Day 17 – October 9, 2012 – Prince George

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Order of Appearances

Enbridge Northern Gateway Pipelines Panel #1

Pipeline and Terminal Design and Engineering Panel

Ray Doering	Peter Acton	Barry Callele
Drummon Cavers	Tom Fiddler	Shane Kelly
Clive Mackay	James Mihell	Peter Wong

Examinations

Elizabeth Graff for Province of British Columbia 4899

Opening remarks by Sheila Leggett, Chairperson for the Joint Review Panel 4632

The Chairperson welcomed everyone and introduced her fellow Panel members, Kenneth Bateman and Hans Matthews. She stated that the focus in Prince George will be on the terrestrial pipeline. The specific issues to be covered include: engineering, design and construction, operations, safety and accident prevention as well as the potential socioeconomic and environmental effects of the pipeline.

Introduction of Enbridge Northern Gateway Pipelines Panel #1 by Kathleen Shannon 4722

In her introduction, Ms. Shannon introduced the witness panel members, and ran through the information listed in pages 3 &4 of Exhibit B136 which contains a full list of Northern Gateway Pipelines' witness panels, titles and responsibilities, issues and evidence, including the Application.

Examination by Elizabeth Graff for Province of British Columbia 4899

Aerial Photos and LIDAR

Ms. Graff's questions were primarily directed to Mr. Cavers and Mr. Kelly, both geotechnical experts. She began with questions about the usefulness and limits of aerial photos and LIDAR to detect landslides, and the extent of LIDAR coverage in BC.

Mr Cavers replied that they have continuous coverage through the Coast Mountains, and additional areas of "larger topography, deeper valleys" and greater susceptibility to slides. Mr. Doering stated they intend to acquire LIDAR data on the entire route as they advance into the design phase. 4933

PEAA and PDA

Ms. Graff established the meaning of two terms which will be in common usage during the hearings: Project Effects Assessment Area (PEAA) which is a 1-km-wide corridor containing the pipeline right-of way (RoW), and the Project Development Area (PDA) which is a 25-m permanent corridor within the PEAA containing the pipeline RoW, plus a 25-m-wide temporary workspace and additional workspace.

Structural inefficiencies arise with the witness panel arrangments

In asking questions about the "Geology and Terrain Technical Data Report," (B12-1) which is described as "surficial geology mapping," Ms. Graff discovered that those questions belong with another of the Prince George panels. Her questions related to terrain stability, but her inability to examine the contents of the report with this panel demonstrated an inefficiency inherent in the witness panel arrangements. 4946

Geotechnical assessment

Mr. Cavers provided a lengthy description of the steps involved in the geotechnical assessment. It did not depend on, and generally did not include data from, the report Ms. Graff had been concerned with. 5220

Glacial marine clays and Chist Creek

Ms. Graff asked about glacial marine clays, and focussed on Chist Creek where two of three exploratory drill holes showed the presence of of clays. She quoted from a report by James Schwab filed by the Northwest Institute for Bioregional Research (D155-6-06), "Chist Creek above the confluence with the Kitimat River cuts through glacial fluvial and glaciomarine sediments, forming terraces, steep scarps and benches." 5302

Her concern was that not all areas of known clays were mentioned in NGP's glacio-marine clay report (B45-10). Mr Cavers said they were "cavilling after a hair." 5332

Ms. Graff asked, "Given the known risk that is posed by these types of materials, … why exactly was it determined by Northern Gateway that it would be appropriate not to confirm … the presence of these clays and … the risk that they may pose before approval of this project?" She pointed out other areas of instability with landslide and debris flow potential which have not been mapped. Mr. Cavers replied that what they have done is appropriate at this stage. 5353

He described their design process as one of progressively compiling more data, and refining the mapping and the design. In their "conservative" approach, he said that polygons on the mapping would be larger, encompassing a greater area, than they will later. He also said that a primary design concern is to identify "containment hazards", those which could result in a spill or loss of contents. He referred to their "Quantitative Geotechnical Hazard Report" (B75-2) 5540

Landslides, classification, and recurrence intervals

Ms. Graff cited Mr. Schwab again, this time with reference to landslides that have ruptured pipelines in British Columbia, and which have been known to travel more than 4 kilometres. Mr. Cavers said that when two rock avalanches cut the PNG pipeline, he was the geotechnical engineer who determined how to put the pipeline back in service. 5564

He said that the hazards which travelled 4 km were in valleys west of the Telkwa Pass, an area that NGP specifically avoided with Northern Gateway routing because of the nature of the geohazards.

He also explained that there are different ways of classifying landslides which are discussed in B75-2, but "moderately deep" and "deep-seated" is a useful distinction for NGP's purposes. 5576

Mr. Cavers also said that they had considered recurrence or return intervals in their temporal analysis of geohazard occurrence, but that their concern is primarily with the potential that a slide can occur, not with its frequency. 5589

Ruptures: Northern Gateway vs PNG

Asked about studying landslides that have ruptured pipelines, Ms. Graff cited a document from Pacific Northern Gas which lists 14 "outage events" in 10 years. Mr. Cavers said "these outages were not along our route," and is in no way "representative of the terrain or the experience that we will have for the proposed Northern Gateway pipeline."

Mr. Cavers emphasized that it is both route choice and engineering which will reduce risk from landslides and outages. 5620

Effects of climate change & permafrost

In response to the final questions from Ms. Graff, Mr. Cavers said that they have considered climate change but there is considerable uncertainty about what changes might result that could affect the pipelines: both more and less rainfall has been predicted, temperature changes may range from two to six degrees by 2080.

"We're not depending on favourable climate; we're mitigating things so that the pipeline will be safe under an unfavourable condition if that occurs." 5648

As for permafrost, while an important factor for pipelines, they have identified no permafrost areas to date, but will examine areas of potential permafrost. 5700