Enbridge Northern Gateway Project
JRP Hearing Notes

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Contents

Order of Appearances

Government of Canada Panel 2

Operations, Safety, Accident Prevention & Response, and Submarine Slope Failure and Tsunami Potential

Mr. George Armstrong	Dr. Andrée Blais-Stevens	Dr. Carl Brown
Mr. Kevin Carrigan	Dr. John Cassidy	Dr. Caroline Caza
Dr. Josef Cherniawsky	Mr. John Clarke	Mr. Kim Conway

Dr. Heather Dettman	Mr. Chris Doyle	Mr. Wayne Dutchak
Mr. Michael Dwyer	Mr. Michael Engelsjord	Mr. Charles Hansen
Mr. Grant Hogg	Dr. Bruce Hollebone	Dr. Ali Khelifa
Mr. Erik Kidd	Dr. Gwyn Lintern	Ms. Laura Maclean
Mr. François Marier	Mr. Phil Murdock	Capt. Glenn Ormiston
Mr. Donald Roussel	Mr. Paul Topping	Mr. Rob Turner
Mr. Shane Walters		

Examination by Ms. Rosanne Kyle for Gitxaala Nation (continued)
20824

NGP or Enbridge's concerns about a tanker moratorium

Ms. Kyle pulled up an email exchange involving NRCan, which suggests that NGP and Enbridge had concerns about a tanker moratorium presenting problems for the proposed project. Mr. Clarke answered that he was not aware of such concerns. Mr. Roussel answered that he was generally aware of them, and that the government departments have been working to bring clarity on the issue "for many years… even against adversity in the public domain". He reiterated that the voluntary tanker exclusion zone only relates to traffic from the Gulf of Alaska to the Juan de Fuca Strait. 20824-20851

Mr. Turner explained that he first heard about the moratorium in 2005 when Transport Canada and NRCan received a letter from Mr. Anderson on the subject. The letter caused him to search for evidence on the existence of the moratorium, but he found none. He noted that the Canadian Coast Guard had no evidence of a moratorium in its ship routing measures documents, which are required for all ships to carry when in Canadian waters. 20861

International requirements to instate a ban on tanker traffic

Mr. Roussel described the requirements for a country to ban activity in its Economic Exclusive Zone (EEZ), under the UN Convention of the Law of the Sea. He explained that complicated and extensive consultation is required for a moratorium, which Canada has not engaged in, and that any suggestion of the existence of a moratorium is "grossly misleading". 20878

Mr. Turner agreed that previous references to the moratorium referred to it having been put in place in 1972, which was before the tanker exclusion zone and the TAPS routes were established. 20888

Responding to Mr. Roussel's description of requirements for a ban, Ms. Kyle asked if it were possible for Canada to have a moratorium policy to not approve projects requiring oil tanker traffic on the West Coast. Mr. Roussel disagreed and indicated that such a policy needs to be "extremely precise" and needs to define what is being banned, for safety and security reasons. It would also need to pass the scrutiny of all the flag states of

ships being prohibited from passing through the waters. Discussion continued around required international mechanisms for restricting vessel passage within an EEZ. 20897

First Nation concerns about a tanker moratorium

Calling up NRCan media lines on the NGP project, Exhibit D72-15-47, Adobe 17, Ms. Kyle asked about NRCan's attempts to clarify the voluntary exclusion zone details. A minister's briefing note providing information on the opposition to tanker traffic, "Tanker Traffic off the B.C. Coast", Adobe 13, was called up. It indicates Aboriginal and environmental groups' arguments that a longstanding policy on tanker traffic provides reason to not allow the NGP project. 20959

Ms. Kyle asked questions about the government's consultation activities with First Nations on the project, and the moratorium. Mr. Roussel answered that government departments had been meeting with First Nations groups for the past two years, and pointed out that consultation activities are done through the JRP. He agreed that Gitxaala had not been met with on the subject. 20998

Ms. Kyle pointed out a paragraph in the exhibit that the Royal Society science report (which was discussed in the previous hearing day) had gone beyond its mandate in addressing a moratorium in its conclusions. She pointed out an error, in that the Terms of Reference for the report do not preclude such a conclusion from the Society's mandate. Discussion on the matter continued. 21009

The Chairperson asked for clarity of the relevance of the line of questioning, and Ms. Kyle explained that the type of inconsistency seen in the minister's briefing note are ones that First Nations are concerned about, as they consider any tanker restriction policy important for the JRP to take into consideration. The Chairperson indicated that the Panel didn't require further questioning on the subject. 21030

Government meetings with Enbridge

Ms. Kyle pulled up a 2006 Memorandum for Minister Prentice, (Minister of Indian Affairs) at Adobe 14-16, which briefed him for a meeting with Patrick Daniels, CEO of Enbridge. The note describes First Nations' concerns about a tanker moratorium and its effect on the project. The note states that the moratorium is inaccurate. Ms. Kyle asked if NRCan had consulted with First Nations about their concerns related to the moratorium. Mr. Clarke answered that he wasn't aware of such consultation, and explained that NRCan's focus is more on offshore oil and gas. 21045

Mr. Clarke indicated that NRCan attended some information sessions in advance of the JRP between the Government and First Nations groups. He noted that at some of those meetings, tanker safety issues were spoken about, which falls outside of NRCan's mandate. Ms. Kyle asked further questions about whether government officials provided rationale for stating the moratorium to be inaccurate. Discussion continued. 21071

Examination by Mr. Dave Shannon for Douglas Channel Watch 21105

NGP weather monitoring stations

Calling up Exhibit B17-19, Adobe 12&36, Mr. Shannon went over CCAA weather monitoring stations in the Douglas Channel, set up by Hayco consultants for NGP. He asked about the validity of the Kersey Point station, noting trees 20-30 meters away, which could obstruct wind measurements. Mr. Doyle stated that weather stations rarely give perfectly accurate readings, and that obstructions are common at stations all across the country. Mr. Shannon raised further questions about inflow and outflow wind measurements at the station and Mr. Doyle spoke about the expertise of the individual who sited the station for NGP and the adequacy of the locations of the sites.

Language used aboard vessels

Mr. Roussel indicated that international conventions require officers to be able to operate in English. Mr. Shannon noted the findings of the Cosco Busan spill in 2007, in Exhibit C202-1, page 2, which indicated that the ship's Asian crew were unable to understand the ship's safety manual. He asked if it would be a good idea for NGP to have port safety manuals printed in other languages. Mr. Turner described safety requirements and discussion continued. 21129

Chemical components of oil sands products and impacts on corrosion

Mr. Shannon spoke about an analysis of the various diluted bitumen products to potentially be carried by NGP. He noted that the products have relatively high acidity (TAN) and sulphuric content levels compared to conventional crude oil. Exhibit D80-27-3, Adobe 8, appeared to corroborate this finding. 21161

Mr. Shannon asked if the witnesses were aware of the challenges that higher TAN and sulphur levels present to the double-hulled tanker industry. Mr. Dwyer answered that the marine industry has long been aware of a product's chemical composition playing a role in long-term corrosion patterns, which are mitigated by best practices and regulatory requirements. 21169

Dr. Dettman provided a detailed explanation of the effects of acidity content in oils. She noted that Alberta's oils are washed during steam removal, which results in smaller acids being removed from the product, resulting in less corrosive products, "relative to other global crudes with even lower TAN values", at lower temperatures. She pointed out that refinery conditions play a large role in TAN and sulphur content issues. 21176-21185

Mr. Dwyer added comments about the International Maritime Organization's legislation pertaining to tank protection through protective coatings. 21190

Corrosion in double-hulled tankers

Mr. Shannon pulled up Exhibit D187-5-2, a study testing the longevity of epoxy coatings along the bottoms of cargo tanks, with exposures to various crude oils. He highlighted a table showing that blistering of the coating occurred with higher TAN levels of oil within 6 months. He asked the witnesses if the decomposition of the protective coating shown in the study would be of concern for the Kitimat port. 21194

Dr. Dettman indicated that the experiment was not representative of a real-world scenario, because the acid used for the study is far more acidic than crude oils. 21208

Mr. Shannon cited a separate report by Chevron Shipping Company, which found that coating defects in cargo tanks of double-hulled tankers could create hospitable environments for microbes that cause corrosion. The report also found corrosion in cargo tanks less than 5 years old. He asked in Transport Canada had experience with such a high degree of deterioration at such a young tank age. 21219

Mr. Dwyer provided clarity on the authorship of the report, explaining the context of the organization that produced it. He stated that Transport Canada's inspectors had not seen evidence of such rapid corrosion in its experience, but that the international regulatory community had been following such issues. He noted, "since this particular paper has been written there have a number of initiatives in the world to monitor and mitigate the effect of corrosion cargo tanks." 21228-21238

More on corrosion and the concerns of explosive mixtures within ballast tanks

Mr. Shannon referred to an additional report that spoke of pitting corrosion causing oil leakages into ballast spaces, which causes concerns of oil mixing with combustible gases. The report also noted an example of intensive corrosion that would be expected for a 20-year-old vessel, on a vessel less than 5 years old. Mr. Shannon noted Mr. Michel's testimony from Volume 156, line 31554, regarding cracks between cargo and ballast tanks. 21241

Given the evidence for corrosion and fatigue cracks meeting explosive gases in ballast tanks, Mr. Shannon asked how TC or the Coast Guard would avoid such dangers for tankers calling in Kitimat. Mr. Dwyer described the measures taken to avoid such risks, and explained that the occurrence of such risks are quite rare. Discussion continued. 21246

Characteristics of Orimulsion

Dr. Hollebone corrected a statement from the previous day regarding Orimulsion. He pointed out that the product is actually a mixture of water-bitumen, rather than oil-bitumen. 21271

Mr. Shannon pointed out that he had read that Orimulsion is problematic in ocean spills because the water component causes it to quickly disappear when spilled in water. Dr. Hollebone stated that he hadn't worked with the product, but that research found the behaviour of Orimulsion to change greatly depending on salinity content: the product has been found to remain dispersed in freshwater, but in higher saline water, emulsion breaks down. 21275

Kitimat as a test case for VLCC tankers carrying dilbit?

Mr. Shannon asked further questions about the behaviour of dilbit and Orimulsion in double-hulled tankers. He asked if TC had experience with inspection of tankers carrying dilbit. Mr. Roussel confirmed that the department had experience at the western terminal

in Vancouver, though only with Aframax sized tankers. Mr. Shannon asked where else in the world VLCC tankers carry dilbit, but the panel did not have such information. 21284

Mr. Shannon voiced his concern that the Port of Kitimat will be a test case for such a large ship carrying dilbit, noting the added concerns of corrosion and cracked hulls. Mr. Roussel answered that TC doesn't anticipate a difference of cargo behaviour in an Aframax, Capesize, or VLCC tanker, because of the specific gravity of dilbit being so similar to any other heavy crude oil. 21293

Mr. Shannon asked further questions about the risks of pitting corrosion with high sulphur content cargo, especially in the rough weather of this part of the world. Mr. Roussel confirmed that the panel was not aware of the product being carried at the same latitudes in other parts of the world, but pointed out that there are "tens of thousands of tankers moving cargo around the world [in] this latitude or in the more harsh conditions of the North Atlantic" in different types of tankers. 21298-21301

Tanker inspections

Mr. Shannon called up a table showing tanker inspections at various ages, and inspection types, in Exhibit B83-30, Adobe 7. The table indicates that a close-up survey of thickness measurements of cargo tank bottoms would occur at 5 years old; a visual inspection of representative tanks at 7.5 years; and another close-up thickness measurement at 12.5 years. He asked if such an inspection regime would be sufficient at Kitimat given the corrosion concerns with the cargo. Mr. Dwyer answered that the regime was the internationally acceptable regime, and that the Department believed its frequency is adequate. Mr. Roussel provided further details on international inspection requirements, noting that additional inspections can take place at any time if there are concerns with a vessel. 21303

Mr. Shannon asked further questions around inspection regimes and discussion continued. 21319

Mr. Shannon asked about the effectiveness of booms in oils spills. Mr. Armstrong explained that effectiveness depends on sea state, wind state, tidal currents, and the type of boom used. He noted there are different strategies for boom use depending on conditions. He agreed that booming and skimming would be ineffective in very high winds. Mr. Kidd noted that newer technology exists for skimming in difficult weather scenarios. 21325

The difficulty of modelling oil spills

Mr. Shannon asked about the 1993 Braer disaster, involving a single-hulled tanker breaking apart off the Shetlands which resulted in oil deposits on nearby grasses and sheep. He asked how airborne oil via evaporation, would be taken into account in the spill modelling, particularly in regards to the characteristic changes in oil through evaporation. 21339

Dr. Hollebone explained that oil deposits on a shoreline are usually a result of spray rather than evaporation. He noted that oil doesn't evaporate and re-condense elsewhere.

He didn't have data on weathering of spray droplets in the air, referred to as "spray on the overbank". Discussion continued on the difficulty of modelling oil spills in a lab environment and predicting where oil will end up. 21347

Mr. Khelifa explained that modelling typically involves lab results as well as data from real spills, and is developed through decades of experience. 21368

Examination by Mr. Jesse McCormick for Haisla Nation 21384

Knowledge gaps in the behaviour of spilled bitumen

Looking at Volume 169, line 19869, Mr. McCormick asked about previous comments on the need for more research to understand the rate of change of the proposed products. Dr. Hollebone agreed that there are knowledge gaps about the behaviour of oil in spills. He spoke about research being conducted by the federal government, noting that the products in question had not been researched very heavily. 21395

Mr. McCormick noted oil spill expert, Dr. Merv Fingas' writings that bitumen sank in every lab sample he ran. Dr. Hollebone spoke about Environment Canada's experience with bitumen testing. Discussion continued around the separation of diluent from bitumen. 21411

Mr. McCormick asked for agreement that after diluent notes have separated, the remaining substance resembles bitumen. Dr. Hollebone agreed that the substance approximately resembles bitumen. He provided details of Environment Canada's history of research on bitumen and Orimulsion. 21430

Government testing of products to be shipped by NGP

Mr. McCormick asked if Environment Canada had been provided with samples of the product to be shipped by NGP. Dr. Dettman stated that NRCan had received samples in March and forwarded some on to Environment Canada and DFO. She explained that the samples are of two mixtures of diluted bitumens, and that the government would conduct further tests of other products to be shipped, in the future. Dr. Hollebone added the importance of testing all products to be shipped, and noted that the initial samples received were not sent from NGP, but from another source. He mentioned that the government is working with industry associations to ensure that samples are representative of what will be available to the market. 21452

Dr. Dettman explained that the testing would confirm whether or not the samples would fit the project's tariff specifications. Mr. McCormick noted the lengthy process associated with the testing, meaning that results may not be available for the JRP's final report. He asked why the samples were not provided to the government earlier. Dr. Dettman explained that testing has been going on for years, but that the inter-departmental approach is just beginning. Dr. Hollebone added that there are other proposals coming before the government, requiring additional testing. The witnesses continued to speak of the knowledge gained from the current testing for national interest, as well as for the rest

of the world, which is seeing more and more heavy oils and bitumens being shipped. 21465

Dr. Dettman spoke further about the government testing allowing for an integration of industry and government knowledge on the products, and adding to global knowledge of what to expect from heavier oils, "so it's timely for the world." Discussion continued. 21479-21481

Mr. McCormick asked if NRCan or Environment Canada had any studies or results on the fate and behaviour of the products to be shipped by NGP, which have not been shared with the JRP. Dr. Hollebone stated that all the information the departments have is in the evidence. He agreed that some of Dr. Fingas's previous work on Orimulsion from Venezuela, done at Environment Canada, has not been filed as evidence. 21490

Spill knowledge gained from the Kalamazoo spill

Mr. McCormick asked about the Submerged Oil Science Group, which was formed following the Enbridge Kalamazoo spill. Dr. Hollebone, a member of the Group, spoke about its research methodology in attempting to understand fate and behaviour of submerged oil. He agreed that the Science Group found that some response measures to locate submerged oil were affected by water temperature. Given the Group's findings, and given the conditions of the Project area, Mr. McCormick asked if a NGP spill would present difficulties for detection and recovery of sunken oil. Dr. Hollebone answered that there are other approaches to detecting oil. 21498

Noting previous testimony that water temperature and salinity play key roles in fate and behaviour of spilled oil, Mr. McCormick asked, "are there any characteristics in the water around the Kitimat area and the Confined Channel Assessment Area that would tend to make submergence of spilled product more likely?" Dr. Hollebone agreed that temperature and salinity do affect emulsion formation, density and other behavioural aspects of spilled oil, though noted that oil's chemistry can also change, complicating predictability. 21518

Dr. Khelifa added his thoughts, "I think to address the submergence of the oil, it's not wise to focus on the specific…chemical…processes… there are physical processes as well, like waves, interaction with waves and so on, stratification, is there freshwater there or not and so on". 21525-21528

Mr. McCormick asked if Dr. Khelifa agreed that lower surface water salinity tends to increase submergence of oil. Dr. Khelifa explained that the differential between two liquids matters when they are combined. 21532

Detection and trajectories of spilled oil

Mr. McCormick pulled up evidence on density gradients and salinity profiles, in Exhibit B16-26, page 24, and asked about the trajectory of oil spilled in densities close to that of saltwater. Dr. Khelifa spoke about stratification in water columns being taken into consideration in spill modelling. 21535

Dr. Hollebone spoke about overwashing- submerged oil that doesn't sink to the bottom of a water body, essentially becoming neutrally buoyant. Mr. McCormick asked if there are effective techniques for detecting overwashing. Dr. Hollebone spoke about a federal tracking system using over-flights, which was used "very successfully to track oil that was riding very low in the water in the Gulf oil spill". Dr. Brown noted that it is difficult to look for oil that is a couple meters below the water's surface. 21548-21559

Dr. Brown agreed that weather conditions, sea state and other visibility issues can reduce the effectiveness of detecting spilled oil from the air. Discussion continued on the various technologies available for remote sensing during nighttime as well as the potential for false negatives with such equipment. 21561

Dr. Hollebone confirmed that submerged oil modifies its fate and behaviour and that Environment Canada's knowledge of submerged oil in the conditions of the Project area are "under active development". 21579

Dr. Hollebone agreed that subsurface currents might play a large role in determining the trajectory of submerged oil. Mr. McCormick asked if Environment Canada had conducted investigations into subsurface currents in the project area and the witnesses confirmed that the departments do not measure hydrodynamic data. Dr. Hollebone spoke further about Environment Canada's future research and assessments, while describing the information gaps expected to be filled by the Proponent. 21583

Mr. McCormick asked if Dr. Hollebone was indicating that the Government would not be independently assessing marine conditions, but would rely on NGP to provide such information. Dr. Hollebone spoke about interfacing with NGP in an effort to answer some of the knowledge gaps, by forming a science advisory board, in which Environment Canada would participate. 21598

Recovery techniques for sunken or submerged oil

Mr. McCormick asked about containment measures for submerged oil 10-15 meters deep, as cited in the Exhibit. The witnesses indicated that the question was "highly speculative", though Dr. Hollebone stated that if oil sinks, "it's going to be on the shore and it will be recovered mechanically". Mr. Kidd added that world expertise and knowledge of recovery of the oil products in question is limited. 21613-21625

Discussion continued with the witnesses providing general comments about their expectations that the oil products will not sink when spilled, but that future research is needed on the subject. 21627

Mr. Kidd described "pom poms", which were used to recover submerged oil in the Westridge Terminal spill. Dr. Hollebone mentioned techniques used to recover sub-surface oil in the Kalamazoo spill. 21658

Referring to Exhibit E9-21-12, page 71, Mr. McCormick noted Environment Canada's evidence, "*recovery and mitigation options for sunken oils are limited*". Dr. Hollebone stated that after his experience on the Kalamazoo spill, new techniques have changed his

position on the subject. Discussion continued as to whether or not such new techniques would be effective for the Project area, with Dr. Hollebone agreeing that the conditions in the Kalamazoo are significantly different from those in the Project area. 21671-21723

Changes to NGP's plans for ballast testing

Calling up Exhibit B210-2, page 3, Mr. McCormick noted changes to NGP's commitments to ballast testing, as discussed in Volume 162. The changes shift responsibility for ballast water testing to Transport Canada. Mr. Topping explained the ballast water management regime options, describing performance standard requirements in detail. 21725

Mr. McCormick asked for agreement that the ballast water management regulations "rely heavily on voluntary compliance". Mr. Roussel answered, "when the regulation is in place, it's not voluntary anymore. It's mandatory and we have the mechanism, which is our compliance and enforcement programs, to make sure that it is happening". He stated that all tankers would be inspected for regulatory compliance upon first visiting Kitimat, and "every year thereafter." 21757-21766

Discussion continued on the role of NGP in ballast water testing, and how industry and government ballast testing compares in other regions. Mr. Topping agreed that a regime where NGP assisted in validating regulatory compliance could be "entertained." Mr. McCormick asked if Transport Canada would require ballast water testing facilities at the Kitimat terminal. Mr. Topping answered that such facilities are not required at any ports in Canada, and described the very simple method of testing regulatory compliance using refractometers. 21771

Discussion continued on ballast tank inspection requirements, and the consequences of inspection failures. Mr. Topping spoke about corrective measures in the event of failures such as offloading water to port, rather than releasing it into the ocean, or adding saltwater to the ballast, to kill any organisms within it. Discussion continued. 21799

Mr. McCormick asked if Transport Canada delegated vessel inspection responsibilities to third parties in regards to issuance of maritime certificates. Mr. Roussel confirmed that that there are five organizations that do such work on behalf of the Department. 21814

Mr. Topping spoke about pending evaluation of onboard ballast water treatment technologies. 21820

Ballast water exchanges within Canadian waters

Mr. Topping confirmed that a ship may discharge ballast waters within 200 nautical miles of Canadian shores if, for safety reasons, it cannot do so outside the boundaries. He confirmed that this meant ballast water could be discharged within 45 nautical miles of Haida Gwaii. Mr. Topping explained that a vessel would not discharge in one standstill spot, but discharges over several nautical miles while uptaking fresh ballast water. 21833

Mr. McCormick asked further questions about the locations of the alternative ballast water exchange zones, using a map of the zones that his colleagues and he created.

Topping explained that Transport Canada worked with DFO in selecting exchange zones that would disperse into wider ocean areas, rather than returning to land, which would also help to ensure invasive species enter higher salt-content water so that they cannot survive. 21845

Weather forecasting and implications for NGP operations

Calling Exhibit E9-6-32, page 14, Mr. McCormick noted Environment Canada's responsibilities and proceeded to ask questions about verification studies of the Department's forecast accuracy. Mr. McCormick asked if NGP had asked for verification statistics for the areas where statistics have not already been gathered within the proposed shipping route. Mr. Doyle answered that they had not. 21876

Discussion turned to the subject of forecast amendment criteria. Mr. Doyle answered that the department was not able to provide amendment criteria for the specific operational limits of NGP's VLCC vessels. Mr. Turner pointed out that under the *Canada Shipping Act*, a vessel's master is responsible for ensuring safety by making decisions based on the meteorological information they receive. 21889

Mr. Doyle explained the purpose behind commercial forecasts and answered that NGP had not been encouraged to acquire private forecast information. 21912

Mr. McCormick asked about the meaning of *severe weather* and Mr. Doyle spoke in general about frequency of various wave, wind and visibility issues. He indicated that NGP had not discussed visibility with the Department. 21921

Mr. Doyle agreed that there are instances where visibility conditions cannot be detected by Environment Canada's monitoring systems. He also described scenarios where satellites cannot distinguish between low cloud and fog. Mr. McCormick asked if there is more observation of the south coast weather than the north coast, and Mr. Doyle agreed. Mr. McCormick continued with questions about the absence of visibility data availability in the Douglas Channel, and the weather data collection sites in Kitimat. 21942

Mr. McCormick asked if shippers should apply wind visibility and lightning thresholds for safe tanker operations through the Project's routes. Mr. Turner again spoke about a ship Master's responsibilities and discretion in interpreting weather forecasts. He added that the Government's TERMPOL review report provided recommendations around operational limits. 21976

Mr. McCormick asked further questions about improved transit safety in holding and anchorage areas, with hourly automatic weather stations. Mr. Turner provided some general details on the subject. 21986

Referring to Captain Flotre's comments in Volume 161, line 5689, Mr. McCormick asked if it was true that small crafts do not always have the same navigation systems to enable them to deal with poor visibility, as do larger vessels. Mr. Turner answered that radar equipment is often carried on pleasure vessels, and again explained that a boat's

Master is responsible to use their discretion when navigating. He also pointed out that larger vessels can detect smaller vessels on their radar. 22003

Hydrodynamic modelling

Mr. McCormick asked about Environment Canada's recommendations for expert review of hydrodynamic modelling, as referred to in its technical review of NGP's marine spill modelling studies, Exhibit E9-39-2, page 5. Dr. Khelifa described the importance of understanding how water is moving. He again spoke about the need for a Scientific Committee to address the knowledge gaps in this area and others. 22055

Review of NGP's TERMPOL submission

Looking at Transport Canada's review of NGP's TERMPOL submission, page 15, Mr. McCormick asked the witnesses about the Departments' recommendations around spill modelling and other factors. 22081

Mr. McCormick noted previous Haisla questioning of the fact that NGP only modelled one type of condensate. Dr. Hollebone indicated his understanding from industry representatives that, "there is a significant amount of variability… within the condensate." 22110

Mr. McCormick asked about the addition of drag-reducing agents to diluted bitumen before shipping through pipelines. The witnesses didn't have knowledge of the effect of such agents, or whether they would be added to the products to be shipped. 22122

Continuing with recommendations to the TERMPOL submission, at page 15, Mr. McCormick asked which departments would be informed in the event that NGP alters any commitments, operational plans or characteristics of the Project. Mr. Roussel explained that different departments and authorities would be informed, depending on the changes. 22142

Slope failure and tsunamis

Looking at DFO's evidence on modelling slope failure tsunamis, in Exhibit E7-4-2, page 4, Mr. McCormick asked about the impact of 30-40 meter waves on passing tankers. Mr. Roussel answered that the probability hadn't been calculated, but that the chance of having a vessel present at the time of a slope failure is "extremely unlikely". Dr. Cherniawsky pointed out that the period of intense tsunami wave activity would be very short, and would be contained within "the immediate region of the submarine landslide itself". 22166-22185

Mr. McCormick asked about potential slope stability concerns that would impact the terminal. Dr. Lintern explained that slope failures in Kitimat Arm "are being taken seriously by the Proponent", who is conducting reports on the issue. He described the Proponents reports on the subject so far, which have outlined steps needed during the detailed engineering design, including the need for better understanding of the slides and implications for design. 22188

Looking at Exhibit E9-6-30, page 25, NRCan's comment 108, Mr. McCormick asked questions about terrain hazards and risks for the Project. He noted NGP's changes to approaching failure likelihood in Exhibit B196-2, from earlier versions. Dr. Blais-Stevens was unprepared to comment on the issue. She was able to answer that there are a few areas in the lower Kitimat Valley that do not have glacial marine clay, but not many. 22209

Federal involvement with the port and terminal

Looking at Exhibit E9-21-12, page 105, Mr. McCormick asked if any federal government department would have the ability to create additional regulations to enforce the Proponent's terminal regulations. Mr. Roussel answered, that there is a formal review taking place with respect to various tanker safety issues, as well as amendments to the *Canada Shipping Act*. He added that the Governor-In-Council would be the authority on creating new regulations for oil handling facilities, if need be. 22256

Mr. McCormick asked which federal department would be responsible for the administration of the Kitimat port, if it were to be designated as a public port. Mr. Marier indicated Transport Canada would be responsible, pursuant to the *Canada Marine Act.* Discussion continued on requirements for equipment and certified response organization contracts in the Port under the Act. Mr. Marier clarified that such requirements fall under the *Canada Shipping Act*. Discussion continued. 22266

Mr. McCormick noted Kitimat Mayor, Joanne Monaghan's reported concerns about lack of consultation with the District in regards to port changes. Mr. Marier answered that the parties that are impacted by the regulatory process will be consulted in the future, including the District, industry and First Nations. 22291

Who should fund joint research projects for the Project?

Looking at a statement about the Proponent's responsibility to provide appropriate information and analysis in Exhibit E9-21-12, page 89, Mr. McCormick asked who should fund the collaborative government-industry research projects, such as the science committee on fate and behaviour of diluted bitumen. Dr. Caza answered that funding hadn't yet been addressed. 22310

Mr. McCormick asked if Environment Canada had enough information from the Proponent to reach definitive conclusions about risks to the marine environment associated with a spill. Dr. Caza answered, "there is still information outstanding relevant to our areas of expertise." 22326-22329

Mr. McCormick noted NGP's suggestion to apply a standardized industry procedure to a database it has agreed to provide, with physical and chemical properties of the products to be shipped, as noted in Exhibit B83-2, page 15. He asked what a standardized industry procedure for compiling such properties would look like. Dr. Hollebone wasn't sure what the statement meant, but noted that Environment Canada would advise NGP on the standards of practice used by the Department and by crudemonitor.ca. 22349

Dispersant use

Mr. McCormick asked what types of environmental and effects monitoring Environment Canada would require for the use of dispersants. Mr. Hogg pointed out that it is so far undetermined which department would have the authority to allow the use of dispersants. He noted that environmental end points would have to be established with scientists and stakeholders, in the event of a spill, which would help determine the responsible department. 22356

Mr. McCormick asked if in situ burning generates tar balls when responding to spills. Dr. Hollebone explained that burning as a response method always leaves residue, which must be considered when determining whether or not to use that mitigation technique. He was unable to provide details of the effectiveness of burning off product residue, or the likelihood of tar balls to sink. 22366