Enbridge Northern Gateway Project
JRP Hearing Notes

Day 57 – February 21, 2013 – Prince Rupert – Vol 141

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Contents

Order of Appearances

Northern Gateway Panel 2 - Prince Rupert

Marine Emergency Preparedness & Response

Mr. John Carruthers	Mr. Randy Belore	Mr. Jeffrey Green
Dr. Alan Maki	Mr. Owen McHugh	Mr. Greg Milne
Mr. Jon Moore	Dr. Edward Owens	Dr. Walter Pearson
Dr. Jack Ruitenbeek	Dr. Malcolm Stephenson	Mr. John Thompson
Mr. Chris Wooley	Mr. Dennis Yee	

Examination by Mr. Jesse McCormick for Haisla Nation (continued)

11958

Ecotoxicology in Fish

Mr. McCormick took the witnesses through statements in Exhibit B3-22, Adobe 64, and asked for agreement that it is difficult to generalize the potential for spill impacts and effects on a seasonal basis. Dr. Pearson agreed that the document is general, and that the spring is generally the most sensitive time for the given fish species.

Mr. McCormick asked for agreement, "*there is never a time when the effects of an oil spill would not present serious consequences in a highly productive and complex environment like upper Kitimat Arm and the adjacent Kitimat River estuary*". Dr. Pearson answered, "*I think we would agree that the vulnerability of the species in this region vary*

with season and that there's no one season where there isn't a species that could be vulnerable under certain conditions of a spill". 11963-11964

Discussion turned to the fact that there are several possible pathways of exposure to fish in a spill, depending on the seasonal and life stage of the fish, as well as the state of the oil and weather conditions. Dr. Pearson confirmed that fish can take up oil through their gills, ingestion, membranes of eggs, and other routes. Discussion continued around various life stages and species that are vulnerable to oil spills, and how oil impairs species, generally. Dr. Pearson spoke about the uncertainty of sub-lethal oil exposure causing mortality, and the uncertainty of population-wide effects. 11966

Dr. Maki spoke about the experience of the Exxon Valdez spill, pointing out that it "*didn't result in any major population effects to the pink salmon return*." He also indicated that the spill didn't result in "major" effects to egg and larval stage fish leading to compromised development and survival. 11994

Turning to more statements on the same page, Mr. McCormick asked for agreement around the complex interdependencies of physical and biological balances required to sustain the ecosystem in the Upper Kitimat Arm and Estuary. Dr. Pearson spoke about the "constant flux" of nature, rather than a state of balance, and the concepts of resistance and resilience of ecosystems. 12006

Mr. McCormick asked for agreement that given the noted complexity of ecosystems, "*it can be difficult, if not impossible, to reliably predict the outcome"* of a spill, and its effects on species. Dr. Pearson answered, "*I don't agree with the statement… that it's hopeless to be able to understand and assess the potential effects*", pointing out that "a substantial" body of literature exists on the ability of systems to recover from spills. 12021-12022

Similar discussion ensued, this time around effects to larvae and their food supply. Dr. Pearson indicated that there is a lack of research on effects of oil to eulachon. Mr. McCormick asked for agreement that losses to eulachon from a spill could impact the survival of fish, birds and mammals that use eulachon for food. Dr. Pearson again spoke about the difficulty of predicting such impacts, noting that species would switch their food sources in the absence of eulachon. 12024

Dr. Maki spoke about the survival of the herring population in Prince William Sound following the Valdez spill. Dr. Pearson added comments about researchers' findings of the success of the herring survival. 12037

Mr. McCormick asked questions about the likelihood of eulachon avoiding spawning areas in the Upper Kitimat Arm and Kitimat Estuary, in the event of a spill. Dr. Pearson answered that avoidance of areas can occur in some cases, but that it depends on circumstances. He stated that avoidance of spawning areas wouldn't necessarily mean a loss of hatchlings. 12045

Mr. McCormick asked about the witnesses' understandings of the Haisla traditional beliefs and fishing practices of eulachon. Dr. Pearson stated, "*I'm aware of the weariness of spawning herring and presumably spawning eulachon. It sounds to me like traditional knowledge is an important thing for us to understand here.*" Dr. Maki added comments about the Alaskan experience. Discussion continued around eulachon reproductive characteristics. 12059

Mr. McCormick sought confirmation of NGP's awareness of saltwater intrusion entering the Kitimat River upstream. Dr. Pearson agreed that saltwater travels up the Kitimat Arm though disagreed that such water would enter the river because it is so shallow. As such, he stated that oil "is unlikely" to enter the river. 12073

Continuing with Adobe page 65 of the exhibit, Mr. McCormick asked questions about NGP's evidence with regards to toxic exposure to herring eggs and larva. Dr. Pearson confirmed that oil uptake by adults entering spawning, can result in exposure to eggs, though indicated that such exposure doesn't have as serious effects as direct exposure to eggs. 12082

Dr. Pearson disagreed that maternal transfer of toxicity from contaminants can occur for herring. Discussion continued with regards to decreased survival as a result of genetic effects from oil exposure. 12092

Turning to Adobe 60, Mr. McCormick asked similar questions about NGP's evidence with regards to effects on various life stages of pacific salmon. Dr. Maki again spoke about the strong survival rate of salmon populations following the Valdez spill. He also provided details on the physiological changes in salmon embryos when transitioning into saltwater from freshwater. Discussion continued around the capacity of salmon to relocate in an effort to avoid an oil spill. Dr. Maki spoke about the strong salmon returns following the Valdez spill. 12100

Dr. Maki discussed the characteristics of a shallow estuarine, and saltwater versus freshwater estuary environments. Using an aerial photo of the area, he described the freshwater and sediment inputs in the Upper Kitimat Arm and Kitimat Estuary. 12121

Similar discussion continued with regards to sub-lethal effects of oil to salmon fry adapting from freshwater to saltwater. Dr. Maki stated, "*Laboratory exposures consistently show that the larval stages of fish are indeed the most susceptible to toxicants…[and it] is the most sensitive stage of a life cycle of any fish*". 12156-12166

Discussion continued with regards to general effects to fish at various life stages in the estuarine and near-shore coastal waters, at different times of the year. The witnesses provided general comments. Dr. Owens added comments about the geographic response plans, which he indicated the area in question will almost certainly have, and will involve consideration of oceanographic and rainfall data. He stated, "*I think this is the perfect example of the type of resource of concern, resources at risk that we look at in the planning phase before we have an operation*". 12173-12189

More on vulnerability of estuarine environments

Turning to pages 136-137, Mr. McCormick continued with questions related to a hypothetical 250 cubic meter spill near the terminal and resulting impacts to Kitimat Arm and Estuary. 12193

Continuing on with the same risk assessment example, Mr. McCormick noted NGP's statements about spilled dilbit coating rocks and penetrating gravel and rocky substrates. Dr. Owens answered that penetration would require sufficient space between sediments and the absence of sand. He also answered that tidal action wouldn't increase potential for penetration of tidal flats and that in fact, tides generally lift any deposited oil from tidal, sand, or mud flats and carry it up to the shore or offshore. 12207

Discussion continued with regards to tidal fluctuations in the area. Dr. Owens agreed that tides can fluctuate between 6.5 meters twice a day. He then agreed that deposited oil in the upper parts of the intertidal zone could reside in the tidal sediments. 12216

Mr. McCormick asked for agreement that a spill's size would generally correlate to the magnitude of the spill's effects. Dr. Owens disagreed stating that spill size "*is typically not a prime factor in the effects*", but that "*effects vary depending on location…or the pathway of the oil*." 12237-12242

Similar discussion continued, and moved to further discussion on the potential for sand and gravel particulates from river flow to cause oil to settle along shorelines. Dr. Owens' opinion was that oil wouldn't interact with the sand and gravel from the river, but would interact with particulates in the upper intertidal zone. He explained that wave energy would be required for oil to mix with the sediments, noting the low energy environment in the area. Please see transcript for greater detail. 12243

Mr. McCormick highlighted Dr. Owens' statements from Volume 134, line 2990-2992, such as "*those small particles when they interact with oil, they don't cause it to sink, in fact, they cause it to break down."* He asked if such breakdown causes oil to become more bioavailable and Dr. Owens confirmed that it does. 12264-12267

More on impacts of oil exposure to survival of aquatic species

Mr. McCormick asked if increased bioavailability also increases toxicity of oil to aquatic species. Dr. Maki answered that absorption of oil into fine particulate forms a tight bond, making the residual hydrocarbons "*much less available to exert effects on any biota*." 12268-12271

Mr. McCormick pulled up a peer-reviewed study that finds that dispersed oil will increase exposure of fish to contaminants. Dr. Maki and Dr. Stephenson provided opinions on the methods used in the study. Discussion continued. 12272

Turning back to Exhibit B3-22, page 56, Mr. McCormick asked questions about eelgrass habitat which is inhabited by benthic and infaunal communities. Dr. Maki stated that the habitat is "*only one of several habitats that juvenile salmon could use*", and is used by other aquatic species. 12323-12331

Mr. McCormick asked about Dr. Stephenson's previous comments with regards to a study that evaluated the sensitivity of various life stages of aquatic organisms to oil, in Volume 114, line 13239. Discussion continued around the model used and findings of the study. 12332

Mr. McCormick asked if NGP agreed "*even brief exposure to low levels of oil contaminants as well as extended exposures to fish during spawning and early development can result in decreased reproductive output of adults and decreased recruitment of juveniles?*" Dr. Maki spoke about findings from DFO laboratory tests in Vancouver, which found that exposure of crude oil to larval pink salmon, resulted in "*typical natural high mortality. And there were no discernable effects on survival that were attributable to the exposure of the water soluble fraction of the crude oil*." 12362-12368

Mr. McCormick asked similar questions with regards to heart malformation and failure in early life stages of fish when exposed to contaminants. The witnesses again discussed findings of experiments on the subject, pointing out the difficulty of extrapolating laboratory findings to the real world. 12370

Mr. McCormick asked for agreement that exposure to oil "*may alter the abundance, size, growth, and age distribution of fish populations*". Dr. Pearson again stated the difficulty of generalizing, indicating the complexity of different life stages and level of exposure. 12388

Effects on fish from exposure to oil and PAHs

Mr. McCormick asked further questions of the previously discussed DiToro model in relation to chronic effects of exposure to oil and PAHs. Please see transcript for details. 12417-12435

Calling up another study on the effects of PAHs to development of vertebrates, Mr. McCormick asked further detailed questions with regards to the mechanisms of PAH toxicity to early life stages of fish. Additional studies on the subject were later brought up. Readers are again encouraged to refer to the transcript for greater detail on the subject. 12436-12477

Noting the witnesses' criticisms to inadequacies of the research in discussion, Mr. McCormick asked if they agreed that there is a risk in relying on one model for a risk assessment if there is insufficient understanding involved. Dr. Maki answered that the models are "useful for understanding the effects and try to explain the ultimate effects" but that understanding spill consequences for populations should be done by looking at the BC studies that he had earlier referred to. 12478-12479

Questions on NGP's spill model depictions

Calling up Exhibit B16-9, NGP's Coastal mapping, Mr. McCormick asked what is meant by *long oil residency* as depicted in the Douglas Channel sensitivity map. Dr. Owens

confirmed it refers to fine grain flats, marshes, and lagoons, and that oil residency could mean "months to years". 12483

Pulling up Exhibit B25-5, pages 11-13, which depicts a model 250 cubic meter spill of diluted MacKay River Heavy Bitumen (MKH), Mr. McCormick asked why the scenario shows the spill travels from the Kitimat Terminal directly to the Haisla Nation Kitimat Village shoreline. Mr. McHugh answered that the depiction shows an unmitigated scenario, and that the wind and currents would move the oil to the depicted location. 12493

Mr. McCormick asked further details with regards to the modelled spill trajectory, and Mr. McHugh indicated what areas are identified as long oil residency, referring back to Exhibit B16-9, page 9. He continued to provide further details on the shoreline depositions depictions in the map, noting that more detailed mapping and sensitivity analysis for the area "is a future activity." 12511-12527

Mr. McCormick called up more maps showing NGP's depictions of spill modelling and asked further details of the models and fate of the spilled oil. The witnesses spoke about plans to develop geographic response plans with First Nations. Dr. Owens also confirmed that the type of shoreline in an area would be a primary consideration for response planning. 12530

Referring to the SL Ross meso-scale study, page 26, which depicts a predicted evaporation curve, Mr. McCormick asked why Cold Lake Bitumen diluted with condensate was chosen for the study. Mr. Belore explained that four different products had been originally suggested to provide examples of the range of products to be shipped. The Cold Lake bitumen and MKH were chosen so that one could represent a product diluted with condensate, and the other with synthetic. 12549

Mr. Belore agreed that the figure shows that after 48 hours, approximately 17.5 percent of the oil had evaporated. Turning to page 28, Mr. McCormick asked further questions about the density and viscosity changes of the products as they weather in various environmental conditions. Mr. Belore confirmed that the colder the oil is, the denser it becomes. 12559

Mr. McCormick called up Exhibit B193, page 9 and asked further questions related to the density changes of Cold Lake bitumen under two different simulation scenarios. He compared the results of the simulation with those in Exhibit B16-31, which tested the same product but came to differing results. Mr. Belore discussed the processes involved in the two different studies. Discussion on the details of the analysis continued. 12580

Logistics of recovering spilled oil

Mr. McCormick asked if oil spill response vessels would be required to have storage tank capacity to permit the storage of recovered oil. Mr. McHugh explained that it would depend on the type of vessel; some could be part of the vessel itself, and others could have portable tanks. 12630

Mr. McCormick asked if it were true that storage tanks may need to be heated when recovering viscous oil to enable them to empty quickly and return to gather more spilled oil. Mr. McHugh explained that there are different heating options for doing so. Mr. McCormick asked if such heating would slow down the recovery process and Mr. McHugh answered that such considerations would be accounted for during the detailed design of the project. 12636

More on viscosity and temperature changes of spilled diluted bitumen

Mr. McCormick asked further questions about the SL Ross meso-scale tank test, seeking to understand what the results of the density test would be at 15 degrees Celsius, rather than 20 degrees. Mr. Belore explained that the importance of the tank test was to understand if the product would sink through weathering alone, which it did not. 12666
Mr. McCormick asked the witnesses about their familiarity with the American Society for Testing in Materials (ASTM), and its guide for petroleum measurements. Mr. Belore spoke about the difficulty of applying generic models to predict densities of oil, given the complex mixtures of products. 12673

Mr. McCormick continued to gain an understanding of the density of the product measured in Exhibit B193, at 15 degrees. Mr. Belore acknowledged that a direct measurement had not been done and again spoke about the differing purpose and scope of the two studies of Cold Lake bitumen, again providing details of the two studies. Detailed discussion continued along the potential fate and behaviour of diluted bitumen as reflected in the studies in question. 12679

Alteration of test conditions

Mr. McCormick asked about the methodology in Exhibit B193, noting that the researchers "*adjusted fans, increased thrusters to move oil past dead zones, adjusted UV lamp output and otherwise adjusted or altered test conditions during the test*" (as indicated on page 14-15). He asked for agreement that manipulating the conditions would affect the test results. Mr. Belore spoke about the problems posed by sidewalls in the tank, which had to be adjusted to assure movement in the tank. 12724-12736

Mr. McCormick asked further questions about the implications of the study given the limitation of the altered results. Mr. Belore stated his opinion that the conclusions in the study were not compromised by the alterations in the tank, though agreed that different adjustments could change the results. 12737

Discussion on the matter continued. Noting Mr. Belore's comments that the study was not trying to match a particular environmental condition in terms of wind speeds or water currents, Mr. McCormick asked if he agreed, "*to the extent that it deviates from those conditions, it would not be realistic in its results*". Mr. Belore answered that a test would need to take place on a larger scale, but that it does "*provide some insight as to what will happen in the real world.*" 12762-12767

Mr. McCormick asked if Mr. Belore would expect similar results in the marine area of the project and Mr. Belore noted that the test used freshwater rather than saltwater, which is less dense. He also stated that the test used higher UV exposure than would be the case

in the marine area. He noted that the product didn't sink in the test conditions, confirming that heavy oil will not sink due to weathering alone. Discussion continued. 12768

Mr. Belore confirmed that the study in question didn't include any sediments or particulates, noting, "*given the right combination of sediment or sand interactions with oil, we know that oil can sink*." 12786

Mr. McCormick asked further questions around the distinction between waves and currents in the marine environment, as opposed to the simulated conditions in the study. He then asked further details of the study conditions, such as sample size and the fact that the tests were not replicated. 12791

Mr. Owens added comments about the certainty that the oil products in question will not sink. Mr. McHugh confirmed that the test is the only one NGP has conducted for the purpose of determining whether dilbit will sink or float. He noted the company's commitment to conduct further study on the subject through the Scientific Advisory Committee, noting that further information is needed on fate and weathering of oil. 12817

Discussion continued around the witnesses' confidence in the results of the study, and whether or not professional expertise is being offered rather than opinion. 12823

Noting that the study in question looked at only one parent oil, Mr. McCormick asked how the results would differ if a different dilbit was chosen. Mr. Belore spoke about the general viscosities of all diluted bitumens when they are first spilled, but will then change as they evaporate and weather. He indicated that such diluted products will not weather and sink by weathering alone. Discussion on the properties and behaviour of the products continued. 12838

Mr. McCormick asked if the two products tested by NGP are representative of the entire range of products that will be transported according to NGP's tariff. Mr. Belore answered that those tested provide a good surrogate and that he believes NGP's tariff will ensure those shipped will have similar densities and viscosities to those tested. Discussion continued around the applicability of the test results to waters between 1 and 5 degrees Celsius. 12851

Turning to page 13, Mr. McCormick highlighted a statement in the study, about the collection of oil 10 centimeters below the surface, which was subsequently classified as surface oil. He asked what basis the classification was made. Mr. Belore answered that 10 centimeters was selected because it was where the most highly concentrated oil had adhered to the sidewall of the tank. Mr. McCormick asked if the increase in viscosity was responsible for the adherence to the sides of the tank. Discussion on the matter continued. 12865

Mr. Belore confirmed that the researchers found oil adhering to the sidewalls below the 10-centimeter mark, and agreed that it shows a "temporary submergence". Discussion continued around the potential for entrainment of spilled oil in open ocean conditions, as a result of wave energy, which the witnesses agreed to. 12872

Mr. Belore confirmed that 15 percent of the oil in the tank adhered to the tank wall below 10 centimeters. Discussion continued on the mechanisms used in the test to prevent entrainment in the tank, and whether or not it prevented submergence of oil, and prejudiced the results. More questions were asked in regards to the applicability of the test conditions to real world marine conditions. 12897

More on the potential for dilbit to sink in water

Mr. McCormick pulled up a document comparing the relative densities of water and bitumen as a function of temperature, noting that at 20 degrees Celsius, the two substances have similar densities. He highlighted that as temperatures drop, the density of water doesn't increase at the rate that bitumen does. He asked for agreement that the differing density change rates between the two substances will affect the potential for bitumen to sink in water below 20 degrees. Mr. Belore pointed out that the document was showing information on bitumen, but that NGP would be shipping diluted bitumen, which is a unique product. 12949

Mr. McCormick asked if water temperature was considered in NGP's modelling, spill response strategies, or considerations on the fate and behaviour of the products they would be shipping. Mr. Belore answered that the modelling included temperatures in various simulated summer and winter temperatures. 12966

Mr. McCormick brought up a document from the U.S. NOAA, on the fate and transport of the Selendang Ayu tanker spill. Discussion ensued around the findings of that spill, and the similarity of the products to be shipped by NGP to those spilled from the Selendang spill. 12969

Recovery of submerged oil

Mr. Belore confirmed that NGP agrees over wash from wave action can cause spilled oil to be forced below the surface into the water column, even if the oil is less dense that the water. The witness explained the factors influencing the depths of such temporary submergence, and the mechanisms of the process. 12978

Dr. Owens confirmed that in-situ burning cannot take place when oil is forced below the water's surface. He noted that controlled burning involves the use of containment booms, which reduce wave action and allow for effective collection for burning. 12992

Discussion continued around the requirements for the recovery of spilled oil through the use of skimmers. Mr. McCormick asked if attempting to bring submerged oil to the surface for recovery would be less effective than recovering floating oil from the surface. Dr. Owens answered that it would depend on the size of the oil particles. Discussion on the matter continued. 12996

Mr. McCormick asked how NGP would locate oil submerged from wave action. Dr. Owens answered that there are various techniques available such as visual observations, florescent and radar techniques. Discussion turned to NGP's plans for access to links of skirted boom for immediate deployment. 13010

NGP's product tariffs

Mr. McCormick asked for confirmation that NGP had filed a crude petroleum tariff, but none for condensate. Mr. McHugh answered that the oil tariff was filed and that the condensate tariff "was also put on the record". He called up Exhibit B39-12, and discussion continued around the difference between *tariff* and *pool* in the given context. 13028

Discussion continued about whether or not NGP had been in compliance with Enbridge's tariff requirements given that the condensate tariff had not been filed. Mr. Milne explained that NGP had not yet developed its product tariff, but that it would likely be consistent with Enbridge's current tariff. 13036

Mr. McCormick asked further questions about the existing Enbridge tariff. Mr. Milne confirmed that it requires that condensate must have a density between 600 and less than 800 kilograms per cubic meter. Mr. McCormick asked if such density would convert to a given API range, and Mr. Langen objected. Mr. McCormick explained that he was trying to gain an understanding of whether the projected condensate tariff for NGP would potentially mean shipping a product that could be outside the scope of the tests NGP had run, and have distinct risks in spills. He was encouraged to proceed directly to his question. 13059

Mr. McHugh again confirmed the approximate density requirements for the condensate tariff. Mr. McCormick asked for agreement that the range in composition of the condensate to be shipped by NGP could also result in a wide range of potential environmental effects. Mr. McHugh answered that NGP's environmental assessment looked at a wide range of products from heavy to light oil. 13082

Mr. McCormick asked for agreement that NGP had modeled only one condensate and Mr. McHugh agreed. Mr. McCormick asked if the witness thought one modeled condensate was sufficient to represent the range of products that may be shipped in accordance with the tariff that is yet to be developed. Mr. McHugh again stated, "*we've covered the range of products from high to low.*" 13093

Fate and behaviour of spilled condensate

Mr. McHugh confirmed that condensate and diluted bitumen would be shipped separately, one being imported, and the other exported. Mr. McCormick again sought comments on the notion that the range of products that have been tested hasn't adequately informed potential environmental effects, because it requires "comparing apples to oranges". Mr. Belore explained that the lighter condensates would have a higher evaporation rate if spilled, and lower impact to the water column as a result. He added that it would have a rapid dispersion rate. 13097

Mr. McCormick asked further questions about the expected behaviour of the condensates at each end of the viscosity and density range, and what effects could be expected of the condensate products to be shipped. Discussion on the matter continued at length. 13107

Mr. McCormick asked if a condensate spill would automatically result in a dilbit spill at the same time. Mr. Belore indicated that it would be possible to have a condensate spill only. Mr. McCormick asked for agreement that it is therefor important to understand the effects of spilled condensate without diluted bitumen. Mr. Green answered that NGP's environmental assessment did just that. Reiterating the findings that condensate tends to disperse quickly in water, and has different effects on fish. 13160

Discussion on potential effects of the various products continued, with Mr. Belore stating that the behaviour of spilled condensate in water will be "pretty much the same" whether it be heavy or light condensate. Mr. McCormick asked if such a conclusion was reflected in NGP's modelling and Mr. Belore again explained why only one condensate was modelled. Discussion continued with regards to the difference in persistence between condensates and dilbit, with Dr. Stephenson stating that condensates are not persistent. 13175-13186

Mr. McCormick asked for agreement that condensate spills may result in water column clouds of hydrocarbon contamination. Mr. Belore answered that the light product could be expected to evaporate and under breaking wave conditions to disperse into the water column. Mr. Belore also agreed that heavier condensates would spread through a larger area of a water column when spilled. 13198

Mr. McCormick asked if it were true that there are fewer spill response options for hydrocarbon contamination in water columns as opposed to spills remaining on the water's surface. Dr. Owens agreed, stating, "*there are no techniques that we use for attempting to contain or recover oil from a condensate spill in the water column… It presents a safety hazard*." 13206-13208

Noting that heavier condensates will spread into a larger marine area than lighter condensates, Mr. McCormick asked if this meant it would likely expose a larger distribution of marine organisms to toxic chemicals. Similar discussion continued. 13210

Mr. McCormick asked if NGP would allow tankers to use its terminal if carrying condensates that are heavier than what is permitted in its tariff. Mr. Milne answered that NGP would only accept products meeting the tariff. 13226

Mr. McCormick called up NGP's risk analysis, and noted the objective to "*characterize the risks associated with accidental release…*" and to use "*credible worst case examples*". He asked whether worst case examples had been used and also asked for confirmation that NGP's spill modelling did not take into consideration subsequent project design revisions to oil and condensate tank specifications, as reflected in Exhibit B182-2 and Exhibit B197-2. Discussion on the matter continued at length and Mr. McCormick requested an undertaking to explain the methodology and source information used to prepare Table 5-1, from the Quantitative Risk Analysis. The matter was delayed until a page number could be confirmed in the morning. 13231