for unrestricted licensing for cargo vessels and cruise ships. 3727-3744

Discussion continued around what was meant by “senior member” when Mr. Flotre had previously indicated that senior members of BC Coast Pilots Limited would be operating VLCC tankers. Mr. Flotre confirmed for Mr. Robinson that no member has piloted a VLCC to Kitimat before, though noted that the pilots do have “a lot of experience in handling similar sized ships in more demanding areas”. 3745-3755

Asking about safe passage of a tanker through a confined channel area, Mr. Robinson asked who has the ultimate responsibility for the vessel. Mr. Flotre explained that the pilot “must have conduct of the ship” in BC Coast Pilotage waters, noting that a ship’s master could take that conduct away if he or she “has concerns about the pilot’s actions”, which he suggested is unlikely to happen. 3760-3763

Referring to [Exhibit B23-18](#), Mr. Robinson asked about the manoeuvring study and additional simulations, which involved Captains Wood, Aspland and Flotre, mentioned by Mr. Bay earlier in the week. He asked if the results of the additional simulations would be reported. Mr. Bay indicated that the data is included, but that it would be up to NGP to release a report on those studies. When asked, no one from the panel gave any response to whether or not a report would be released, Mr. Flotre indicated “those particular simulations were done to familiarize us with the simulator and the results, and were not done with intention of doing a statistical report.” 3779-3796

Mr. Flotre indicated “there are no pilots on the BC coast who have experience piloting VLCCs because there are no VLCCs on the coast.” Discussion continued around the abilities of coastal pilots as observed by Mr. Bay during the simulation runs. Mr. Robinson asked if the Pilotage Authority had committed to live training on VLCCs for its pilots before the project begins, and Mr. Flotre responded that by law, pilot training is the responsibility of the Pilotage Authority. Referring to [Exhibit B101-2](#), Adobe 2-3, Mr. Cowdell indicated intent to do training with tug escorts and pilots, “ahead of operations” with the agreement of the Pilotage Authority. 3799-3833

### **More on simulation tests**

Mr. Robinson noted that the maximum wave height in the simulation runs was 5 meters, as indicated in [Exhibit B23-22](#). Discussion continued around the visibility levels in the simulations. The witnesses spoke about the ability to navigate well with reduced visibility because of radar systems, stating “on a large vessel like this the instrumentation actually gives you a better idea of your position and... your distance to other vessels in the area than you can...figure out by using...human eyesight.” 3835-3870

Mr. Robinson continued with questions about the simulations, this time asking if any instances were run with a communication failure between tanker and tug. Mr. Bay responded that they hadn’t run such tests. Mr. Robinson asked if they tested a scenario with a tanker having to take action to avoid a fishing or recreational vessel. Mr. Bay answered that they had, and discussion continued around the subject, with [Exhibit B23-24](#), Adobe 5, being called up and Mr. Bay describing “a congested situation to see how

the tanker handles”. Mr. Robinson followed up asking if a scenario was run with a tanker having to avoid a whale, and Mr. Cowdell indicated that those types “of situations weren’t part of the simulations.” Mr. Robinson asked further questions about particular simulation runs and the witnesses walked him through related details. 3872-3941

Taking him to [Exhibit B23-9](#), Adobe 10 and 14, Mr. Robinson asked Mr. Brandsaeter if traffic density increases the likelihood of collision, and the witness agreed that collision probability increases with increased traffic density, with Mr. Michel pointing out that this is only the case if everything else in the equation remains constant. 3944-3969

Referring to [B23-34](#), Adobe 77, Mr. Robinson asked about predicted collision frequency in the QRA, pointing out that it doesn’t show collision probability for all of the traffic travelling to and from the NGP terminal, but would have to be calculated based on the predicted frequency of collisions per nautical mile. Mr. Brandsaeter confirmed that such a calculation was not given in the QRA, and Mr. Robinson asked if he would undertake to calculate it and report it to the Panel. After some discussion as to the relevance of such a calculation, Mr. Brandsaeter stated that he considered it “premature to go into such details” at this point of the project. 3972-3994

Referring to the same document, Mr. Robinson pointed out that the QRA did not calculate “probability or consequences of damage to other vessels”, and pointed out that third party risks and consequences of damage or loss of life, from “grounding, foundering, collision, fire or any other hazard” from NGP’s shipping procedures was not calculated. Mr. Cowdell again stated that such calculations were “not the purpose of the... risk assessment, as required by...Transport Canada.” 4000-4029