Enbridge Northern Gateway Project
JRP Hearing Notes

Day 23 – October 16 2012 – Prince George

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12078

Tanks and the tank farm

Yesterday, Mr. Hudson said he had questions in seven areas. His first was related to the tunnelling work. This morning, he looks at the tank farm in Kitimat.

With Mr. Doering, he established that the terminal will be designed for 14 tanks, 3 for condensate and 11 for oil. Capacity at the site for two additional tanks is drawn in the plans. The condensate will be commingled. Oil will be stored in four different "commodities".

Noting that the future capacity potential of the oil pipeline is 850,000 barrels per day from the present 525,000 and the condensate pipeline is 275,000 bpd from 193,000, Mr. Hudson asked about additional tankage. Mr. Doering answered that locations for two potential future tanks were in the plan, and that other sites in the vicinity have been evaluated. He said that if they don't change the commodity mix, they may not need additional tanks – just greater utilization of the existing tanks. He was fairly certain that expansion would not require additional tanker berths. 12087

Mr. Wong spoke about tank design and seismic considerations: in Los Angeles tanks are designed with diameter to height ratio of 6:1, in Kitimat the are planning on 4:1. 12103

In a series of questions, Mr. Hudson focussed on tank and tanker capacities, transfer rates, and logistics between tankers, tanks, and pipelines. 5 tanks, for example, could fill a VLCC tanker. Loading time is 48 hours. The "working capacity" of a 78,000 m^3 tank is 67,700 m^3.

Mr. Hudson asked about training and if Enbridge has access to port facilities where that training can take place. The subject belongs with the next panel.

He asked whether API650, which specifies standards for oil storage tanks, requires taking into account the protection of the environment. Mr. Wong assured him that it does. 12174

Mr. Wong and Mr. Hudson discussed storage berms and containment. Mr. Wong explained that there is containment surrounding all the tanks – at present about 10% of a tank – but it is diverted to the 250,000 m^3 remote empoundment. 12192

Pipeline hydraulic design

Mr. Hudson's next set of questions relate to pipeline hydraulics and maximum pressures. He referred to Exhibit B109-10. Mr. Maury Potter, Supervisor of Pipeline System Design for Enbridge, is affirmed as a witness. Mr. Hudson presented a scenario in which a valve closes downstream from a pump station. Would an overpressure situation arise? Mr. Potter said that it could, theoretically, but the pipeline would shutdown "far before you ever reached this condition. This is followed by an extensive discussion of hydraulics, pipe thicknesses, etc. 12223

Mr. Potter said, "We conduct a transient analysis where we analyze various abnormal operating conditions for the pipeline." He referred to Exhibit B64-2, page 46. He also clarified that the old wall thickness design was simplified with the recent change to thicker pipe throughout. 12264

Project milestones

In Exhibit B1-5, Table 1-1, Mr. Hudson noted the timeline is out of date, and he reviewed the schedule with Mr. Doering. NGP expects to complete a Class 3 estimate (-15% to +25% uncertainty range) by mid-2014 at which point 30%-40% of the design will be completed. This would include procurement of pipe and other equipment, according to Mr. Doering, and "potentially … would align with a decision by the JRP." 12302
He asked for a revised project schedule. 12345

Mr. Hudson asked if the pipe can be manufactured in Canada. The reply is that an operation in Portland Oregon is able to manufacture the 20 inch pipeline, and may retool to manufacture the 36 inch pipeline. 12332

He asked questions about clearing schedules and construction of work camps. Mr. Cavers said that the "collection of the primary geohazards data and associated investigations will be done prior to construction" and prior to clearing. 12354

Frequency of inline inspections

NGP has committed to increase the frequency of its inline inspections by 50% "over and above current standards." Mr. Hudson asked, which standards? Mr. Doering said, "Enbridge's own integrity management standards" which are in compliance with CSA Z662. For details, Mr. Hudson is referred to the next panel. 12374

Citing NGP's commitment to staff all of its pump stations continuously, Mr. Hudson asked about the employment impact, and training requirements, and for an update to the human resource estimates for the project. Mr. Doering calculated that the commitment will mean 40 to 50 additional personnel. 12384

Air testing

Mr. Doering said that there could be locations where air testing might be the most appropriate method of testing. Mr. Hudson asked if it is a good test for leaks from small defects. Mr. Fiddler said there is "work to be done" before a decision is made about air testing. Mr. Doering confirmed that if air testing is to be done, Category 2 pipe will be required in those areas. 12402

"What is the highest density oil to be transported on NGP?" Mr. Doering replied 940 kg per cubic metre. 12411

Hydrocarbon sensors

Volume 88 of the transcripts includes discussion of floating hydrocarbon sensors (paragraph 9207) in questioning by Mr. Izzard. Mr. Hudson asked Mr. Callele for a description of how these technologies work and their applicability with NGP. Discussion begins at 12422

Class 3 estimates and costing considerations

Discussion about the Class 3 estimates begins at 12460.

In this discussion, Mr. Doering calculated the current "preliminary and unclassified" cost estimate for the project at $7.885 billion including funds used during construction or "AFUDC". Without AFUDC, it's $6.571 billion. Using an approximate 60/40 cost allocation, the oil pipeline share of this is, according to Mr. Doering, $4.126 billion. If only the oil pipeline were to be built, the unclassified estimate is $4.815 billion. On operating and tolling costs, Mr. Doering was unable to provide an answer without an undertaking. 12507

Examination by Hans Matthews of the Joint Review Panel 12549

Sulphide bearing rock

Mr. Matthews stated that he has questions for "the rock doctors" about the Hoult and Clore tunnels. Mr. MacKay stated that the *in situ* rock volume is about 350,000 m^3, and the broken rock volume would increase by a bulking factor of 30% to 40%.

Mr. Matthews asked, "How would the company dispose of 25,000 m^3 of sulphide bearing rock?" Mr. MacKay replied that the material would be segregrated, contained and encapsulated. Mr. Cavers added that the main issue is keeping water and oxygen away, and they may add limestone. In the worst case, removing the rock is another possibility.

Examination by Kenneth Bateman of the Joint Review Panel 12583

Mr.Carter's inefficient use of hearing time

Mr. Bateman stated that using the hearing process to sort out consultation and communication situations as Mr. Carter was doing yesterday, "uses a great deal of valuable time." "What type of outreach is occurring?" Mr. Doering replied, "We've extended the opportunity to have further dialogue" and "There is a standing offer."

Mr. Bateman asked what consequence using Category 2 pipe would have on costs. Mr. Doering said that it is not an issue with cost, but rather with technical challenges associated with wall thicknesses. Mr. Mihell joined the discussion with a more detailed explanation. 12598

Mr. Bateman also had questions about welding pipe outside a tunnel and moving it into the tunnel (12610), and about landslide mitigation and control (12625).

Pile and deck berthing structure

His final question was to Mr. Acton, who has not been able to contribute much on this panel. Did he have any thoughts he'd like to share? Mr. Acton said that his expertise is the design and construction of maritime structures and in this project, specifically the tanker berths. He explained briefly the various methods of berthing tankers which were considered – steel-framed jacket structure, floating structures, single-point mooring, and the pile and deck structure that they settled on. 12639

Examination by the Chairperson of the Joint Review Panel 12650

Acoustic in-line inspection tool

To Mr. Callele, the Chairperson asked if the acoustic inline inspection tool is in use anywhere. Mr. Callele replied that one tool they are currently using needed modifications (extended battery life and memory) for the NGP applications, and that the other has been used for years in Europe, but needs to be custom built for each pipeline application.

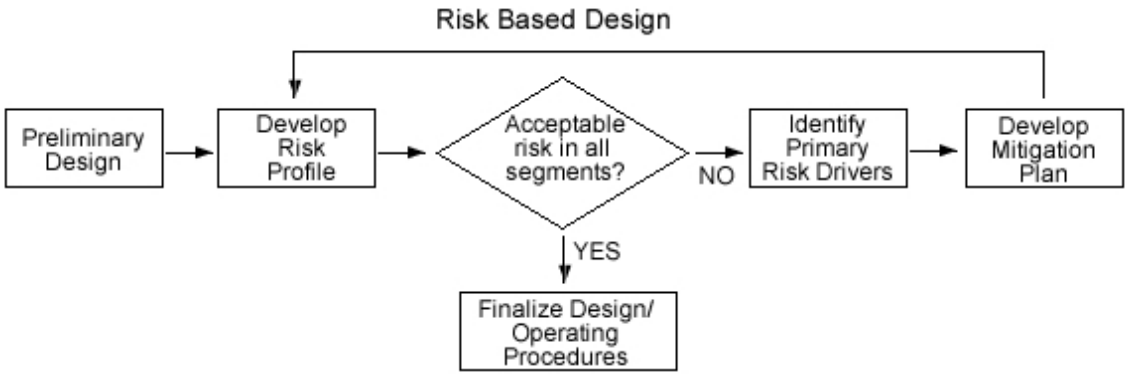
She also asks a question about material balance systems and the effects of elevation (12678), about micro-tunnelling and its constraints (12694).

Changes you might have made in doing the SQRA?

The Chairperson asked any of the panel members to respond to this question. Mr. Doering spoke to their awareness that there is a lot of good data and informed people in provincial and federal ministries and elsewhere and it would be good to form or to have formed a more comprehensive working group. The Chairperson basically nudged him to get going on it. 12715

Mr. Cavers said they would integrate the mapping and the model sooner in the process, rather than piecing parts of it together later. 12740

Mr. Mihell said that in the risk-based design process, he would have described "a lot more process" around the diamond in the centre that establishes "acceptability of risk." 12752



Introduction of Enbridge Northern Gateway Pipelines Panel #3 by Dennis Langen 12779

Mr. Langen introduced the members of the Pipeline Operations, Emergency Preparedness & Response Panel, asked that they be affirmed or sworn in, then named the witnesses, their titles, and their specific areas of expertise.

Examination by Christopher Jones for the Province of British Columbia 13090

Worst case spill

Mr. Jones stated that his questioning is going to be focused on Northern Gateway's plans and capability for responding to spills. He first asks the witness panel about the worst case spill at a watercourse crossing. Mr. Doering said that 2000 m^3 is a guideline used to ensure that valve spacing was frequent enough to keep release volumes at or under that volume in sensitive environments.

On average, said Mr. Doering, the calculated volume on the 131 “isolation points” is 1800 m^3. Some locations will be higher, but those are not associated with a sensitive environment. On the condensate pipeline the comparable volume is 600 m^3. 13143

Mr. Jones asked if the 2000 m^3 is a combined spill volume if both pipelines experienced a full bore rupture. Mr. Doering said it is not a combined scenario. 13155

With respect to a worst-case scenario, NGP has said, “A difficult to access location with a release into a watercourse and the resultant downstream transport and impact is expected to present the greatest difficulty for clean-up and remediation.” JRP IR 3.3 (c.10). Exhibit B32-2. Mr. Jones said he would like to review some of the difficulties that might be faced in the event of a spill. 13182

Remoteness

Mr. Doering said that in its route development NGP has attempted to make as much use as possible of existing access roads, but he cannot identify what portion of the pipeline would be more than 2 km away from road access. Mr. Jones asked NGP to confirm the number of routes selected to be next to or adjacent to existing linear disturbances. 13223

NGP confirmed that it has not at this point identified watercourse crossings which are boat-accessible, nor has it "determined access areas or places in which it could access where a spill could travel."

River control points

Continuing to highlight issues that Northern Gateway has not yet developed with respect to responding to spills, Mr. Jones confirmed that the "River Control Points for Oil Spill Response Technical Data Report" (Exhibit B17-1 is the first of 17 reports) is for only some streams and is not completed as a full tactical response plan would be. Nor has NGP gotten any further than a few examples of access management plans. 13257

Don't you want to know now if you can access a stream?

Mr. Jones said, "Wouldn't you want to know today -- I mean, if you are committing to world-class spill response and spill response that is intended to be effective, wouldn't you want to know today whether or not you are going to be able to access those parts of the -- of watercourses where a spill might end up?" 13321

Mr. Underhill replied, "We're looking at a window of approximately five years to do aggressive work and detailed work to develop the emergency response plan. We've provided examples of what segments of that plan may look like. Those are going to be augmented with detailed design. But we have a lot of work to do." 13322

Dilbit sinks with sediments

Mr. Jones asked if weathered dilbit may sink in watercourses. Dr. Horn said that most studies have found that it does not reach a density greater than 1. Mr. Jones referred to other evidence filed by NGP that said that when mixed with sediments in water, 50% or more of the entrained oil may sink. Dr. Horn said, "That is a different question." 13403

Dr. Horn explained that this is what happened in Michigan, that the rivers were turbid with suspended solids, which mixed with the oil, and sank. 13418

Mr. Underhill described some of the challenges in Michigan, in which Enbridge used a fluvial geomorphologist to indentify areas were submerged oil would collect. "I do think we had a good success … removing the bulk of the submerged oil. When I say bulk, … these are small, small droplets that are suspended or that have submerged and have sediment attached to them." 13454

Mr. Jones: "Is there anywhere in the evidence that Northern Gateway has produced in this proceeding which explains how Northern Gateway would respond to that difficult challenge of submerged oil? Especially in the context of the conditions that Northern Gateway would face in British Columbia? 13484

Mr. Underhill refers to NGP' Submerged Oil Recovery Plan (Exhibits B-132-5 & B-132-6) and Appendix D of the Kitimat Valley Study (Exhibit B83-17). He acknowledged that "at this point they're preliminary."