JOINT REVIEW PANEL FOR THE ENBRIDGE NORTHERN GATEWAY PROJECT
COMMISSION D'EXAMEN CONJOINT DU PROJET ENBRIDGE NORTHERN GATEWAY

Hearing Order OH-4-2011
Ordonnance d'audience OH-4-2011

Northern Gateway Pipelines Inc.
Enbridge Northern Gateway Project
Application of 27 May 2010

Demande de Northern Gateway Pipelines Inc.
du 27 mai 2010 relative au projet
Enbridge Northern Gateway

VOLUME 70

Hearing held at
Audience tenue à

Holiday Inn Conference Centre
4485 Gateway Blvd.
Edmonton, Alberta

September 5, 2012
Le 5 septembre 2012

International Reporting Inc.
Ottawa, Ontario
(613) 748-6043

Canada

This publication is the recorded verbatim transcript and, as such, is taped and transcribed in either of the official languages, depending on the languages spoken by the participant at the public hearing.

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Printed in Canada

Imprimé au Canada

HEARING /AUDIENCE
OH-4-2011

IN THE MATTER OF an application filed by the Northern Gateway Pipelines Limited Partnership for a Certificate of Public Convenience and Necessity pursuant to section 52 of the *National Energy Board Act*, for authorization to construct and operate the Enbridge Northern Gateway Project.

HEARING LOCATION/LIEU DE L'AUDIENCE

Hearing held in Edmonton (Alberta), Wednesday, September 5, 2012
Audience tenue à Edmonton (Alberta), mercredi, le 5 septembre 2012

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ERRATA

Tuesday, September 4, 2012 - Volume 69

Paragraph No.:	Should read:
14400: "**MS. GRIFFITH:** ..."	"**MS. BOYE:** ..."
14411: "…Panel 4…"	"…Panel 1…"
14473: "…crude oil process by…"	"…crude oil processed by…"
14473: "…synthetic crude process by…"	"…synthetic crude processed by…"
14491: "…page 51…"	"…page 51 of Exhibit B83-4…"
14492: "…increases by about 1 percent…"	"…decreases by about 1 percent…"
14624: "…about how this market works,…"	"…about how this model works,…"
14637: "...-- I say at least higher…"	"...-- I should say at least higher…"
14639: "…to speak to his in a minute,…"	"…to speak to this in a minute,…"
14675: "…you expect bringing forecast to grades."	"…you expect from forecasts degrades."
14675: "…forecast the grades…"	"…forecast degrades…"
14678: "…more of the industry develops,…"	"…more of the industry developments,…"

ERRATA

<u>Tuesday, September 4, 2012 - Volume 69</u>

Paragraph No.:	Should read:
14688: "…that is in their base case."	"…that is in the base case."
14689: "Now, that is a flawed…"	"Now, if that is a flawed…"
14713: "…actually flowing a line --…" --…"	"…actually flowing down the line
14713: "…50 percent of upgraded is being…"	"…50 percent of upgraded product is being…"
14717: "…ratio of Pacific producers of bitumen was synthetic…"	"…ratio of specific producers of bitumen with synthetic…"
14725: "…then finally they ask about the synbit…"	"…then finally Athabasca synbit…"
14733: "…Alberta refineries to lessen the light,…"	"…Alberta refineries particularly the light,…"
14740: "…Mr. Earnest…"	"…Mr. Fisher…"
14749: "…Mexican Maya Heavy Sahara crude…"	"…Mexican Maya Heavy Sour crude…"
14783: "…petrochemical projects…"	"petroleum products…"
14818: "…that's using naphtha for off-treatment process…"	"...that's using naphthenic froth treatment process…"

ERRATA

<u>Tuesday, September 4, 2012 - Volume 69</u>

Paragraph No.:	Should read:
14821: "…using the naphthenic treatment process,…"	"…using the naphthenic froth treatment process,…"
14857: "**DR. ROBERT CHAHLEY:** ..."	"**DR. ROBERT MANSELL:** …"
14901: "…modelling of that project…"	"…modelling of the operations of that project…"
14904: "…suppress that of 100 percent pipe produced..."	"…suppress that so 100 percent of the pipe is produced domestically…"

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AQ2	Aid to cross-examination - Pipeline News published July 22nd, 2011	15697
AQ3	Aid to cross-examination - Conference Board of Canada report	16209

UNDERTAKINGS/ENGAGEMENTS

No.	Description	Paragraph No./No. de paragraphe

--- Upon commencing at 9:29 a.m./L'audience débute à 9h29

15211. **THE CHAIRPERSON:** Good morning, everyone. Bonjour à tous. If we could get everyone to take their seats, we'll be ready to get underway shortly.

15212. Are there any preliminary matters to be raised this morning?

15213. Hearing none, Ms. Chahley, would you please continue with your questioning of this panel?

JOHN CARRUTHERS: Resumed
PAUL FISHER: Resumed
NEIL EARNEST: Resumed
ROBERT MANSELL: Resumed
ROLAND PRIDDLE: Resumed
JACK RUITENBEEK: Resumed
MARK ANIELSKI: Resumed

--- EXAMINATION BY/INTERROGATOIRE PAR MS. CHAHLEY: (Continued/Suite)

15214. **MS. CHAHLEY:** Thank you and good morning.

15215. Dr. Mansell, we were talking last day about your methodology, and I just wanted to finish off a few more questions there so I understand them better.

15216. As I understood what you had said last day is that you had run your -- run the I/O model from StatsCan, but then you had done a number of adjustments based on your own separate modules that you used for that -- this kind of analysis. Is that a fair summary?

15217. **DR. ROBERT MANSELL:** Yes, that's correct.

15218. **MS. CHAHLEY:** And I think you also told me that a summary of the modules and how you did that work has -- does not appear in the report. It's not that I missed it; it's just you didn't add that in. Is that correct?

15219. **DR. ROBERT MANSELL:** That's correct.

15220. **MS. CHAHLEY:** And is that work available so that there would be a possibility for me to have a review of it or for others for transparency? Is it something that you could share with us at a later date?

15221. **DR. ROBERT MANSELL:** So you're asking for the proprietary model that we use?

15222. **MS. CHAHLEY:** No, I'm not asking for the details of your -- so let's just stop. As I understand what you just said, that part of the -- using the modules is a proprietary item that you use. Is that correct?

15223. **DR. ROBERT MANSELL:** That's correct.

15224. **MS. CHAHLEY:** What I'm asking for is, is I gather from what you said is that in utilizing your model, you made adjustments to take into account things that would happen over time or things that were different in the model than you thought were the reality for this project and so you made adjustments; am I correct so far?

15225. **DR. ROBERT MANSELL:** Yes. As well as inputs -- included inputs that relate, for example, to the work done by Muse Stancil.

15226. **MS. CHAHLEY:** And so what I'm interested in is whether you can share with us those alterations or the reasoning behind them or how you chose to make those changes or to focus on those matters.

15227. I guess what -- I'm not sure what I -- to ask for because I don't know your model. But I know that there's a piece of your analysis that I can't look at here because you haven't shared it, and I'm wondering if there's something that you can share with us to make it more transparent what you did.

15228. **DR. ROBERT MANSELL:** So as I understand it, you're asking for a summary of the mechanics of preparation of the estimates?

15229. **MS. CHAHLEY:** Okay. I'm -- perhaps that's what I'm asking for. I'm asking for some help from you as to what I could look at that would allow me to understand better how you took into account time or how you've altered the model to take into account other realities than what was in the Stats Canada model.

15230. So if that's a summary of the -- I mean, I don't know the right words to ask you as to what I want. You know what you have that would give me that information.

15231. **DR. ROBERT MANSELL:** So this would be an undertaking that we would provide ---

15232. **MS. CHAHLEY:** Well, first I'm asking if it's possible for you to share that with us and if it is, then yes, the second part would be that I would ask you, if you can, then you would be able to provide it.

15233. But before I ask you to undertake, I need to know if it's even available.

15234. **DR. ROBERT MANSELL:** Well, it's something we would have to put together. We're talking about models that include probably about 1,000 equations and many, many elements. And it's very difficult to summarize that easily.

15235. There are certain parts -- I mean, it would be possible to provide an overview of the steps that we go through, but in terms of getting into the fine details -- I mean, for example, you mentioned adjustment to labour productivity. I mean, there are 250 industries in that.

15236. So we have made adjustments to labour productivity based on trends, but they would differ between those industries, for example. And to go into all those details would require more than just a few-page summary.

--- (A short pause/Courte pause)

15237. **DR. ROBERT MANSELL:** I would also emphasize that, really, what's critical here is the change. The changes are fairly easy to define. The changes that we've introduced to the model are set out. Now, granted, we haven't included all the years, but we've included selected years. But the individual years, for example, in the price uplift are taken directly from Muse Stancil, and that is a year by year summary. So those changes are available.

15238. Bid production figures, again, they're year by year out of Muse Stancil. We've included those. So a lot of that detail is there now.

15239. So I'm not sure whether you're asking about whether we could provide more information on the inputs, the things that go into the model or the mechanics of running the model.

15240. **MS. CHAHLEY:** I guess what I'd like to understand, Dr. Mansell, is how what you did is different from what I had understood from your report you had done.

15241. What I understood from your report -- and perhaps this is just that I didn't understand your report, so let's start with that -- is that you had calculated based on the Muse Stancil numbers what the price uplift would be; you had then added and subtracted some things that in your tables.

15242. In 2.4, for example, I think in the second report you added -- or you accommodated the cost to the refineries of the additional price uplift. And then you came up with a number which I had understood you then added together for the 30-year period and put that into the I/O model.

15243. Now you're saying that no, that's not what happened, so I'd like to know how it's different from that because that's what I -- in reading your report, I understood you did in terms of that impact, the impact of the price lift.

15244. **DR. ROBERT MANSELL:** The impacts are year by year, so they are -- for example, in this case, they are taken directly from the Muse Stancil report. He lays out, for example, the price uplift, the impact on refineries for each of the years out to 2035.

15245. We go out to a full 30-year operating period. That takes us out to 2048. From the period 2035 to 2048, we've simply extrapolated using the values for the last years of the Muse Stancil forecast.

15246. **MS. CHAHLEY:** Right. But when you put it all into the Stats Canada model did you -- you only ran that price impact uplift one time for the first part and then a second time for the indirects and induced; is that correct?

15247. **DR. ROBERT MANSELL:** So as I understand it, you're asking how many runs -- individual runs of the StatsCan report were done for ---

15248. **MS. CHAHLEY:** At this point I am, yes.

15249. **DR. ROBERT MANSELL:** I believe it was about five runs for that component, might be six. I don't recall ---

15250. **MS. CHAHLEY:** Okay. So ---

15251. **DR. ROBERT MANSELL:** --- exactly.

15252. **MS. CHAHLEY:** Because last time you told us you ran the model for StatsCan 10 times.

15253. **DR. ROBERT MANSELL:** Yes.

15254. **MS. CHAHLEY:** One time to produce the first part of the Tables 3.2 to 3.7 or -- I'm -- 3.1 to 3.7 and the second time I understood from yesterday, to create the second part of those tables.

15255. And if you need to go to them, maybe that's helpful for us to all see that. Would be -- Madam Clerk, it is Exhibit B83-4, and it's the paper page number 54. It's where these tables start.

15256. I do apologize. I worked with the hard documents and I don’t have the Adobe numbers and I'm so sorry about that but I have a -- I don’t have them.

15257. So when I'd understood that for each of these tables you had run the model once for the top part and once for the second part; is that wrong?

15258. **DR. ROBERT MANSELL:** That’s true but the table that you refer to, Table 3.1 is the aggregate ---

15259. **MS. CHAHLEY:** Right.

15260. **DR. ROBERT MANSELL:** --- for all things rolled together.

15261. **MS. CHAHLEY:** So ---

15262. **DR. ROBERT MANSELL:** If you flip over and for example, if you look at Table ---

15263. **MS. CHAHLEY:** Three point two (3.2) for example?

15264. **DR. ROBERT MANSELL:** --- 3.3 ---

15265. **MS. CHAHLEY:** Oh, 3.3 is on page 58.

15266. **DR. ROBERT MANSELL:** --- is on page 58, yes. So that is the one just for the construction.

15267. Now, in that case you're right, there's two separate runs there, one for the top part which is direct and indirect. And another run for the direct, indirect and induced.

15268. **MS. CHAHLEY:** Okay.

15269. **DR. ROBERT MANSELL:** Then there's another run where, as I indicated, we suppress the import coefficient for pipe and we've replaced that with the assumption that all of the pipe would be produced in Canada. So there are three runs there for that part.

15270. **MS. CHAHLEY:** So if we could just stop with this one then. We know construction took four years, that was what's been projected, I think you said you used a four-year construction phase; is that correct?

15271. **DR. ROBERT MANSELL:** That's correct.

15272. **MS. CHAHLEY:** But when you ran the model, did you -- if we look at the very top right-hand corner under Canada across from the heading "Investment" we see 6393 billion -- or 6 billion -- 6.4 billion; correct?

15273. **DR. ROBERT MANSELL:** Correct.

15274. **MS. CHAHLEY:** So when you put the information into Stats Canada is that the number you put in for the shock to the model, the additional impact on the economy from the construction?

15275. **DR. ROBERT MANSELL:** That is the aggregate number for the individual components broken down by commodity, that goes into the model.

15276. **MS. CHAHLEY:** So you put the aggregate number in or ---

15277. **DR. ROBERT MANSELL:** No, no.

15278. **MS. CHAHLEY:** --- or you put the individual components in?

15279. **DR. ROBERT MANSELL:** No, the model has 737 commodities ---

15280. **MS. CHAHLEY:** M'hm.

15281. **DR. ROBERT MANSELL:** --- and 250 industries. And you have to put in the individual components associated with the $6.4 billion. So there's pipe, there's compressors, there's all the components that make up -- that has to go into the model and it goes into the model based on the individual years.

15282. **MS. CHAHLEY:** Okay. So you would put in -- we're going to use this much pipe in year one in 2000 and ---

15283. **DR. ROBERT MANSELL:** M'hm.

15284. **MS. CHAHLEY:** --- whatever year that would be, I think it's what -- be 2014 we're going to use this much pipe in 2015, this much pipe in 2016; is that how you would do it?

15285. **DR. ROBERT MANSELL:** Basically.

15286. **MS. CHAHLEY:** And you would give that data set to Stats Canada and then they would run it?

15287. **DR. ROBERT MANSELL:** We provide a detailed list which is sent to Statistics Canada for that component and some other components that go into the model, yes.

15288. **MS. CHAHLEY:** Okay. Okay, because my understanding of these kinds of models was they would take a snapshot of the economy at the time the model is modelled under, in this case 2008, and they would take whatever price shock or production shock that you had added to the model and they would apply it all in that same one-year period.

15289. Are you saying that it had a dynamic aspect where it could apply it over time?

15290. **DR. ROBERT MANSELL:** The model has technical coefficients, in other words numbers which capture the technologies for 2008. It applies those technology conditions to estimate what the impact would be whatever year it is. So you're right it's a snapshot of the technologies in 2008.

15291. Now, I indicated that one of the key adjustments that needs to be made is on labour productivity because that does change over time, so we don't freeze labour productivity. But we do freeze the structure of the Canadian economy to 2008.

15292. **MS. CHAHLEY:** Okay. So the total impact, however it's spaced, is only run through and impacted on the economy as if it was all happening -- or as if the economy was exactly like 2008 for the entire time that the shock is being applied; is that a way for me to understand it?

15293. **DR. ROBERT MANSELL:** The way to understand it is the structure of the Canadian economy and the technologies ---

15294. **MS. CHAHLEY:** Yes.

15295. **DR. ROBERT MANSELL:** --- remain basically unchanged over a period of years. That is by necessity because the amount of effort to go into producing one of these tables for one year is just absolutely immense. So Statistics Canada typically only updates that model every -- I believe -- three years.

15296. **MS. CHAHLEY:** Well that's pretty hard for us to know what the structure of the economy or technology would be in five years in the future, we don't know; do we?

15297. **DR. ROBERT MANSELL:** The structure of the economy doesn't change, it's a huge entity and there might be some changes at the margin. But in terms of the basic relationships of, for example, if you're going more steel, how much additional electricity does that involve, how much more iron ore and so on, that doesn't change a lot in a short -- relatively short period of time.

15298. Over a long, long period of time that's perhaps true, but again, there's no other -- there's no other model out there that does as good a job of capturing the complexity of all these interrelationships.

15299. **MS. CHAHLEY:** So when you say -- I mean would you agree with me that 30 years is a fairly long time to be applying the same structure of the economy and the same technologies?

15300. **DR. ROBERT MANSELL:** Well it depends. I mean there's huge parts of our economy that -- again, given the size of it and although individual components might show a change year by year, it doesn't really dramatically change the structure.

15301. You can imagine for example that in the case of Alberta, the structure of that economy has not changed a huge amount. It's true that the individual components have grown, but they've typically grow in long step. And when the energy sector has expanded for example, we did a fairly constant impact on all of the traditional inputs, the geophysical, the insurance, the finance components of it.

15302. So I think we have to distinguish between changes and the components growing, and that's true they do grow over time, and separate from the structure of the economy, the type -- the types of industries, the number of industries and so on.

15303. **MR. CARRUTHERS:** Maybe I could add some context. Just because an investor of a long-life asset that we anticipate to be in service for more than 30 years, and I guess would be consistent with our shippers who are making long-term commitments that approach probably $1 billion.

15304. We do look at these models, we look at them because we -- better than putting up our thumb, we want to look at very sophisticated models that try and replicate what happens in the real world.

15305. And when you looked at Muse Stancil you saw that it's the same model the industry uses to make their own decisions and they go through and try and very mathematically anticipate what might happen and you make assumptions.

15306. Similarly with the Mansell model, it goes into a very sophisticated assessment of things, so we find that the best -- to our best ability we can anticipate what happens. And not necessarily specifically in any one year but certainly trends such that a decision could be made.

15307. **MS. CHAHLEY:** Okay. And Thank you, I understand that, it's just that there's a different focus for Enbridge making an investment versus what's good for Canadians as a whole.

15308. I do appreciate though what you're saying, is you have confidence that these trends are helpful to making those decisions; is that what I'm hearing you say?

15309. **MR. CARRUTHERS:** Not just helpful but pretty much essential that you need to try and look out in the future, anticipate what might happen. And I think it would be consistent with what we saw in the need for accessing markets in terms of not just the benefits we would see on a year-to-year basis, but certainly the optionality value and the criticality of accessing new markets.

15310. So I think it's consistent with what Canada would see as very important. And certainly we've seen that represented from many across Canada who would share that opinion.

15311. **DR. ROBERT MANSELL:** I would just add the following, that in testing these models what we typically do is we do an in-sample forecast.

15312. By that I mean we take the data that we've used to generate this model, we then go back in time -- and let's say we're talking about the 2008 model -- we might go back to the year 2000 or even 1995 and say how would have that model predicted the type of change in GDP, employment, whatever, given an impact that we know happened in terms of investment in the oil and gas industry or whatever and how does that compare with what actually happened.

15313. So we get an idea of the accuracy overall and part of that is measuring the types of error, the size of the error that's associated with any structural change.

15314. In the model that I referred to earlier, that is, yesterday, we built in dynamic technical coefficients, so we had in that model differential equations which allow the technology to shift year by year by year.

15315. In the end, it's a trade-off between incredible complexity where one little error can create a situation where the model goes off the rails, so to speak, and a model which is robust. It doesn't have the year to year sophistication, but it's much more robust. It's much more stable.

15316. And in terms of doing these impact analysis, that's a very important attribute, that you have a lot of confidence that the result you're getting is not because of one little assumption you made, but is driven by the key driving forces that are embodied in the model and in the key inputs.

15317. **MS. CHAHLEY:** So that double-checking process, is that something that you do specifically for a project like this, or is that just something that you routinely do in your office on a regular basis to ---

15318. **DR. ROBERT MANSELL:** That's what we would routinely do as we expand and develop the modules and the model. It's an ongoing process.

15319. **MS. CHAHLEY:** So just so I understand, then, in terms of the changes in the dynamic coefficients that you applied from your own work to the information, did you take into account any negative effects that the price uplift that's projected might have had on the Canadian economy?

15320. **DR. ROBERT MANSELL:** Could you be more specific?

15321. Price effects of the ---

15322. **MS. CHAHLEY:** Well, ---

15323. **DR. ROBERT MANSELL:** --- uplift in the price of oil?

15324. **MS. CHAHLEY:** Yes.

15325. For example, did you take into account the impact on consumers?

15326. **DR. ROBERT MANSELL:** We have incorporated the increased cost to refiners using Western Canadian oil, and so that -- and let's just use a round number -- that increase of $2 or, to look at it differently, the reduction in the price discount on Western Canadian crude of $2 feeds in to affect the cost of feed stock for refineries.

15327. If you look at the impact of that today, that would be absorbed by the refineries. It would not be passed on. And the reason, basically, is that the gasoline prices, for example, tend to be set by the competition from imported gasoline.

15328. So it would be the producing sector, so to speak, that would have to absorb that cost.

15329. In an IR -- a response to an IR ---

15330. **MS. CHAHLEY:** M'hm.

15331. **DR. ROBERT MANSELL:** --- and I believe it was the -- excuse me.

--- (A short pause/Courte pause)

15332. **DR. ROBERT MANSELL:** Excuse me for just a second ---

15333. **MS. CHAHLEY:** Certainly.

15334. **DR. ROBERT MANSELL:** --- and I'll point you to where we've dealt with that.

15335. **MS. CHAHLEY:** Certainly. Thank you.

--- (A short pause/Courte pause)

15336. **DR. ROBERT MANSELL:** I apologize. I don't have an exhibit number, but it's the response to J Weir Information Request 5.49a.

15337. **MS. CHAHLEY:** Okay.

15338. **DR. ROBERT MANSELL:** I don't know if it's necessary to pull it up, but I can indicate to you that, in the event that that increase in the price of feed stock for refineries fed by Western Canadian crude was passed along to consumers, it would be equivalent to about a one and a half cent per litre increase. So we have taken that into account in the modelling.

15339. Now, what does that do to the rate of inflation? It's just insignificant. It's virtually too small to measure.

15340. Would it do -- as has been alleged, would it cause the rate of inflation to go up and then force the monetary authorities to tighten the money supply and thereby shrink the economy from what it would otherwise be? The answer, again, is ‘no’.

15341. In fact, monetary policy is based on what's called the “core inflation rate” which excludes the price of food and energy.

15342. **MS. CHAHLEY:** Okay.

15343. You've jumped ahead to some questions I had coming, but maybe we should talk about this briefly.

15344. Well, actually, you know what, I'm going to come back to this, so maybe keep that IR handy so that I don't get too far afield.

15345. So what I'm understanding you to say is that you put all of the impacts of the economy that you felt were relevant into the model. Is that a summary of what you're trying -- what you're saying to me now?

15346. But that you did not think it would be necessary to include consumer impacts because they were not significant enough.

15347. **DR. ROBERT MANSELL:** That's correct.

15348. Anything that was material we captured, I believe, in the model.

15349. **MS. CHAHLEY:** Okay.

15350. And is it -- so going back to where I started and -- or where we were a few minutes ago, in terms of a short summary to give a bit of transparency to what you did in terms of the adjustments, is that something that could be included in a short summary that we were talking about: what you would have thought was significant to impact and what you did in summary form so that we can have a better understanding?

15351. **DR. ROBERT MANSELL:** It is possible.

15352. I would point out that virtually all of the elements of that are embodied in our updated study, so we explain why -- just to continue on on the same lines -- why a $2 or $3 increase in the price of Western Canadian crude that goes into refineries does not have any significant impact on the Consumer Price Index, for example.

15353. We explain why one would not expect that to have any significant effect on the exchange rate. We explain why it is not credible that one could argue that this would cause Dutch disease and, in fact, I've referred to analysis undertaken by the Bank of Canada and an outline by the Governor of the Bank of Canada.

15354. And so those things have not been incorporated in the modelling for the reasons we explain in the report.

15355. **MS. CHAHLEY:** And we're going to go through them individually, so I don't need you to spend too much time now.

15356. I'm talking about the things that aren't in the report that you tweaked. And I think you started off earlier that you could give us a short summary of what you would have done. I'm not asking for a detailed explanation of your proprietary model, but just so that we have a bit more understanding of what was changed or what was in -- if I say "customized for this project" in how you applied the Stats Can model, maybe that would be -- allow us a little bit more understanding.

15357. Is that something that can be done in a reasonable way? Is that a reasonable request?

15358. **MR. BERNIE ROTH:** Madam Chair, I'm just listening. I'm not -- my only concern is defining what the undertaking is and then having Dr. Mansell take us -- talk about how long it would take to respond to it.

15359. So I am wondering if a few more questions to define what the undertaking is or whether Dr. Mansell can just tell you in response to further questions.

15360. **MS. CHAHLEY:** I'm just looking for some transparency here.

15361. And I don't know the words to ask for what I want because I don't have the details of Dr. Mansell's model. But I think that maybe -- I mean, if you want, we can revisit it at the end of questioning to see if there's anything left that he hasn't covered, if that is easier for everyone.

15362. I just want to know that -- I'm going to leave off on methodology here with Dr. Mansell. I just want to leave that on the table.

15363. **MR. BERNIE ROTH:** Madam Chair, that might be the best thing to do, is see if there's still this lingering question at the end of cross and, if there is, we can revisit the undertaking and possibly better define what it is. And then Ms. Chahley is, I assume, going to be around, and if it doesn't take too long to respond to the undertaking, she could follow-up on it later, assuming that's still necessary but right now I'm having difficulty figuring out what the undertaking would be.

15364. **THE CHAIRPERSON:** So my understanding, Ms. Chahley, at this point, is you don't have a request for an undertaking at this point. You're going to proceed through your questioning, and then at the end of that, see if there's an undertaking that remains that you want to put to this panel?

15365. **MS. CHAHLEY:** I think in light of what we're finding, trying to define this, maybe that's the most efficient use of our time, if that's okay?

15366. **THE CHAIRPERSON:** Let's proceed on that basis. Thank you.

15367. **MS. CHAHLEY:** All right. Thank you.

15368. Now, I want to just ---

15369. **DR. ROBERT MANSELL:** Ms. Chahley, just to help you with that ---

15370. **MS. CHAHLEY:** Yes.

15371. **DR. ROBERT MANSELL:** --- response I was referring to, I'm told, is Exhibit B43-10.

15372. **MS. CHAHLEY:** Thank you for the reference. That's excellent. Okay.

15373. Okay, Mr. Earnest, I wanted to talk to you a little bit about your methodology. I understand there's an awful lot in your report that explains the process and what goes into your proprietary models. I'm not going to ask you to go through that.

15374. Is it fair for me to assume that that is what I need to fully understand the process of your model, the way it was structured and built? I guess I'm asking you is that what I need or is there stuff that you left out?

15375. **MR. NEIL EARNEST:** Sorry, counsel, I may have missed the first part of your question. Would you repeat that, please?

15376. **MS. CHAHLEY:** Do you want me to start over?

15377. **MR. NEIL EARNEST:** Yes, perhaps.

15378. **MS. CHAHLEY:** In your report, you went through at the beginning, in the report, a fairly detailed explanation of the kind of steps that were taken to build your proprietary model over the years and the kinds of inputs and materials that are contained in it.

15379. And so I just really want to know, for this project, is there any material details of how that model was developed or applied that were left out to maybe shorten the report or have you basically provided it to us already there?

15380. **MR. NEIL EARNEST:** I can think of no significant aspects of the modelling approach that has not been fully discussed in the -- particularly the Muse update report, counsel.

15381. **MS. CHAHLEY:** Okay. How come you changed your time horizon from the first report to the second?

15382. **MR. NEIL EARNEST:** Two reasons. For the update report, I was advised by Enbridge that the start date for the pipeline would be 2018 rather than 2016, and at the end date, it got revised really in a response to a request -- I believe it was a request from the Joint Review Panel 2.2 about -- if memory serves, it sought or asked for an extension of the CAPP forecast from 2025 to 2035, and that was provided, of course, by Enbridge.

15383. And since that appeared to be the timeframe that the Joint Review Panel had in mind, that 2035 then became the end point for my forecast period.

15384. **MS. CHAHLEY:** Okay. Okay. Thank you.

15385. So you were responding to what seemed to be the needs of the Panel and the parties in adding the extra time. Is that what I understand?

15386. **MR. NEIL EARNEST:** Yes.

15387. **MS. CHAHLEY:** Okay. All right.

15388. Now, Mr. Earnest, if we can look at the first Muse report, which is Exhibit B1-4, Appendix A, and I'd like to go to page 5, which is at the summary there. You need to go to Appendix A of the exhibit. So that's the actual Enbridge evidence part, and then at the end is the Muse report as Appendix A. Maybe if we get that Adobe number, I'll write it down for future reference.

15389. There we go. And what's the Adobe number on that one, Madam Clerk, and I will then -- the page number, and then I will be able to give it.

15390. **THE REGULATORY OFFICER:** Forty-five (45).

15391. **MS. CHAHLEY:** Thank you.

15392. So then if you go on, it's page 5 of this appendix. That won't help you because -- yeah, there we go. Yes, page 5 at the bottom, under the table. There we go. Okay.

15393. Mr. Earnest, I understood from reading the first Muse report, if you look at the bottom, under the table, that what you were saying was in the early years of the forecast period, and this one was 2016 to 2025, so a 10-year period, that the price benefit would come from two elements, the higher delivery to refinery non-Canadian crude prices in Northeast Asia -- so I'm going to call that the Asian uplift, if you like, and we'll come to that later -- and you said, secondly, a northward shift in the market clearing point within North America due to reduction in supply, correct?

15394. **MR. NEIL EARNEST:** That's correct, counsel.

15395. **MS. CHAHLEY:** And then in this second report, do we continue to have that impact of the northward shift of the clearing point in the North American market due to the reduction of supply?

15396. And if I take you to -- Madam Clerk, it's Exhibit B83-3, and then it's page 5 of that report, I think is where this starts.

15397. So, Mr. Earnest, in terms of reading this report, I wasn't clear whether or not there was still going to be this impact of the northward shift of the clearing point causing part of the price uplift predicted. Can you explain?

15398. **MR. NEIL EARNEST:** I'll try, counsel.

15399. **MS. CHAHLEY:** Thank you.

15400. **MR. NEIL EARNEST:** As I indicate -- if we can scroll down a little bit on the screen, I'd take you to the specific sentence. It's about halfway down that paragraph, the full paragraph you have here now on the screen. We find a sentence that reads:

> *"In effect, the price-setting location for Canadian light crudes shifts from the U.S. Gulf Coast northward to somewhere in the Midwest,..."*

15401. Et cetera, et cetera. It's talking about the same dynamic I'm using. Obviously somewhat different words express the concept.

15402. **MS. CHAHLEY:** Yeah, okay.

15403. So how many of the early years does that apply for? And it can be a range. I'm not asking you to say if it's two and a half but, you know, when you say the early years, remember the second projection was over 18 years, not 10, whereas the first projection was over 10. So the amount of years that might be the early years might be different in each one.

15404. **MR. NEIL EARNEST:** If you'd give me a moment, counsel, I can give you a fairly accurate estimate of how early is early.

15405. I'm just looking at some of the flows quickly from the Gulf Coast inland. It looks like it's approximately the first three years of the forecast period.

15406. **MS. CHAHLEY:** So for the -- so the price impact that's caused by a shortage of supply is just the first three years at this point, by what time we're at the second report. Is that correct?

15407. **MR. NEIL EARNEST:** The phenomenon I'm talking about where the clearing point shifts northward is approximately the first three, perhaps four years. However, I wouldn't really, as a matter of precision, characterize it as a shortage of supply.

15408. There is, at the end of the day, no shortage of supply for the North American refiners. They all are fully supplied. The only issue is do they get it from Western Canada, somewhere within the United States itself or some water-borne import from somewhere else in the world.

15409. **MS. CHAHLEY:** Okay. That’s where I wanted to go next because I wasn’t understanding. In the first report you talked about taking the 500,000 barrels out of the market and sending it to Asia. So it’s not out of the market, but it’s a new purchaser that wasn’t part of the equation before.

15410. Is that a fair way for me to understand it?

15411. **MR. NEIL EARNEST:** By and large, but for the fairly small line that's loaded at the Trans Mountain Westridge Dock, yes, it would be a new market for the Western Canadian producers.

15412. **MS. CHAHLEY:** So when that new market was accessed with 500 and then, slightly after, 525 thousand barrels a day, I understood in your first report, you said that would cause a short-term shortage in North America. It's being removed from the people who would otherwise have been using it.

15413. And did I get that wrong in the first report?

15414. **MR. NEIL EARNEST:** Well, not necessarily have it wrong. I'd characterize it somewhat differently. I used different words perhaps to express the concept, counsel.

15415. Again, it's not really a shortage per se. I mean no refiner runs short or runs out of crude as a consequence of Northern Gateway in Western Canada or anywhere else, for that matter, in the world.

15416. What it is -- what Northern Gateway represents is a redistribution of the crude flows from Western Canada. Rather than pushing it all south and east into the U.S. and Eastern Canada, a portion now flows west to California and/or Northeast Asia.

15417. **MS. CHAHLEY:** Okay, wait a second. California -- I thought specifically all of the reports did not consider California as a market because California wasn't accepting our crude from Alberta at this time.

15418. Did I get that wrong too?

15419. **MR. NEIL EARNEST:** As a matter of precision, counsel, the Canadian crudes which were permitted to flow to California were the conventional lights and mediums, which wouldn't have the same issue with the low-carbon fuel standard that's currently or they're trying to implement in California.

15420. And today, even the oil sands derived crudes are permitted to ---

15421. **MS. CHAHLEY:** Okay.

15422. **MR. NEIL EARNEST:** --- be processed in California.

15423. So it's -- this is really -- the issue of California is we don't know how the regulations will be precisely implemented and how the California refiners will go about working around the regulations or working within the regulations to accommodate future volumes of oil sands crude.

15424. For all those reasons, it's hideously complicated in California. We elected to leave -- leave it out of the analysis.

15425. **MS. CHAHLEY:** Yeah, I've never been there, but I like that image, "hideously complicated".

15426. But that's -- what I understood is this whole thing was premised on although the boats could float to California down in the future, the analysis was done and we're going to leave that out for now.

15427. Is that what you're saying?

15428. **MR. NEIL EARNEST:** With the caveat that conventional grades of Canadian crude could flow to California and Canadian crude -- all grades of Canadian crude were permitted to flow to the Puget Sound refineries from Kitimat, although I don't -- you really don't have much volume on that route.

15429. **MS. CHAHLEY:** Okay.

15430. So going back then, maybe I need to understand your first report better.

15431. I had understood, as I said, that you talked about in the first report on page 5 and 6 -- and we looked at that a minute ago -- that you called it "a reduction in supply to the market". So are you saying now that it wasn't actually meant to be a reduction in supply to the market? It's just a redistribution of the market?

15432. **MR. NEIL EARNEST:** Global supply is unchanged with or without Northern Gateway.

15433. In that sense, there is no reduction in supply to the global market. It would be more precise thinking about it and how you're phrasing your questions, counsel.

15434. Certainly, there was reduction of Western Canadian supply to the North American market if some portion of it is sold into the Asian Pacific markets.

15435. I trust that explanation is -- or elaboration is helpful.

15436. **MS. CHAHLEY:** Okay, so what I'm trying to understand -- and maybe I'm not being as precise in my questions as I should be -- is, in the first report at page 5 to 6 and following, I had understood you talked about a part of the basis for the price increase or the price lift, the differential diminishment, was because one of the assumptions was there was no change in supply when you applied your -- looked at this project; that another assumption was, without Northern Gateway, all of the oil in Western Canada would flow to a market.

15437. But when we then added the pipeline and took 525 thousand barrels a day out, that that impacted supply that was previously going south and moved the clearing point for oil northward.

15438. **DR. ROBERT MANSELL:** Ms. Chahley, I think an easy way to understand this is imagine that you are producing a certain amount of your product and you have one market. If your production is increasing over time, you are pushing more and more into that market and depressing the price.

15439. If you now have a second market, you no longer are required to push as much production into that market, and so the discounting is less. And that applies to virtually any commodity.

15440. The problem that we've had from time to time in gas markets, for example, has been the same: that if you're just restricted to one market, there's a limit to how much supply it can absorb and to push more into it and it has no easy or inexpensive way out, it will cause the price to be very depressed.

15441. And so what you're doing when you're diversifying markets is you're allowing the producers the opportunity to, instead of pushing it into one market depressing the price, to move some of that to a different market.

15442. I'm not sure if that's helpful, but that's a very simple explanation. So it's not really a shortage.

15443. **MS. CHAHLEY:** No, I understand that, Dr. Mansell, and it is helpful and so is Mr. Earnest's answer.

15444. But what I'm trying to understand right now is what the Muse 1 Report were saying were the causes of the price uplifts. And when it says specifically, the pricing benefit -- if I'll call it "the pricing benefit":

> *"... is primarily derived from two elements: 1) the higher delivered (to the refinery) non-Canadian crude prices in Northeast Asia versus the [...] Gulf Coast..."*

15445. And right now, I'm reading from page 5 in Exhibit B1-4, and it starts in Appendix A, which starts at Adobe page 45.

15446. And then, going on -- so I said I'm going to come back to that impact by shipping it to Northeast Asia. And number 2, it says:

> *"A northward shift in the market-clearing point within North America due to the reduction in supply in the North America market."*

15447. So I wanted to understand the reduction in supply part, and I'm not clear in your answers if now you're saying: "Well, that wasn't really what we intended" or if you're just saying it in different words.

15448. So let's start with the simple question: Was that statement what was intended; that the second part of the price impact or benefit was caused by a reduction in supply to the North American market and how that impacted on the clearing point?

15449. **MR. NEIL EARNEST:** Yes, I would say, counsel, there's no substance differences between how the dynamics -- let me back up.

15450. I would say in the update report, I expressed the concept in different words, and I hoped in a clearer manner to the reader than was the way I expressed it in the initial report.

15451. **MS. CHAHLEY:** Okay.

15452. **MR. NEIL EARNEST:** But the concept is exactly the same.

15453. **MS. CHAHLEY:** Yeah, and I understand, Mr. Earnest, that maybe you're trying to -- you're saying you're trying to simplify it. It's just that, you know, those of us who don't get to sit and chat with you and aren't economists have to try to understand these reports too and to work with them and so we're trying.

15454. And so, okay, what you're saying is: In the second report, there's still this impact of the reduction in supply for a short period of time, three to four years. It's just you didn't call it -- used those same words.

15455. **MR. NEIL EARNEST:** Yes, counsel, and you know, again, in our initial report, I'm talking about a northward shift in the market clearing point in North America.

15456. And if we turn to the update report, which is up here on the screen:

> *"The price setting location of Canadian light crude shifts from the North U.S. Gulf Coast northward to somewhere in the Midwest."* (As read)

15457. I think I'm expressing exactly the same concept here using different words.

15458. **MS. CHAHLEY:** Okay, so that first part then would also then be because of the reduction in supply to that market.

15459. Is that right, for three to four years?

15460. **MR. NEIL EARNEST:** Yes, if you redistribute Western Canadian crudes, some less to the south and more of it west, unless you reduce refinery throughput, you'll have to backfill those volumes with something else.

15461. And in this instance, yeah, it comes up from the Gulf Coast.

15462. **MS. CHAHLEY:** Okay.

15463. So if, in fact, -- when you made this report -- the second report and the first one I believe -- you used the assumption that supply wasn't going to be altered one way or the other; is that correct?

15464. That it would be constant?

15465. **MR. NEIL EARNEST:** That's correct, counsel.

15466. **MS. CHAHLEY:** Okay.

15467. So when we look at what the projections -- okay, let me step back.

15468. Will you agree with me that the oil-producing dynamic in Alberta is such that we're not at the top of our supply? New technologies, new research and development, new people are coming on stream and they're adding supply in that just wasn't there before?

15469. They're pulling more resources out of the ground and that that sometimes happens and sometimes doesn't, but we're not at the point where this is all the supply that can happen per year; are we agreed on that?

15470. It's still a developing resource.

15471. **MR. NEIL EARNEST:** If I understand your question, which -- to put in my own words, I understand your question to be: Will Western Canadian crude supply increase?

15472. I would say: Yes, I believe Western Canadian crude supply will increase ---

15473. **MS. CHAHLEY:** So ---

15474. **MR. NEIL EARNEST:** --- from their levels today.

15475. **MS. CHAHLEY:** Yeah.

15476. And what I wanted to ask you is if you look at -- now, this is an aid to cross-examination. We have the CAPP report from 2012.

15477. You used 2011 when you updated your report; correct?

15478. **MR. NEIL EARNEST:** That is correct.

15479. **MS. CHAHLEY:** And I'm assuming that was because that was the most recent one available as you were putting the material together?

15480. **MR. NEIL EARNEST:** That is correct and that's indicated in Footnote 1, page 5, Adobe page 8 of the report.

15481. **MS. CHAHLEY:** Okay.

15482. So I've given this to you, Madam Clerk, as a -- there you have it, perfect.

15483. Now, what I'd like you to go to -- sorry ---

15484. **THE CHAIRPERSON:** Ms. Chahley, just while you're doing that, in order to just keep track of the aids to cross-examination, could we have an aids to cross-examination number for that, Ms. Niro?

15485. **THE REGULATORY OFFICER:** This will be AQ1.

--- AID TO CROSS-EXAMINATION NO. AQ1/AIDE AU CONTRE-INTERROGATOIRE No. AQ1:

2012 CAPP Report

15486. **MS. CHAHLEY:** So if I can just get you to go, Madam Clerk, to page 8 of this document. The pages are at the bottom, page 8. There we go and that's -- we want to look at is that table.

15487. So Mr. Earnest, do you see that this is the Western Canadian crude oil supply productions now that CAPP is putting in place in -- this year -- and what I suggest to you is looking at the material here it becomes clear that they are projecting a larger supply for the years 2018-19 and 20, the first -- and to 21, then was available to the projection that you worked with when you did the report; correct?

15488. **MR. NEIL EARNEST:** I would agree, counsel.

15489. **MS. CHAHLEY:** And that that increase is close to 500,000 barrels a day; isn't it?

15490. **MR. NEIL EARNEST:** The difference in an individual year looks like it's a bit less than that, but it's certainly higher.

15491. **MS. CHAHLEY:** Yeah.

15492. And if you look on to page 9, where you get the word summary, because the table is harder to read, under 2.5, you see compared to the -- under the heading 2.5 which is on the right:

> *"…compared to the 2011 forecast, western conventional products production is higher by 388,000 barrels per day by 2025.*" (As read)

15493. And then, they go on to say:

> *"Oil sands production is higher by 478,000 barrels per day resulting from accelerated project time to an addition of new projects."* (As read)

15494. Now they've gone out as far as 2025 so those numbers are a little bit high I would say looking at the graph. But, roughly, we're seeing an increase in production that wasn't on the table when you did your report that, generally speaking, comes pretty close to covering what's now the pipeline if it's in place will be shipping out to Northeast Asia; correct?

15495. **MR. NEIL EARNEST:** I'd have to do the math, counsel.

15496. But yeah, generally, I would agree that the CAPP forecast, depending what year you're at -- well, the difference between the 2011 and 2012 CAPP forecast certainly, by the time you get out to 2022-23, it looks like it's on the order of half a million barrels a day.

15497. **MS. CHAHLEY:** So I wanted to ask you does that eliminate that two to three-year price impact -- that part of the price impact that you're predicting given that they've got new production coming on from acceleration of projects or new -- new projects that -- or therefore weren't in the mix when you did your report?

15498. **MR. NEIL EARNEST:** It may or may not, counsel.

15499. It -- I would anticipate that if the only thing we change is the Western Canadian supply inputs we're using in the optimization model and change nothing else, that the dynamic of the parity point for the light sweet crude shifting north may not be there anymore.

15500. Now, that's not to say that the Northern Gateway project will not have any economic benefits in year 2018 simply because there's more Western Canadian crude in -- being produced in Canada.

15501. At the end of the day, Northern Gateway is all about providing the Western Canadian crude producers with more access to the greater market and, all else equal, the more volume of crude produced in Western Canada, the more helpful it is to have more outbound outlets to the greater market.

15502. I'd simply suggest that the pricing benefits would evolve from shifting the parity point for light crude within North America to the pricing mechanisms you see for Northern Gateway and this update report for the out years of the forecast.

15503. **MS. CHAHLEY:** And I was trying to be careful because you had also predicted an impact in terms of the costs for oil that can be achieved in Asia and we're going to come back to that, so -- I haven't taken that off the table yet.

15504. But -- and we'll talk about that in a bit because I saw that there were two separate things going on in your first report.

15505. So when you say if you have the more supply we're going to move to the later impacts in your report earlier -- and we don't know if there'll be more supply but assuming that -- that's what I heard you -- you just answered.

15506. Can you explain to me -- leaving aside the benefits scheme from selling in the new market in Northeast Asia -- what is the impact -- the second or later impact on the -- in terms of North America that you've described in your report?

15507. How do I understand that and what should I understand?

15508. Because you talked about rail transport and -- so I wasn't understanding what you were saying would be the second impact.

--- (A short pause/Courte pause)

15509. **MR. NEIL EARNEST:** Just give me a minute counsel, I'm looking for some specific language in the update report that speaks specifically to ---

15510. **MS. CHAHLEY:** Thank you.

15511. **MR. NEIL EARNEST:** --- this issue.

15512. In the Muse Update Report which is ---

15513. **MS. CHAHLEY:** So that's Exhibit B83-3, for the record.

15514. **MR. NEIL EARNEST:** Adobe page 8 in the bottom paragraph there.

15515. The very last few sentences, you know, we speak to -- or I speak to what's going on in terms of the crude market dynamics in the out years of the forecast, and what's going on is -- is they -- they start up in Northern Gateway which enables a Canadian crude producer to ship now roughly 500 odd thousand barrels a day of mostly heavy crude to Northeast Asia and/or California, as the case may be.

15516. What it does do, it allows or permits the Western Canadian crude producer to no longer have to sell their production to their least attractive customers somewhere in North America, most likely somewhere on the U.S. Gulf Coast. Because even on the U.S. Gulf Coast, which is big refining market, as you push more and more heavy sour Canadian crude into that market the price starts moving down within the Gulf Coast itself.

15517. And so, what the dynamic is is the Western Canadian crude producer doesn't have to sell to their least attractive -- from a pricing prospective -- customer in the U.S. Gulf Coast, but via Northern Gateway they'd have access to, in their view, a more attractive -- again, from a pricing prospective -- customer somewhere in Northeast Asia.

15518. And that's what we're talking about here at page 5 or Adobe page 8 of the -- of the update report. And there's further discussion of this dynamic, as well as some of the issues associated rail transportation found back on page -- Adobe page 40 of the -- of the same report.

15519. **MS. CHAHLEY:** Is that Adobe page 40 up there?

15520. **THE REGULATORY OFFICER:** Yes.

15521. **MS. CHAHLEY:** Can you just go to the bottom of the page so I can see the actual page number? Thank you.

15522. Page 37, thank you.

15523. Okay, so what I understand in -- in my shorthand, Mr. Earnest what you've just described is this is the benefit of market diversification. I can have a broader customer base with the pipeline. Is that how I should understand that the impact is in so far as the North American market impact? I don't have to sell to my least attractive buyer, I can sell to a more attractive buyer through the pipeline; correct?

--- (A short pause/Courte pause)

15524. **MR. NEIL EARNEST:** Counsel, apologies. Could you repeat your question, please?

15525. **MS. CHAHLEY:** Okay, and if -- I was going to suggest, Madam Chair, if the Panel needs a chance to consult to -- I'm happy to maybe suggest a break to give them that time.

15526. Let me repeat my question although it's -- I'm not -- I don't have it written down so I'll do the best I can.

15527. What I understood your answer to be is that the later part of the pipeline or all of the pipeline's life depending on whether or not that new market flows in that we saw in CAPP, the new supply flows in in CAPP -- I understand what you're saying to be that the -- the price -- or the benefit to the price that flows at that stage in your report is simply the benefit from market diversification because I now have the choice, if there's a pipeline, to sell to a buyer who will pay more in Northeast Asia versus selling to the buyer in California my last barrels who's going to -- or not California, in -- in the Gulf Coast who's going to pay the least for them, I can now, as the producer, choose not to send them to that cheapest buying person in -- in the Gulf. I could alternatively send my barrels to Northeast Asia where the price would be higher.

15528. And is that what you're saying, is -- is the impact in the North America benefit to the price in your report after we get past the shortage of supply issue?

15529. **MR. NEIL EARNEST:** That's -- I think it's -- we'd be more precise to say, counsel, that that certainly is a sizable component of the benefit is, is that that market diversification attribute whereby you're not compelled to sell to the lowest -- the customer who sees the lowest value for particular grade of Canadian crude within North America but you have the option shipping it offshore.

15530. And I would further point out that even the early years the dynamic of the shifting parody point, that mostly applies to the -- the lighter grade to the Canadian crude, less so to the heavier grades. And -- and in all years of -- throughout the forecast period where they were talking about the original Muse report or the updated Muse report you have the same market optionality.

15531. What that -- that flow is from -- the start up in North Gateway and only Northern Gateway.

15532. **MR. JOHN CARRUTHERS:** You used the terms "diversification", "value", and certainly what Muse has looked at was looking at the highest netback and where that might go with Northern Gateway. But it doesn't include what I would say is the option value of having a secondary market in case of any -- I'll call it dislocations that might have happened at any -- at any one period.

15533. So there's the value of diversification for accessing the best market but there's a far greater value in terms of optionality over the course of the life of the

-- of the asset where you can definitely access the highest market at any one period. And those could be very substantial; a bit of insurance -- or a lot of insurance, in fact.

15534. **MS. CHAHLEY:** Okay, maybe, Mr. Earnest, I'm going to come back to you but let's just deal with that for a minute, Mr. Carruthers, because that's a slightly different -- a different point, but I think one that you want to make sure is -- is covered here.

15535. So what you're saying is if we've got construction on the main highway it's nice to have a second highway that goes -- where we can take our product to market, and that is a value too. Is that part of what you're saying?

15536. So if there's a problem on a highway if -- our -- on a pipeline, if there's a backup or an issue it's nice to have that secondary option to -- or another option to send my product. Is that one of things you were describing?

15537. **MR. JOHN CARRUTHERS:** Yes. It -- it definitely has value to have a second alternative.

15538. **MS. CHAHLEY:** Okay. So just so I understand a bit more about that value before we leave that point. And I'm sorry, I tend to put it back to the highway images in my head because that's the flow of transportation I'm more familiar with, but -- so, over the beginning of Northern Gateway I understood that you would have a number of producers who were going to sign take-or-pay contracts, is that correct?

15539. **MR. JOHN CARRUTHERS:** Yes, that's correct.

15540. **MS. CHAHLEY:** And help me if I've misunderstood, but I thought that the idea was to have 10 -- or 10 companies who would contract for 50,000 barrels a day each leaving 25,000 barrels open to the -- any other producers. Is that correct? Is that a good summary?

15541. **MR. PAUL FISHER:** So the arrangement we have our -- our funding partners is that they have the option to contract for 50,000 barrels. They may contract for more or less than that number, but in aggregate we're looking for a total volume to be committed to the project of 500,000 barrels. That will facilitate us getting the financing in place to build the project.

15542. **MS. CHAHLEY:** And you're hoping that those would be 10 to 15-year contracts, minimum?

15543. **MR. PAUL FISHER:** More than hoping.

15544. **MS. CHAHLEY:** Okay. That would be a requirement?

15545. **MR. PAUL FISHER:** Correct.

15546. **MS. CHAHLEY:** And so are they -- are any that would be longer than 10 or 15 years?

15547. **MR. PAUL FISHER:** The way we structured the agreement which are -- are attached to the precedent agreement is that the shipper has the choice of signing a 15-year term and having one 5-year renewal option or they can sign a 20-year term and have two 5-year renewal options.

15548. **MS. CHAHLEY:** Okay. So are you -- forgive me, the contract was 145 pages.

15549. **MR. PAUL FISHER:** You're forgiven.

15550. **MS. CHAHLEY:** Thank you. I figured you could sum up. So in fact some -- you're -- some people might -- some of the producers might sign on for a 20-year time and then even renew longer if they choose down the road.

15551. **MR. PAUL FISHER:** That's correct.

15552. **MS. CHAHLEY:** And, of course, Northern Gateway would like that because now you have an assurance of revenue and use.

15553. **MR. PAUL FISHER:** That's correct.

15554. **MS. CHAHLEY:** And just to finish this summary, if someone has signed a 15-year or a 20-year take-or-pay contract to ship their 50,000 or more barrels a day, they pay you whether or not they put 50,000 barrels in each day; don't they?

15555. **MR. PAUL FISHER:** They would pay the capital portion of the toll and the operating portion of the toll, that is correct.

15556. **MS. CHAHLEY:** So would there be some reduction if they didn't put any barrels in today?

15557. **Mr. PAUL FISHER:** There would be some.

15558. **MS. CHAHLEY:** And what would that be that they're not paying?

15559. **MR. PAUL FISHER:** There -- wouldn't pay the variable portion of the toll, variable power portion of the toll.

15560. **MS. CHAHLEY:** And how much a percentage is that of the toll, roughly?

15561. **MR. PAUL FISHER:** Relatively small.

15562. **MS. CHAHLEY:** So less than 5 percent?

15563. **MR. PAUL FISHER:** I couldn't say off the top of my head.

15564. **MS. CHAHLEY:** I'll go and do the math.

15565. So they might -- they're going to save on paying the variable power if they don't put any oil in today but they're going to pay the rest, whether or not they have oil today?

15566. **MR. PAUL FISHER:** That's correct.

15567. **MS. CHAHLEY:** So assuming that things go according to plan, you'll have the 500,000 barrels of the 525,000 barrels contracted in this way before you start up; is that correct?

15568. **MR. PAUL FISHER:** That would be correct.

15569. **MS. CHAHLEY:** And how much is already contracted?

15570. **MR. PAUL FISHER:** We have commitments via the precedent agreements that were filed.

15571. **MS. CHAHLEY:** Do you know how much barrels that adds up to?

15572. **MR. PAUL FISHER:** In excess of 500,000 barrels.

15573. **MS. CHAHLEY:** So we've covered -- you're covered already?

15574. **MR. PAUL FISHER:** We have the precedent agreements executed greater than 500,000 barrels on the crude export line and, similarly, on the condensate import line.

15575. **MS. CHAHLEY:** Okay.

15576. So there's a very high probability when this pipeline starts that it will have the 500,000 barrels that you plan to contract covered and already with those contracts.

15577. Is that a fair statement?

15578. **MR. PAUL FISHER:** So before we commence construction of the project, we'll have the firm take-or-pay transportation service agreements executed.

15579. And as I mentioned earlier, those would need to be executed in order to arrange financing for the project.

15580. **MS. CHAHLEY:** Okay.

15581. Okay, so just going back then to Mr. Carruther's point, the only amount that's available for the other shippers, the ones who might decide today that they don't want to sell their oil to -- Mr. Earnest used a far more diplomatic word than I did -- the person who's paying the least for oil this week or this month or whatever the right time horizon is and say, "No, well, we're going to use Northern Gateway instead to capture the better price in Asia", that's only going to be 25,000 barrels a day that's available for that kind of decision-making; correct?

15582. **MR. PAUL FISHER:** If you're referring to a monthly desire to ship oil as opposed to a long-term commitment to do so, that would be correct.

15583. **MS. CHAHLEY:** So ---

15584. **MR. JOHN CARRUTHERS:** Just to be clear too, there will be capacity. The 525 is an average over the annual year and the capacity probably on a daily basis would reach 585,000.

15585. So there is some short term, even within this pipe the way it's configured today.

15586. **MS. CHAHLEY:** Is this the right place to ask those questions, Mr. Carruthers, about that or do you want me to leave those to a different panel?

15587. I mean I ---

15588. **MR. JOHN CARRUTHERS:** If you're talking about pipeline design, clearly, it would go to that panel.

15589. **MS. CHAHLEY:** Okay, so just to then -- and so I won't go into details about that but what I understand -- and I've heard this in some other pipeline hearings I've been to is: We say the pipeline can ship "x" amount but there's a little bit of change that happens and, just generally, in a very high-level answer, what might impact to give us a little bit more capacity this week or next week?

15590. **MR. JOHN CARRUTHERS:** You just look over the -- on an annualized basis and there would be things that would reduce the -- you can't always go at 100 percent capacity.

15591. But again, those would be the -- the best would be addressed through design. But the assumption is that it's 525,000 on an annual basis but it can exceed that on a temporary basis.

15592. **MS. CHAHLEY:** So -- okay.

15593. **MR. PAUL FISHER:** The other point -- another point is that, in the event that a committed shipper elects not to utilize their capacity, that capacity would be available for the interruptible shipper as well.

15594. **MS. CHAHLEY:** So if Company A has their contract in place but, for whatever reason, they don't have any oil to ship today they could give -- is it the right term to call it "the spot shipper"?

15595. Is that the person who's coming up monthly?

15596. **MR. PAUL FISHER:** I think in the contract we referred to him as "uncommitted shipper".

15597. **MS. CHAHLEY:** Okay.

15598. So the uncommitted shipper could get that space that was now vacated by the contracted shipper as well. It might be available to them; is that what you're saying?

15599. **MR. PAUL FISHER:** Subject to the nominating procedures, it could be made available to them.

15600. **MS. CHAHLEY:** So I can't just phone up the contracted shipper and say: "Hey, give me your space" because that's not fair to others.

15601. There's a nominating procedure to give me a turn in that uncommitted -- or that extra space that's not being used; is that correct?

15602. **MR. PAUL FISHER:** On a short-term basis, that would be correct but the contracts do facilitate the assignment of the capacity.

15603. So if Shipper A in your example wasn't planning to utilize their capacity for an extended period of time, they could assign it to Shipper B.

15604. **MS. CHAHLEY:** So that's -- but that's the longer term, they have to assign for a chunk of time not just for this one month kind of thing?

15605. Not for the 20-years but it's such -- a greater period of time?

15606. **MR. PAUL FISHER:** I don't believe there's any restrictions on the amount ---

15607. **MS. CHAHLEY:** Okay.

15608. **MR. PAUL FISHER:** --- of time that an assignment can take place.

15609. But typically, in the industry what would happen is that if it's just on a short-term basis, Shipper A wouldn't utilize their capacity and Shipper B would nominate for it.

15610. **MS. CHAHLEY:** Okay.

15611. And that nominating procedure -- again, I'm summarizing at a high-level -- that's a way to ensure that there's some fairness to the people who aren't contracted -- who gets a turn on the limited space available; is that correct?

15612. **MR. PAUL FISHER:** That would be correct.

15613. **MS. CHAHLEY:** Okay.

15614. But in any event, so assuming then our committed shippers are committing because they want to use the pipeline, is it fair to say that there's not going to be a lot of time expected when the committed shippers would have extra space?

--- (A short pause/Courte pause)

15615. **THE CHAIRPERSON:** Ms. Chahley, just while the Panel is conferring, it would be the Panel's desire to take a break at some point this morning for 15 minutes.

15616. And so if you could just help us as to when that time break would be efficient for you in your questioning that would be great.

15617. **MS. CHAHLEY:** Let's just finish this little part and then we can stop. Thank you.

15618. Unless the Panel needs time to confer, in which case we could stop now and let them have that opportunity.

--- (A short pause/Courte pause)

15619. **THE CHAIRPERSON:** Would it be helpful to the Panel to take a break at this point or would you like to finish your answer to this question and any further follow-up that Ms. Chahley has on the subject?

15620. **MR. JOHN CARRUTHERS:** Yes, we'll take advantage of that.

15621. Thank you.

15622. **THE CHAIRPERSON:** Terrific.

15623. So it's 10:50 now, let's come back at 11:05.

15624. And also it's the Panel's intention to break for lunch on a regular basis during these days of hearings from 12:30 to 1:30 and then we would also plan to take a 15-minute break in the afternoon.

15625. Thank you, everyone.

--- Upon recessing at 10:47 a.m./L'audience est suspendue à 10h47
--- Upon resuming at 11:05 a.m./L'audience est reprise à 11h05

15626. **THE CHAIRPERSON:** Thank you very much.

15627. Ms. Chahley, please proceed.

15628. **MS. CHAHLEY:** Thank you.

JOHN CARRUTHERS: Resumed
PAUL FISHER: Resumed
NEIL EARNEST: Resumed
ROBERT MANSELL: Resumed
ROLAND PRIDDLE: Resumed
JACK RUITENBEEK: Resumed
MARK ANIELSKI: Resumed

--- EXAMINATION BY/INTERROGATOIRE PAR MS. CHAHLEY: (Continued/Suite)

15629. **MS. CHAHLEY:** Just before we took the break, Panel, you were huddling to discuss, I thought, a further comment on the questioning that we were talking about.

15630. We were talking about the issue of using the empty -- or the non-contracted space on the pipeline.

15631. And so was there something else that you wanted to add in terms of that?

15632. **MR. NEIL EARNEST:** There is, counsel.

15633. On the subject of optionality, the way we think about it or would describe it, there are several types of optionality that are provided by Northern Gateway.

15634. And even within the committed volumes flowing down Northern Gateway, there is option. I mean, you consider the case where, for example, a major consumer of Canadian light synthetic, such as the Coop Regina Refinery or the PBF, Toledo Refinery goes down, as refineries tend to do -- what may well happen -- is some of those committed volumes shift from whatever those committed shippers were shipping the prior month, perhaps mostly heavy Canadian, to some kind of blend of heavy Canadian and light synthetic because in the circumstance where the market has lost a major consumer, in this example, of light synthetic, of course, the price at Edmonton of light synthetic reacts. It drops.

15635. And so thus, that's a more attractive oil for the committed shippers to move on Northern Gateway to the Northeast Asian markets because certainly the value or price of light synthetic and heavy sour crude in Northeast Asia is not changing as a consequence of a refinery outage in North America. It is what it is.

15636. So even within your committed volumes, you have optionality. And, in that circumstance, if the committed shippers start moving, in this instance, light synthetic, that does help support the price of light synthetic at Edmonton to the benefit of all the producers of light synthetic crude.

15637. That's one, if you like, short term option value within the confines, if you like, of committed, and to a degree, I guess, also the uncommitted volumes.

15638. In a broader sense -- and this is more the sense, I think, that Dr. Mansell's been articulating yesterday and today -- the option value arises in the sense that if the crude production within North America is higher than forecast, higher than what's forecast for either Western Canada or for the Balken or for the Eagleswardin south Texas or the Utica shale in Ohio, the greater the volume of crude produced within North America, almost irrespective of location, the greater the value of a high capacity outlet to a tidewater market in the Pacific Basin. That has value.

15639. And the other -- at a second broader option value again in the sense that Dr. Mansell's been using it is in the circumstance where rail is not there, for whatever reason, and the alternative is shut-in, the option value of having Northern Gateway in place and operating in that circumstance is enormous. And Dr. Mansell has offered some numbers -- yeah, notional numbers to quantify that type of option value in the circumstances of a shut-in.

15640. So that's -- that's how we're trying to -- how we think about and how we're trying to describe option value of North America; there's several different types.

15641. **MS. CHAHLEY:** Thank you. So I'm going to come back to some of those points a little later.

15642. But in terms of the committed volumes, what I'm gathering you're saying is a committed shipper might have been planning to sell bitumen down the pipeline, but -- or dilbit blend with bitumen and decide that because of other impacts in Canada it might be better to send some synthetic crude oil instead. Is that what your basic first point was? And this gives them that option.

15643. **MR. NEIL EARNEST:** That's correct.

15644. **MS. CHAHLEY:** And they might make that decision based on what you said, a refinery goes down and they're not taking it from their other, for whatever reason.

15645. But the projections that you made, we looked at that table yesterday. I can take you back. We confirmed yesterday that the projections and the economic case that have been put forward are all for after the first year -- three years. The expectation is 525 barrels of heavy oil, correct, of the bitumen-based blends?

15646. Do I need to show you that table again?

15647. **MR. NEIL EARNEST:** No, counsel, your recollection is accurate.

15648. **MS. CHAHLEY:** So this is an emergency or an unexpected optionality and it would be for a short term. A refinery goes down -- I think we had a fire at one of them, Simcor Syncrude and it was down for two months and there was a big impact of that; this is to cover that kind of thing; correct?

15649. **MR. NEIL EARNEST:** Well, in the sense that I use in the express in the optionality embedded within the committed volumes and uncommitted volumes, yeah, that would -- generally, I would think of that as more of a short term opportunity.

15650. Now, in the circumstance where a big consumer of synthetic crude goes down permanently, for whatever reason, then that would then become more of a medium or long-term matter.

15651. **MS. CHAHLEY:** So that would be a different thing. So this is for a short term, a one-month, a two-month, a three-month change that wasn't quite expected that's going to come -- move on. Okay.

15652. Now, I think we've covered that.

15653. Maybe this is -- sorry, I'm just -- just give me a moment. I might rearrange something here.

--- (A short pause/Courte pause)

15654. **MS. CHAHLEY:** This might be a nice place to talk about rail, since it's come up in your explanation as well or the shut-in issue and because it comes up in your report where we were looking in Muse 2, if you can, the second report in the change of supply issues.

15655. So maybe, Madam Clerk, if you could put us to Exhibit B83-3 again, and if we could go to page 36, the hard page 36.

15656. At the top of this, Mr. Earnest, this is where you explain the changes that had happened since January report, and one of the biggest changes that I understood you to be mentioning was the change to rail transit; is that correct?

15657. **MR. NEIL EARNEST:** That's correct, counsel. With the higher CAPP supply forecast we had in 2011 versus the CAPP 2009 Western Canadian supply forecast, it was necessary either to use rail as the incremental transportation mode for crude out of Western Canada or use as your base case against which the benefits of Northern Gateway would have been measured a shut-in scenario once all the available outbound pipeline capacity fills.

15658. **MS. CHAHLEY:** So by today's date, are we agreed -- can we agree that rail is now being used and is projected to increase as a transportation option for bitumen in North America?

15659. **MR. NEIL EARNEST:** Today rail is being used to transport heavy crude and under-blended bitumen from Western Canada to the various destinations in the -- in North America. The prospects for rail short term with the start-up of big projects such as pipeline projects such as Keystone XL and the Enbridge Flanagan South and twinning of Seaway I would judge would -- may act to dampen the medium-term and perhaps long-term prospects for rail transport.

15660. **MS. CHAHLEY:** Okay. So we agree that rail is coming onboard as a viable option for transport, but what you're saying is preference for pipelines is likely to dampen the enthusiasm for rail. And as more pipelines are available you're predicting that rail will not be used as much; correct?

15661. **MR. NEIL EARNEST:** Well, the barrel only gets transported once. It's not like it's transported over pipeline or railway, not both simultaneously. And these new pipeline projects that are -- that are expected to be constructed, Keystone XL, which has been approved by the NEB already on the Canadian side, and the southern bit is already under construction from Cushing down the Gulf Coast, and the Flanagan South pipeline project, they all come with sizable committed volumes associated with those projects.

15662. So I certainly would anticipate almost irrespective of what the railroad companies do with their rates that the medium-term the great bulk of the incremental production of crude from Western Canada will move out by pipeline rather than by rail.

15663. **MS. CHAHLEY:** Okay. But to understand your report, okay, what I understand you're saying in page 36 and following is that rail comes onboard and is something that you have to take into account as changing the landscape to a degree; correct?

15664. **MR. NEIL EARNEST:** It -- I would say it certainly offers the Western Canadian -- and not just the Western Canadian but also the U.S. crude producers -- the transportation option or mode that heretofore, you know, they really haven’t used.

15665. Today there's roughly a quarter million barrels a day of Bakken crude produced in -- mostly in North Dakota that’s being transported to market by rail and that’s certainly in part because there's inadequate pipeline capacity exiting the

Bakken area.

15666. **MS. CHAHLEY:** Okay. So in Canada, and I believe in the States, you know, we are -- Canadians are still very proud of their rail history, I assume the Americans are too, and we already have this huge rail infrastructure in place. So one of the advantages to rail is that they don't have to build the railroad, it's already there.

15667. But I understand from your report and from just looking generally at this issue, there still are costs, the rail has to produce proper loading and unloading docks to handle the putting of the product into their cars. And of course rail is transported by car so that we have to talk about much can be transported, how much weight, how many cars can go on a railway, what is the options to add trains to the system.

15668. But even leaving all that aside, would you agree with me that rail has two advantages, it's -- the capital is a significantly smaller investment to bring rail into transporting this product and rail is a lot more nimble. I can transport on the rail to B.C. tomorrow and to California the next day and to the mid United States the day after; correct?

15669. **MR. NEIL EARNEST:** A couple of observations, counsel. I mean you are indeed correct that -- or you're already offered the caveat that before you can load or unload a railcar you need the necessary facilities. So your degree of flexibility is limited by the installed infrastructure both on the -- at the point of production and at the -- on the refinery end.

15670. In general, rail offers you those attributes at a higher operating cost and your ability to push rail into certain congested area is strictly -- I'm thinking of Houston -- is finite. So you -- there are, you know, upper limits and I'm not a rail expert. I don't know exactly where they would be, but it is my pretty clear understanding there are upper limits as to how much oil you can move for example, into the Houston refining complex by rail simply because you just can't get the tracks boost.

15671. **MS. CHAHLEY:** Right, we can't overload the lines so that -- but I think that -- so, is this something that -- okay, I don't want to ask you questions that are outside of your expertise. But you did suggest that you thought that rail would be a higher operating cost. On what basis do you say that?

15672. **MR. NEIL EARNEST:** Our research and analysis, we're working with clients today on the U.S. Gulf Coast, refiners who are looking at -- not just looking at but using rail to bring in various grades of crude to their facilities. So we're -- and this is more my colleagues than myself personally, but we're familiar, we have that industry experience to work with and we're also highly familiar with the cost and issues associated with moving ethanol by rail.

15673. Most of the ethanol that North America has produced in the U.S. Midwest, much of it is consumed elsewhere, California, the south, so on and so forth. And by and large -- or much of that ethanol is transported by rail so that the economic and technical issues of transporting ethanol by rail or crude by rail are really quite similar.

15674. **MS. CHAHLEY:** Okay. Ethanol that’s a finished product, that’s a refined product like gasoline; is that correct? Help me out.

15675. **MR. NEIL EARNEST:** It's -- yes, it's a blend stock you can use in gasoline, that’s correct.

15676. **MS. CHAHLEY:** Yeah. Sometimes I ---

15677. **MR. NEIL EARNEST:** The fuel grade ethanol that we're talking about, yes.

15678. **MS. CHAHLEY:** Yeah. So that’s a whole different product then bitumen, okay.

15679. But -- and one of the differences is bitumen I have to blend with a diluent if I'm putting it in a pipeline; correct?

15680. **MR. NEIL EARNEST:** That is correct, counsel.

15681. **MS. CHAHLEY:** And if I'm looking at rail, some of the information with rail that I've been able to look at suggests that there's a lot less diluent required if I'm blending the bitumen to put into a railcar. And in fact some of the literature suggests they don’t even need to have any.

15682. Is that something you're familiar with?

15683. **MR. NEIL EARNEST:** Sorry counsel, can you repeat the very last piece of your question? I missed it.

15684. **MS. CHAHLEY:** Some of the literature that I read suggest that they use a lot less diluent to blend with the bitumen to go into a railcar because it just needs to go in and come out, it doesn't need to be able to flow down a pipeline. And in fact something suggest that they can put bitumen in without any diluent at all, just enough to move it into the car.

15685. Is that something you're familiar with?

15686. **MR. NEIL EARNEST:** Yes. As a practical matter at the point of production when your heavy oil or bitumen comes up out of the ground -- this is all thermo stimulation -- it comes up with water and so you have the issue of how do you separate your heavy oil from your water at the field.

15687. And what's -- the way that's typically handled is you add some diluent at the field which acts to lighten the oil so it floats on top of the water and now you can easily separate it. Because as the bitumen comes out of the field its density is very similar to that of water and so it doesn't separate very well or very fast. And typically that blend ratio is about 10 percent by volume, 10 maybe 15 percent.

15688. And so now the crude producer has the issue of well, we can rail that under-diluted bitumen blend to market or we can install some additional facilities at the field or somewhere nearby where we separate back out that diluent and recycle it back to the field. So that's an economic trade-off.

15689. The other issue you get into with rail transport of bitumen is that either raw or undiluted, it's very viscous, a very thick oil like molasses or even thicker. And consequently as a practical matter you have to use railcars that are fitted with steam coils underneath the insulation jacket, so that when the railcar arrives at its refinery you hook a steam hose up to it and heat the railcar for some period of time so that you thin -- produce the viscosity of the bitumen within it before you can actually empty it from the railcar.

15690. I mean the raw bitumen by the time it gets to Houston it's going to be -- I think somebody used the expression "hockey puck" yesterday -- it's going to be a sticky solid. And so you'll have to basically melt that using steam before you can actually excavate the railcar.

15691. The implications of that is that you have to build a railcar that's fitted with steam coils, that adds weight and your weight limit on a rail track, so your volume that you can transport of cargo because your container, if you like, is heavier it goes down. And it's also a more costly railcar than a conventional railcar that's transporting crude oil or ethanol or something like that.

15692. **MS. CHAHLEY:** So yeah, you -- so there's going to be a different kind of railcar, it's going to cost more than an ethanol car, but it will have the benefit of not having to have nearly as much diluent added to ship it as in a pipeline?

15693. **MR. NEIL EARNEST:** That is correct, counsel.

15694. **MS. CHAHLEY:** So ethanol gives you some insights but it's not the best comparison. It gives you some insights but it's got some limitations in the insights in terms of rail transport is my point.

15695. **MR. NEIL EARNEST:** Not to be difficult, but I guess I'm unable to agree with that characterization. I think the -- I think our experience from -- we derive from understanding the issues of transporting ethanol by rail are applicable to transporting various layers of crude oil by rail, be it light, conventional or heavy sour.

15696. **MS. CHAHLEY:** Okay, all right. Let's move on. Madam Clerk, I provided you with an aid to cross-examination called "Pipeline News" and it's dated -- published July 22nd, 2011. It looks like this for anyone who's looking for it. There it is up there.

15697. **THE REGULATORY OFFICER:** And that would be AQ2.

--- AID TO CROSS-EXAMINATION NO./AIDE AU CONTRE-INTERROGATOIRE No. AQ2:

Pipeline News published July 22nd, 2011

15698. **MS. CHAHLEY:** Thank you.

15699. Okay. So have you had a chance to look at this, members of the panel?

15700. And particularly you, Mr. Earnest, since you've been talking on this issue.

15701. **MR. NEIL EARNEST:** I have read it, counsel.

15702. **MS. CHAHLEY:** Okay.

15703. So this is a year ago, now, since it was published and it talks about -- if you look in the middle -- let me just get the reference for you. At page 3 of 6.

15704. So third page in, in the middle, it says that:

> *"Trains have capacity for about 60,000 barrels of bitumen…"*

15705. I take that to be per train:

> *"…and do not need to run full. Shippers pay only for what they use, when they use it. According to CN, five trains can take the equivalent of 400,000 barrels per day of a 400,000 barrel per day pipeline."* (As read)

15706. Is that -- given your experience with ethanol and your general experience, do you have any quarrel with that statement?

15707. **MR. NEIL EARNEST:** My observation, counsel, is this -- the sentence that starts:

> *"Shippers pay only for what they use, when they use it …"*

15708. My observation there is, as a practical matter, if you're using unit trains, which is what we're talking about here -- a unit train is simply an assembly of cars that's dedicated to one purpose. It's all oil cars going from one location -- one origination to a single destination, and thus that the railroads usually lower the rate for that -- for using a unit train rather than scattering a bunch of individual cars in their general shipments.

15709. But as a practical matter, the shippers also have to lease the cars and, today, your minimum lease terms on a rail car is five years. I've seen rail -- rail lease -- rail car leases minimum of five years going out to about 15 years. The longer your lease term, the lower your monthly charge is. So your lease -- your lease charge would remain whether or not you use -- you're using that car to transport oil or not.

15710. But, certainly, the fees charged by the railroad would not be incurred if you elected for some reason not to move your oil by rail.

15711. **MS. CHAHLEY:** Mr. Earnest, I'm having a hard time hearing you. I don't know if anyone else is. I'm wondering if either the volume could be increased or if you could pull that microphone just a bit closer. I don't know if that's possible. They seem to be cemented to the table. Thank you.

15712. Okay. So if I'm going to ship on rail, I have to get my cars and lease them for a term. Is there anything that would prevent me from lending them to another shipper if I don't need them?

15713. **MR. NEIL EARNEST:** In long-term, no, you could re-let them.

15714. Short-term, you may or may not be able to re-let them.

15715. **MS. CHAHLEY:** Okay.

15716. And just looking at the statistic in here, five trains is going to take the equivalent of 400,000 barrels, that would suggest to me that about six trains are going to take the equivalent of 525,000 barrels, assuming 60,000 barrels per train.

15717. Are you agreed with that based on this information here?

15718. So if we have six trains or -- six or seven trains shipping bitumen, although that might strain the capacity at Houston, would you agree it's not going to strain the capacity at most train ports in Canada -- or train stations, if you like, in Canada train yards, and most train yards in the United States except for some of the most busiest places like Houston?

15719. **MR. NEIL EARNEST:** Sorry, counsel, now I'm having a little trouble hearing you. There's some banging going on over here.

15720. Could you repeat your ---

15721. **MS. CHAHLEY:** Let me try that again.

15722. **MR. NEIL EARNEST:** --- your question, please?

15723. **MS. CHAHLEY:** Fair enough.

15724. If we look at five trains will move the equivalent of 400,000 barrels per day, then I -- the first step I suggested is it's five or -- sorry, six or seven trains are going to move 525,000 barrels.

15725. And that's not a level of train capacity that's going to strain most rail stations in Canada or the United States, although maybe Houston, which I assume is a very busy rail terminus.

15726. Can you agree with that?

15727. **MR. NEIL EARNEST:** I think the answer is "no", counsel.

15728. **MS. CHAHLEY:** Okay.

15729. **MR. NEIL EARNEST:** I mean, a rail unloading facility that can accommodate six unit trains a day is a pretty big rail facility and it's also one that would be -- have to have the steam generation facilities we were talking about earlier this morning whereby you need to heat the rail cars so you can get the bitumen back out.

15730. I mean, that would be a fairly expensive facility, and that's -- they're not just scattered around North America. Somebody would have to build that on purpose.

15731. And if we're -- yeah, that's the banging I'm talking about. And if we're talking about, you know, using rail rather than Kitimat, obviously, in addition to your rail unloading facility you also need a marine terminal capable of loading your 500,000 barrels a day of bitumen, you know, onto a tanker to go off somewhere.

15732. **MS. CHAHLEY:** Yeah. And ---

15733. **MR. NEIL EARNEST:** And to elaborate slightly or to follow onto that thought, counsel, there are issues with marine transport of particularly raw and even under-diluted bitumen as there's not very many vessels, ocean-going vessels, that can accommodate a raw bitumen.

15734. That's really an asphalt tanker, and that's a specialized vessel, small, that has the ability, again, to heat their tanks so they can get the asphalt or raw bitumen back out of it once it reaches its point of destination.

15735. **MS. CHAHLEY:** Okay. One ---

15736. **MR. PRIDDLE:** Could I add the obvious point that the number of trains you need must depend on the distance that you're hauling the oil and the speed at which the trains go.

15737. **MS. CHAHLEY:** Absolutely.

15738. Not the number of trains you need, a train can -- one single train can go from point A to point B on the railway, but the distance, certainly, is an impact. I would agree with you, Mr. Priddle.

15739. Just talking about the infrastructure, though, if you look further in this article, for example, at the bottom of this same page, where it talks about the infrastructure commitments and you'll see on the very bottom and onto the top of page 4, it talks about:

> *"Infrastructure commitments would likely consist of 5 or 10 million in terminals as opposed to 5.5 or 6.2 billion in a pipeline."* (As read)

15740. So although the infrastructure is expensive, it -- can we agree that it's a fraction of the cost of a pipeline?

15741. **MR. NEIL EARNEST:** Counsel, I'm sorry, I'm not with you yet. Where are you?

15742. **MS. CHAHLEY:** The bottom of page 6 -- or page 3 to the top of page 4:

> *"Infrastructure commitments would likely consist of $5 or $10 million in terminals.."* (As read)

15743. **MR. NEIL EARNEST:** Counsel, I guess my observation is, is this -- this estimate of a rail terminal cost strikes me as quite low.

15744. If we're talking about the cost to construct a rail terminal that's capable in what we've been talking about of unloading six unit trains a day, in fact, it's impossibly low.

15745. It's inconceivable that you could construct either loading or unloading facility for $5 or $10 million that could accommodate six unit trains a day of bitumen.

15746. **MS. CHAHLEY:** Sorry. Are you saying sixteen (16) or six (6)?

15747. **MR. NEIL EARNEST:** Six (6).

15748. **MS. CHAHLEY:** Six (6). Thank you.

15749. **MR. NEIL EARNEST:** Or even one (1), when you get right down to it.

15750. **MS. CHAHLEY:** Okay.

15751. So you don't agree with that number in this article.

15752. **MR. NEIL EARNEST:** No. No.

15753. **MS. CHAHLEY:** Okay.

15754. **MR. NEIL EARNEST:** If memory serves -- and we can certainly confirm it -- my recollection is the Enbridge rail terminal that are under construction or expect to be under construction shortly has a cost of around $180 million for 140,000 barrels a day, I want to say, of light crude.

15755. But we would be happy to confirm those numbers.

15756. **MS. CHAHLEY:** Okay.

15757. So 180 million instead, is what you're thinking for 140 barrels -- 140,000 barrels.

15758. So if we took that and times our 180 million by five, we're still under $1 billion; aren't we?

15759. **MR. PAUL FISHER:** If I could just try and add a little clarity.

15760. So in the Northern Gateway capital cost estimate of $5.5 billion, I think it's just under -- if memory serves me correct, I think it's just under $1 billion is attributed to the Kitimat terminal.

15761. **MS. CHAHLEY:** M'hm.

15762. **MR. PAUL FISHER:** And if you assume that you're going to rail that type of volume to Kitimat, I would assume that the rail facilities would need the tankage and marine terminal facilities that Gateway's proposing.

15763. So order of magnitude, it would be approximately $1 billion.

15764. **MS. CHAHLEY**: Okay.

15765. Yes, and I wasn't actually asking these questions on the assumptions that rail would go to Kitimat, but thank you for the clarification.

15766. Of course, if it going to where there was no facility to put the bitumen in boats and it wasn't going to a refinery, for example, instead, then it would -- yes, you'd need to have a facility for that too.

15767. But my point in terms of the rail loading and unloading facilities is: Even if we up them to $180 million, we can still build a significant number of those with the cost of what a pipeline would cost. And I think we can agree on that much.

15768. **MR. JOHN CARRUTHERS:** Another point of context may be -- I'm not a rail expert but, certainly, in terms of the -- accessing the Pacific Rim, which is what this project does; it accesses a large growing market to give us that value of diversification, and that's the Pacific Rim.

15769. So you would need to get -- in our view, the project we're looking at does have to access the West Coast and the number of trains -- again, not being a train expert, but certainly you would need something in the order of 15 miles of train going each way every day. And we haven't seen any interest from our shippers, who again would have an interest in terms of the most economical, viable, commercial way to move product from where they need it to the market, and many of those have had experience in terms of different transportations.

15770. And again, I think the general consensus would be: To move large volumes economically and safely, the best way is to do it by pipeline. That's certainly been our experience in terms of any feedback we've had from our shippers.

15771. **MS. CHAHLEY:** Okay,

15772. But, Mr. Carruthers, when you started -- you started talking about this pipeline quite sometime ago. I think that, what was it, 2005 you said or 2003 in your Opening Statement?

15773. Remind me.

15774. **MR. JOHN CARRUTHERS:** That would have gone back to 2002 when it was first being conceived.

15775. **MS. CHAHLEY:** Yeah, that's what I was thinking. This one has been on the books or in discussion for quite some time.

15776. And I think what you had described in the Application is there was talk about it, then it sort of went -- it was quieter for a while and then you went to the shippers and said to them, "You come and help us with the Application itself. We need that commitment." And they did.

15777. And so that's -- part of the timeline is that process. Is that correct?

15778. **MR. JOHN CARRUTHERS:** Yes, that would be correct.

15779. **MS. CHAHLEY:** Okay.

15780. But we only see the train as emerging -- according to what Mr. Earnest has said to us, rail has only emerged as a possibility in the much more recent history. It wasn't on the table when he wrote his report in 2009. It's now on the table for his report in 2012.

15781. So to be fair, your shippers have been on this pipeline project for much longer than that. Rail wouldn't have been available for them at the time they were starting to think about this one; correct?

15782. **MR. JOHN CARRUTHERS:** Yeah, certainly not in the volumes we're talking about and the distances and the safety aspects.

15783. So rail wouldn't have been and still hasn't been in the recent period either.

15784. **MS. CHAHLEY:** And I'm not going to ask you about the things that you're not familiar with. So I'm not going to go into the safety aspects and things of rail; okay? Maybe someone else could pick that up or not.

15785. What I wanted to come back, Mr. Earnest, to getting some understanding a little bit about rail, is if we go back to your report -- so back to B83-3, Exhibit B83-3, back to page 37 -- when we look at the economic benefit case that has been put forward -- not is there shippers' interest or does Enbridge want to build this -- but the economic benefit case to Canadians, which as I understand it in the Muse report, is 38 billion and in the Mansell report, that's 312 billion economic benefit generally, that's based, as I think we established, primarily on getting a price lift to the sale of the bitumen and then the economic impacts of that working through the system; correct?

15786. **MR. NEIL EARNEST:** Again, counsel, if you like, we can go look at this specific table, but the benefit is based on increasing the price or reducing the discount -- however you want to think about it -- of Canadian light, medium, and heavy crude.

15787. **MS. CHAHLEY:** Okay, thank you. Thank you, I keep missing that last bit.

15788. So in trying to understand your report, Mr. Earnest, from page 37 onward, where you talk about rail, what I understood in the benefits case for Northern Gateway is Northern Gateway is saying to Canadians and to the Panel: We're bringing 38 billion on a -- one analysis or in the bottom macroeconomic analysis $112 billion to the Canadian economy. This is a huge benefit; correct?

15789. And that that benefit is being caused by Northern Gateway. Is that correct?

15790. **MR. JOHN CARRUTHERS:** Yes, that is correct.

15791. **MS. CHAHLEY:** Okay. Thank you.

15792. But when I read -- and so Northern Gateway is taking, if you like or if I like, the credit for that improved price to the producers, which then flows through to all Canadians.

15793. Is that correct?

15794. **MR. NEIL EARNEST:** I'm not sure I clearly heard the first part of your question, counsel.

15795. Could you repeat it, please?

15796. **MS. CHAHLEY:** Is it fair to understand that Northern Gateway, in coming here today, is saying: We take the credit, we are the ones bringing -- assuming our project goes ahead, we say to Canadians we gave you -- our project gave to Canadians the $38 billion or the 312, depending on which analysis you're using.

15797. That Northern Gateway is the cause of that benefit; correct?

15798. **MR. NEIL EARNEST:** I can speak for what the Muse study does.

15799. **MS. CHAHLEY:** Thank you.

15800. **MR. NEIL EARNEST:** And we establish a base case, which is what it is -- has rail on it, so on and so forth; has Keystone XL in it, has Flanagan South in it, which aren't currently in operation -- and assessed the -- estimated the price or quantified the price of all grades of Western Canadian crude, light, medium and sour.

15801. And the only thing we changed with our optimization model to assess the benefits of Northern Gateway is turn it on. We did not change the volume of Western Canadian crude. We did not shut down a refinery in Western Canada or in the U.S. Gulf Coast. We didn't change pipeline tolls along the Keystone XL.

15802. The only thing we did was turn on Northern Gateway, subject to a capacity limit of 525 thousand barrels a day with 500 thousand barrels a day of committed volume order at the indicated tolls for the committed and non-committed shipments.

15803. And the -- we estimate approximately $2, depending on what year you're talking about, increase in the price for Western Canadian crude as a consequence of having access, via a high capacity pipeline, to the Northeast Asian or more generally the Asia Pacific markets.

15804. And the final step in at least the Muse analyses is we recognize that higher Canadian crude oil prices benefits the Canadian producer but doesn't benefit the Canadian refiners.

15805. So we've explicitly corrected for that effect.

15806. So my analyses quantify the impact of Northern Gateway on the Canadian oil industry, and I'll let Dr. Mansell speak to this certainly. But then, Dr. Mansell speaks to the implications of that upon Canada in its entirety.

15807. **MS. CHAHLEY:** Okay.

15808. So if I can ask you then -- what I hear you saying is that I'm correct that the benefit that you predict is caused by putting the pipeline in the place?

15809. That that was the only variable you changed. We added the pipeline and this additional benefit was recognized, in essence?

15810. **MR. NEIL EARNEST:** That's correct.

15811. And again, keeping in mind we adjusted for the implications to the Canadian refiners of this ---

15812. **MS. CHAHLEY:** And I'm going to come to the amount of the benefit later but, yes, that's fair enough.

15813. Yet, as I understood it in Muse 1, in your first report, what you were seeing was, in essence, that the barrel sold to the pipeline becomes the price setting barrel for as long as there's room in the pipeline. Is that correct?

15814. And that's why not only does the price go up for the barrels in the pipeline but all of the other Western Canadian barrels sold in North America, the price also goes up.

15815. Is that correct?

15816. **MR. NEIL EARNEST:** That's certainly not the way I'd express it, counsel.

15817. It might be helpful if you could point me to the specific place in either the original or ---

15818. **MS. CHAHLEY:** Okay.

15819. **MR. NEIL EARNEST:** --- the update report. Thank you.

15820. **MS. CHAHLEY:** What I'm trying to understand is -- okay -- I'll -- let me find you it in the original report.

--- (A short pause/Courte pause)

15821. **MS. CHAHLEY:** I'm going to not be able to put my finger on it as quickly as I hoped. Maybe I'll ask the question a different way.

15822. Let me ask it really simply: Why if the price goes up on the barrel that's sold to Asia does there any price in the increases in Canada?

15823. And I think you're going to give me the same answer that I was trying paraphrase.

15824. **MR. NEIL EARNEST:** You're -- my apologies, counsel, repeat your question for me, please.

15825. **MS. CHAHLEY:** In -- when Northern Gateway barrels accessed -- access Asia, you have predicted in both reports that they will be able to command a higher price because of the value that the Asian community places on that barrel.

15826. Why does that make any difference to the barrel sale to -- to Burnaby or to Strathcona or to somewhere in the States?

15827. Why does that affect their price? Why will the prices go up in all of North America?

15828. So I was trying to paraphrase that which I obviously did badly so maybe you can just explain that quickly instead and we'll have a better set of words for that.

15829. **MR. NEIL EARNEST:** I'll try, counsel.

15830. I think the best place to find the -- the language I believe you're looking for is Exhibit B83-3, the Muse Update report, Adobe page 8, the -- the bottom paragraph.

15831. The last few sentences there:

> *"... Northern Gateway allows the Canadian crude producers to both stop selling to their least attractive refiner clients (attractive from a pricing perspective) and reduces their need to ship [heavy crude] via comparatively expensive rail ..."*

15832. Northern Gateway does not change the price of crude in Northeast Asia or California for that matter or, really, on the Gulf Coast. Or Philadelphia or Come By Chance. Northern Gateway is not changing the global crude oil price benchmarks for Brent in the North Sea or TAPIS in Southeast Asia or Arab light at -- at Ras Tanura.

15833. Did I -- what Northern Gateway is doing for the Canadian producer is exactly what I've articulated here. It allows them to, again, stop selling to their least attractive customer, North America, and those -- and, you know, you can only stop selling to your least attractive customer if you have an alternative. Absent an alternative, you're stuck with them, like it or not, and Northern Gateway gives you that alternative.

15834. **MS. CHAHLEY:** Okay.

15835. So what I understood that to be, that's the idea -- and I'm going to say it wrong because this is not my industry -- but the marginal barrel -- the prices set by what -- if I want to sell you a barrel for $100 and you say, "I don't want to pay $100, I want to pay $90." But Mr. Carruthers, there, he's going to buy my barrel for $100. I say to you: "Well, then I'll sell it to him." You say: "Okay, I'll give you $100 because I don't -- I want -- I want it." So that's the last barrel sold goes for $100.

15836. So that impacts all the other barrels sold at that point in time. Is that -- because of the way the pricing works in this industry, is that a very simplified version of how this works?

15837. **MR. NEIL EARNEST:** In general, counsel, there's -- I suppose, there are conceptions to any rule or every rule but, in highly liquid, highly competitive markets such as we find in Western Canada -- in the Western Canadian crude markets where there is a lot of buyers and a lot of sellers, as a practical matter for a given grade of Western Canadian heavy Cold Lake plan or Western Canadian select, there is only one price.

15838. Irrespective of who's selling Western Canadian select or who's buying it, they're buying and selling it at about the same price. And whatever is acting to set the price for Western Canadian select -- whatever pricing mechanism -- if it's this least attractive refining customer in the U.S. Gulf Coast then that is establishing the price for all buyers and all sellers of Western Canadian select.

15839. Then again, what -- what Northern Gateway allows you to do is, because you can no longer have to sell it to the least attractive customer in North America, now, the price moves up for all -- for all sellers and all buyers.

15840. **MS. CHAHLEY:** So ---

15841. **MR. NEIL EARNEST:** So that's why the price changes at Burnaby and everywhere else in North America.

15842. **MS. CHAHLEY:** It's selling the -- this and -- and I think it's been clarified: it's the Western Canada barrels that this price impacts on. You said it doesn't affect Brent and some of the other things.

15843. Okay, so that's -- so then it's -- is it fair for me to understand that the price -- or, sorry, the -- the benefit that's being claimed in the benefits place is because Northern Gateway's customers become the price setters for the grades that they're selling down the pipeline?

15844. **MR. NEIL EARNEST:** No.

15845. **MS. CHAHLEY:** Okay.

15846. Why do they get to claim the increase in price as being a benefit that they create?

15847. **MR. NEIL EARNEST:** Well, I don't know that the customers or the shippers get to claim anything.

15848. I mean ---

15849. **MS. CHAHLEY:** Okay.

15850. Why does Northern Gateway say that putting the pipeline in will cause this increase to all crude and -- produced out of Western Canada?

15851. **MR. NEIL EARNEST:** Because only if you have Northern Gateway in place and in operation can the Western Canadian crude producers and aggregates -- you know -- stop selling their barrels to their least attractive customers in Western Canada.

15852. And when that happens -- you know -- the price moves up for everybody.

15853. If, again, going back to our example of Western Canadian select -- if you have to sell less of that into the Gulf Coast, you're -- you're going to move -- because some has been diverted to Northeast Asia, for example, you're going to move the price up at Edmonton -- or actually it's priced at Hardisty -- at Hardisty for Western Canadian select. And that price moves up for all -- all buyers and all sellers of that specific grade.

15854. And that -- that price shift -- that price change occurred only because a big pipeline got commissioned from Western Canada to Tidewater to -- it enabled your access to the Asian Pacific markets.

15855. Absent Northern Gateway, there is no shift in price. Absent Northern Gateway, whatever price that's established in the base case doesn't change.

15856. **MS. CHAHLEY:** Okay,

15857. And that was one of the assumptions you made in the report -- is that you'll hold everything else constant. Right?

15858. Absent Northern Gateway, nothing else would change and so that's your base case to compare to; correct?

15859. **MR. NEIL EARNEST:** Well, to -- to be precise -- I mean -- if you want to access the implications, the consequences of starting up Northern Gateway, and you establish a base case, whatever that may be, and if a change case starts up Northern Gateway and simultaneously closes a refinery in Western Canada or something like that, you will certainly get a change in price in Western Canada.

15860. But what you can't determine is what portion of that price change is due to Northern Gateway and what portion was due to closing or starting up a refinery in Western Canada. There's no way to partition it. You can only identify the impact the specific change in a marketplace if you make only that change. If you're changing a myriad of things, you don't know what's -- what change is doing what.

15861. **MS. CHAHLEY:** So, yes, you made the one change but is it -- saying these benefits will continue for 18 years in your report is premised on an understanding that Northern Gateway continues to allow -- or to be the mechanism that is the price-setting barrel; correct?

15862. I -- like, why does it continue for 18 years? The pipeline's in place. The price has gone up in your analysis, but then why does it continue for 18 years to be bringing in this benefit?

15863. **MR. NEIL EARNEST:** Each year, the benefit of Northern Gateway is assessed versus the base case. The base case for year 2018 is not the same base case for year 2019. The crude supply volume changes, of course.

15864. I mean, we're using the CAPP supply volumes. So each year of the forecast period from 2018 through 2035, for the base case, we change the crude supply in Canada as well as the inland U.S. and Alaskan North Slope.

15865. We generally leave the refinery capacities alone. In North America we grow them at 1 percent per year, in China and in South Korea. We generally -- not generally, we don't make any further changes with the exception of, I think, a further expansion on the Enbridge Mainline post-2018. We do -- when I say we, I mean Muse. Muse, I do start up Phase 3 of the Northwest upgrader, I believe, in year 2022 or 2023 in Western Canada.

15866. So each year has its own unique base case. It is what it is. And in each year, we'd make a second optimization model run where the only change made is Northern Gateway is turned on. And so each year we are separately assessing what is the impact of turning on, if you like, Northern Gateway. And the results of that are captured in Table -- in the tables of the update report.

15867. Now, counsel, more generally to your question of the pricing mechanism, that and whether or not Northern Gateway is acting as the price-setting mechanism for Western Canada, that is spoken to specifically in the update report we have up on the screen at Adobe page 34, report page 31.

15868. Adobe 34. Just -- let's see -- stop, stop. And scroll up a little bit.

15869. Now, six, seven lines down:

> *"Once Northern Gateway is full, higher Asian crude prices…"*

15870. This is talking about the Asian premium:

> *"…cannot further increase shipments in Northern Gateway…"*

15871. Et cetera, et cetera.

> *"...and Northern Gateway is no longer acting as the price-setting mechanism for Western Canadian crude."* (As read)

15872. So what I'm talking about here specifically is if the price of crude oil changes in Northeast Asia, does that change the Edmonton price. And what I'm arguing is no, it does not. As far as that goes, even if the toll changes in Northern Gateway, it would not change the Edmonton price. Northern Gateway is not acting as the price-setting mechanism in the marketplace in year 2025.

15873. Now, that is not to say that if you shut off Northern Gateway there would not be a price impact at Edmonton on the Canadian crude producers. That price impact is established, again, each year by establishing a base case that evolves over time, then again turning on the Northern Gateway price -- the Northern Gateway. And that price, in fact, is quantified specifically at Adobe page 72 of this document, Table A-17.

15874. And so this is -- this is our quantitative assessment of the impact of turning on a high-capacity pipeline that connects Edmonton to the Tidewater British Columbia on a year-by-year basis.

15875. **MS. CHAHLEY:** Okay, thank you.

15876. But can we, Madam Clerk, go back to the page you were just at, which is page 31. And I forget the Adobe number. I apologize.

15877. Just where you were, Mr. Earnest, where you said once Northern Gateway is full, higher Asian crude prices cannot further increase shipments on Northern Gateway because it's full, I guess; right?

> *"...although shippers may benefit and Northern Gateway is no longer acting as the price-setting mechanism for Western Canadian crude."* (As read)

15878. So the shippers will continue to get whatever they get in the Asian market, but in my example I can't say to you I want the price in Asia and you say, "No, I'm not going to pay you that price; I'm going to pay you my price". I can't say, "Well then I'll put it in the pipeline and send it to Asia so you will then raise your price to match to get the oil from me".

15879. So is -- am I correct so far? The pipeline is no longer available to allow me to leverage a higher price or to be my incremental -- where I put my incremental bottle -- barrel once it's full.

15880. **MR. NEIL EARNEST:** If I understand your question, counsel, as I described here, once the pipeline is full -- once Northern Gateway is full, a higher price in Northeast Asia doesn't change the Edmonton price.

15881. **MS. CHAHLEY:** Okay.

15882. **MR. NEIL EARNEST:** A full pipeline is not acting as the price-setting mechanism.

15883. And we have an example that's dynamic today that's discussed further down in this document, in this -- in fact, not in this document, in this paragraph. A current example of this dynamic is the Pegasus pipeline, which today originates in Southern Illinois. It's connected indirectly to the Enbridge Mainline system, and it goes down to the U.S. Gulf Coast.

15884. This pipeline's been full for the last -- really, ever since it started up, which if my memory serves, is 2005.

15885. The tolls with all-in cost of this pipeline from Edmonton to the Gulf Coast via Pegasus is about a little under $7 a barrel today. The price difference between a heavy sour on the Gulf Coast and Edmonton is approximately $30 a barrel.

15886. So I would submit to you that if Pegasus was acting as the price-setting mechanism, I would expect the Edmonton price to be whatever the value is of heavy sour crude on the Gulf Coast minus about seven bucks, the all-in toll on the Pegasus pipeline and the Enbridge Mainline, but in fact, that's not the case. The price today at Edmonton is not the Gulf Coast price minus seven; it's the Gulf Coast price minus 30.

15887. Pegasus is full. The incremental barrel cannot move on Pegasus to the market today from Western Canada. The incremental barrel may be -- well be moving from Canada to market today in a railcar somewhere. It's kind of difficult to sort out exactly how the price-setting mechanism is going on right now.

15888. **MS. CHAHLEY:** Okay.

15889. **MR. NEIL EARNEST:** And so that -- that real-world example of today also applies in Northern Gateway. Once it's full, it's not acting as the price-setting mechanism for the last barrel sold in Western Canada. But again, that is not to say that if you turn off Northern Gateway there is no price impact at Edmonton. That's an entirely different question, entirely different answer.

15890. **MS. CHAHLEY:** Right, okay. But just take that example, so if the barrels going on the Pegasus pipeline sell for $31.50 more than the barrels being sold somewhere else; is that correct? Maybe $31 minus $7 for shipping. Is that how I understand your example?

15891. **MR. NEIL EARNEST:** Let's just use some numbers, counsel. So ---

15892. **MS. CHAHLEY:** Yeah, help me out.

15893. **MR. NEIL EARNEST:** To try to avoid some confusion.

15894. If the price of Mayan Gulf Coast is $100 per barrel today ---

15895. **MS. CHAHLEY:** Okay.

15896. **MR. NEIL EARNEST:** That's a little high, but it's a nice round number. The thing of it is, you know, the Mexicans have optionality. They don't want to sell to the Americans. They can sell to the -- particularly the Spanish, who just started up some cokers, and elsewhere in the world.

15897. The current price today, then, of -- at this differential we're talking about here would be $100 less 21.50, which puts you at Edmonton of -- well, it'd be hard to see, really -- of $68.50. So those are your two prices that we're talking about.

15898. **MS. CHAHLEY:** So the price for the Maya would be 100 and the price for the bitumen that's the equivalent, the blend ---

15899. **MR. NEIL EARNEST:** The blended bitumen.

15900. **MS. CHAHLEY:** --- that's equivalent to the Maya in the market today would be $68.50?

15901. **MR. NEIL EARNEST:** At Western Canada -- in Western Canada.

15902. **MS. CHAHLEY:** At Western Canada, yeah.

15903. **MR. NEIL EARNEST:** Purchased in Western Canada.

15904. **MS. CHAHLEY:** And if -- but that Pegasus pipeline is no longer making any difference to the price of the barrel in Edmonton ---

15905. **MR. NEIL EARNEST:** I wouldn't say that. What my argument is, is that the Pegasus pipeline is not acting as a price-setting mechanism.

15906. **MS. CHAHLEY:** It's not the price-setting mechanism?

15907. **MR. NEIL EARNEST:** Yeah.

15908. **MS. CHAHLEY:** So the next barrel sold in Edmonton is not going to have its price --because of this barrel being sold on the Pegasus pipeline, it's going to have its price determined, for example, by the Northern Gateway pipeline if the Northern Gateway pipeline had been -- was in place. What could I sell the barrel that I send down that pipeline might be one example of the price-setting mechanism or what is the cost of the barrel going on the rail car; correct?

15909. **MR. NEIL EARNEST:** I think you're going to have to rephrase your question, counsel.

15910. **MS. CHAHLEY:** I'm just trying to understand if the Pegasus doesn't set the price, then how do we determine the price on the next barrel?

15911. **MR. NEIL EARNEST:** Well, you'd look somewhere other than Pegasus, right? I mean, clearly Pegasus is not acting as a price-setting mechanism. If Pegasus was acting as a price-setting mechanism, I would expect the price of WCS at Hardisty to be $100, the value of Maya on the Gulf Coast, less the Pegasus all-in toll of $6.90, which would be $93.10. In fact, the current price is $68.50.

15912. Clearly, there's a huge disconnect between a Pegasus price-setting mechanism and what's actually going on in the marketplace.

15913. So if your question is how is crude being priced today in Western Canada, it is a market that is hugely over supplied with crude in the inland markets, inland markets extending from Western Canada through Chicago, down to the mid-continent of the U.S.

15914. And today at the margin crude is being shipped out of the inland areas of North America by rail and by truck to primarily the U.S. Gulf Coast as well as rail shipments are moving over to places like Philadelphia, and I think I read that Irving in Saint-John, New Brunswick is starting to receive some by rail shipments, so on and so forth.

15915. I mean that's the level of stress we're seeing in the Western Canadian crude markets today. That's the level of stress that's generating this huge $30-odd price discount that the Western Canadian crude producers are experiencing.

15916. And this is an artefact of inadequate outbound crude transportation infrastructure. If you had a high-capacity pipeline between Edmonton and the U.S. Gulf Coast that had a toll of $6.90, your price of heavy crude today at Edmonton would be $93.10. It's not because you don't have a high-capacity pipeline in place in operation today. What we have is a Pegasus pipeline that's full.

15917. **MS. CHAHLEY:** Okay. So why would it be any different with Northern Gateway if Northern Gateway is built and once it's full, why would it continue to have any impact on the rest of the barrels sold out of Western Canada in the future for the 18 years?

15918. Sure, the couple of years until it's full by why -- well, in fact, Mr. Fisher says it's going to be full before it even starts because that's part of the plan. Why is it going to make any difference once it's full?

15919. That's my question. That's where I want to go. Just like Pegasus, it'll be full. Why is it going to -- why will those extra barrels sold -- the next barrels sold out of Edmonton be impacted?

15920. **MR. NEIL EARNEST:** I think we're -- with respect, counsel, we're confusing the price-setting mechanism. You're really with or without Northern Gateway in operation with the implications of constructing and commissioning a high-capacity pipeline.

15921. What we are arguing or articulating here on the page we have up here on the screen, Adobe page 34 of the Muse Update Report, is speaking to an argument offered by one of the intervenors about -- you know -- Asian prices. And I'm just refuting some of her -- I can't quite remember who's offered it, but the intervenor's comments.

15922. I again come back to the fundamental point I've been trying to make this morning. The appropriate way to assess the impact of Northern Gateway is not trying to sort out what the incremental price-setting mechanism of Northern Gateway in operation is. That's not the way to do it.

15923. The way to assess the impact of Northern Gateway is establish a reasonable and balanced base case. Then make a change, and your only change is you turn on Northern Gateway and quantify the impact on the price at Edmonton for all their various grades of Canadian crude.

15924. That's the appropriate way to assess the economic implications or benefits of Northern Gateway for each year of the forecast period. And that's what I've done with the appropriate adjustments for the impact on the Canadian refiner.

15925. **MS. CHAHLEY:** Thank you, Mr. Earnest, but you didn't answer my question; is once Northern Gateway, if it's operational, once it's in place and assuming it's, as Mr. Fisher said, full with -- we've got a small amount of incremental volume or the 25,000 or maybe a little more on a good day barrels with can play with, why does Northern Gateway continue to -- certainly, it will continue if it's in place to bring a bigger price to the people shipping on it. That's what you've said, and we're going to talk about the Asia premium after lunch.

15926. But why does it make a difference to the price of the barrels sold in North America that aren't going on Northern Gateway in the future for those 18 years? Why does it continue to be the price-setting mechanism when Pegasus isn't, why is it any different?

--- (A short pause/Courte pause)

15927. **MR. NEIL EARNEST:** Could we go to Adobe page 8 of this document, please? The bottom of the page. And we've been here before. But this is -- to answer your specific question, counsel, this is the reason here.

15928. Northern Gateway enables the Western Canadian crude producer to no longer sell to the least attractive customer within North America, and only Northern Gateway can do that for them.

15929. That's why it has a benefit each and every year of the forecast period because each and every year of the forecast period there is a least attractive customer. It may -- they may move around, but there is always a least attractive customer establishing -- acting as a pricing mechanism, establishing the price in Western Canada for all the production.

15930. I don't know how to answer that question any other way.

15931. **MS. CHAHLEY:** I think I understand your answer, but that applies to the 525,000 barrels in Northern Gateway. Once all those barrels have been sold to the more attractive Asian customer, I can't -- and I have some more barrels, I can't put them in that pipeline. It doesn't help me to sell them to a least -- it's not preventing me from selling from the least attractive customer anymore.

15932. So why are my barrels going up in price -- except for perhaps an initial time while the market is adjusting, for 18 years, why are my barrels going up too? That's what I'm trying to understand.

15933. Because I can't put them in the pipeline, it's full.

15934. **MR. NEIL EARNEST:** Let me put it this way, counsel. Let's say rather than going to the base case, the Northern Gateway case, let's come at it from a different direction. Let's start with Northern Gateway.

15935. Let's say that Northern Gateway is in operation, moving 500,000 barrels a day of crude out of the North American market to Asia Pacific. And as a consequence, the Western Canadian crude producers -- let's just take the heavy -- are selling a million barrels a day of crude on the U.S. Gulf Coast.

15936. Your incremental customer -- sorry, if you're the incremental producer of Canadian heavy with Northern Gateway in operation, that last barrel goes to the Gulf Coast and you have to find the refiner who is willing to take one more barrel. Said differently, he has to process or sell successfully in the U.S. Gulf Coast one million and one barrels of crude.

15937. Theoretically, there will be a modest price impact; it would move down.

15938. Now, consider the circumstance when Northern Gateway is not in operation. Now, your starting point on the Gulf Coast is not one million barrels a day. Your incremental barrel is on top of one and half million barrels per day of crude. So now you're trying to push -- sell not one million one, but one and a half million and one barrels a day on the U.S. Gulf Coast.

15939. Your price that you will get for an incremental barrel at a million barrels a day and the price you get for an incremental sale at a one and a half million barrels a day is not the same, it is much -- it is lower even on the U.S. Gulf Coast.

15940. So that is why your incremental crude producer with Northern Gateway in operation benefits. And that is why, absent Northern Gateway, the incremental producer of heavy crude in Western Canada, you know, would suffer the consequences because, you know, they're pushing their incremental barrel into a market that’s -- that has another half million barrels of crude already pushed into it.

15941. **MS. CHAHLEY:** Okay.

15942. Okay, so that -- you're saying it's because the market in North America would have more barrels in it without Northern Gateway -- will have the extra half million barrels a day?

15943. That's why my price is not going to -- is going to be the same as -- why the Northern Gateway is going to continue to elevate the North American price; is that ---

15944. **MR. NEIL EARNEST:** I better listen to that one again, counsel, could you repeat it, please?

15945. **MS. CHAHLEY:** What I thought you said was the reason that Northern Gateway -- why the price increase that you say will happen from Northern Gateway is going to continue to affect all of the North American barrels for 18 years is because Northern Gateway -- because without Northern Gateway, there's an extra half a million barrels in the market; correct?

15946. **MR. NEIL EARNEST:** Well, not on the global market, of course.

15947. **MS. CHAHLEY:** But -- no, we're talking about -- I'm trying to focus ---

15948. **MR. NEIL EARNEST:** Yes.

15949. **MS. CHAHLEY:** --- on Western Canadian crude, the market that you say will be impacted by the price increase or the discount diminishment, whichever way you want to put it.

15950. **MR. NEIL EARNEST:** Well, to be precise, we're talking about the North American crude market.

15951. But, yes, Northern Gateway -- the operation or inoperation -- depending on which way you want to go -- of Northern Gateway will influence the price of all grades of Western Canadian crude and many grades of inland U.S. crude -- if anybody cares about those -- throughout the forecast period.

15952. **MS. CHAHLEY:** So if the supply to North America changes -- either up or down -- in that 18 years, that also is going to affect the price of those barrels; correct?

15953. What you're basically saying is that, because there's going to be more supply in North America, the price will be impacted than if there was less supply in North America, because Northern Gateway is taking away some supply so that's going to make a difference.

15954. But we had established earlier that that CAPP forecast is that the new supply is going to cover that piece anyway really quickly on into the future so the market is going to have that extra supply anyway.

15955. So why is Northern Gateway going to continue to make a difference?

15956. **MR. NEIL EARNEST:** Can we go to Adobe page 20, please? At Figure 3, thank you.

15957. This begins in 2011 and we're talking about the period 2018 through 2035. The volume of Western Canadian crude and indeed inland U.S. crude is changing each year of the forecast period for the base case. And again, we would make a second model run each year, turn on Northern Gateway and quantify the impact on price.

15958. If for year 2020 -- if we want to use a different supply forecast of crude oil from Western Canada or anywhere else in North America, we can do that. We simply have a different base case for 2020 with a higher or lower crude volume. Then, we make a -- then, we make -- then, we take exactly the same next step, and the next step is, again, simply turn on Northern Gateway and quantify the pricing impact of that change to the distribution system in North America.

15959. So the absolute level of volume is in a sense, counsel, captured in your base case for each and every year. And, in general, the higher the crude production in North America -- either in Western Canada or anywhere else in North America, I mean really U.S. -- the greater the economic benefits of Northern Gateway. I mean, the more crude we're producing in North America; the more beneficial it is to have an outlet -- a high-capacity outlet to some other market.

15960. Even in South Texas has gone from less than 100,000 barrels a day of production to, two years ago, to half a million barrels a day and climbing. The supply picture in North America is changing very fast today. And as we add more and more local supply of U.S./Canadian crude, you know, the need or the economic benefits that accrue to accessing similar market just simply go up.

15961. **MS. CHAHLEY:** Okay.

15962. I'm still -- in your analysis you're saying, you know, each year would be a new base case we'll -- and analyze the benefits of no Northern Gateway versus Northern Gateway in each year and that’s what you've done in your report. I get that.

15963. But looking at that graph right there, that’s the one on -- it's page 17 and I think you said a different Adobe number, of exhibit -- it's the Muse 2, Exhibit B83-4.

15964. Let's say that in 2016, the Board has approved Northern Gateway and it's now being built and, in the same 2018, it's operating. It can't be turned off anymore; it's now in place on 2018 as -- or 2019 as planned.

15965. **MR. NEIL EARNEST:** M'hm.

15966. **MS. CHAHLEY:** Then, looking at that you see that the -- I think the -- is the top line or the blue line, is that from the CAPP 2012 Supply Report that we looked at earlier?

15967. Is that what I should understand that blue ---

15968. **MR. NEIL EARNEST:** Yes, counsel, the lower right in the legend box ---

15969. **MS. CHAHLEY:** Yeah, so that’s actually added in that very most recent report that was -- that we just looked at.

15970. So you can the supply jumps, it's not a steady straight line. So the supply changes after 2018. Let's go to 2025, you see a big jump there in supply. Northern Gateway is now on; it's not turning off anymore.

15971. It's -- earlier years, it took away 500,000 barrels and that, as you've explained, impacts on all the other barrels sold because it's not adding one barrel to a million and a half, it's adding one barrel to a million.

15972. But now, we've thrown into the market an extra 500,000 barrels from new supply. So the benefit of having that 500,000 barrels out of the market is gone now because it's coming from new supply in new real life.

15973. So why does Northern Gateway still continue to make a difference to the barrels sold from that point forward?

15974. Except to the people whose oil is getting a different price in a different market, of course, I'm leaving them out of the picture but, to the new seller, why does it continue once you get to the point where supply jumps because of new supply or new production and you can't turn it off anymore, it's just there, it's part of the landscape?

15975. **MR. NEIL EARNEST:** Well, mathematically, counsel, you can assess the benefits of Northern Gateway by establishing a base case that doesn't have Northern Gateway then turning it on, or you can simply re-label your cases.

15976. Well, a base case has Northern Gateway in operation and then I turn it off and measure the impact, how much the price at Hardisty goes down because Northern Gateway has been turned off. So -- and you would get the same answer, it's symmetrical.

15977. **MS. CHAHLEY:** But I'm not turning Northern Gateway off, I'm adding new supply to the mix that wasn't there in either case. It wasn't there in the base case and it wasn't there on the Northern Gateway case when, at 2016, is now added down the road a bit.

15978. What I'm trying to understand is -- accepting for the moment that there's going to be a price lift for the reasons you say for the short run, why does it continue for 18 years when we are in a situation where more supply is coming than was in the models to start with?

15979. That's what I'm trying to understand and, based on the logic of what you're explaining to me, I don't understand why that new supply wouldn't have the same impact as now?

15980. Now, I -- once I have 500,000 more barrels of supply in the market, now, when I go to sell my next barrel I am selling it on a million and a half. I don't get the benefit of only a million anymore. I'm selling it on a million and a half. I've lost the benefit that you've described because of new supply coming in.

15981. **MR. NEIL EARNEST:** In year 2025, if the CAPP 2012 supply outlook is indeed correct and we're now in year 2025, and the question is, well what's the value of Northern Gateway; it's been in operation since August 1st of 2018.

15982. The way I would conduct that analyses is establish a base case with Northern Gateway in operation and my change case would be turn it off and quantify the benefits. I would -- whatever using the CAPP 2011 forecast, I get, you know, $2 a barrel or whatever the actual number is.

15983. If we're actually in year 2025 at the CAPP 2012 spy outlook, which is higher, of course, and I turn off Northern Gateway, I might get $2.15 a barrel, I don't know, you'd have to run the models to sort that out. But you can still quantify the economic benefit of Northern Gateway at a higher crude level and a lower crude level. It really doesn't matter.

15984. I mean, Northern Gateway we're not arguing is establishing the -- is acting as a price-setting mechanism, but each and every year it is in operation has economic utility, it has economic value. Each and every year it is in operation we can assess that economic utility or value. We can turn it off.

15985. In point in fact, occasionally pipelines, usually by accident, do get turned off in North America. They have outages, and they go down for maintenance. And when that happens, you will get a reaction in the marketplace. The price goes down. And they've been there.

15986. And keep in mind, you know, in the base case that we've used, we had Keystone XL turned on, which is not built yet. We have Flanagan South, which is an 800,000 barrel a day pipeline that connects Chicago to Cushing, turned on, although it's not built yet. That's all in the base case.

15987. We're not trying to ask and answer the question what's the economic utility of Keystone XL in this exercise; just what's the value of Northern Gateway. And the only way you can do that by -- is by turning it on or off. And you can start by -- start with it on and turn it off, or you can do it the other way around, you get exactly the same mathematical result.

15988. Does that help, counsel?

15989. **MS. CHAHLEY:** No. I understand your point. It's -- I understand the analysis you're trying to explain and I understand what you're saying is if we're looking at economic benefit.

15990. But I'm trying to understand about the price lift applying to all barrels because this flows through to both the numbers that you claim at the end of your report, but it also is the numbers that Dr. Mansell took to then feed into the Canadian economy.

15991. So we're still back to -- I understand what you're saying, but we're not turning it off in 2025, it's there. And we've got our extra production from new sources coming in, assuming that's right, and maybe it's higher or lower, but we've got that at some point projected and we're leaving Gateway on.

15992. Why does the price lift, assuming one has happened, continue into the future from 2025 to Dr. Mansell takes it to 2046 that we can attribute to Northern Gateway? And I submit to you that it doesn't.

15993. At some point, if new supply comes into the equation as predicted, based on everything you've explained to me this morning, it doesn't. It will not be there. Obviously, if you took Northern Gateway away, that might impact, but the price lift from Northern Gateway just in North America stops.

15994. Do you agree with me?

15995. **MR. NEIL EARNEST:** No, I don't, counsel. I emphatically disagree with you.

15996. I believe that each and every year that Northern Gateway is in operation there will be economic benefits and you can assess those economic benefits by turning on Northern Gateway from a base case that has -- doesn't have it operating or you can do it the other way around. It's symmetrical.

15997. I think unequivocally each and every year that Northern Gateway is in operation, it will have an impact on the price of Western Canadian crude. It's a big pipeline. It accesses a new market. It has a lot of attractive attributes.

15998. And you don't get the benefit of Northern Gateway only on October 1st, 2018 and you get no further changes whatsoever. It's in operation 2019 and

'20 and '21.

15999. And you know, in the year 2025, you know, it -- who knows what may happen. Somebody may decide that, well, we're not going to operate this pipeline anymore and it stops operating. There will be a price impact in Western Canada, and the price will go down. And that's what I quantified.

16000. I don't know how to say that any differently.

16001. **MS. CHAHLEY:** I guess we just disagree that if new supply comes into the system that you're saying it won't make any difference and I guess we'll have to argue that. But I think that's probably a good place to stop for lunch.

16002. **MR. JOHN CARRUTHERS:** I might just add one comment again.

16003. **MS. CHAHLEY:** Of course.

16004. **MR. JOHN CARRUTHERS:** On a practical basis, we will have shippers signing long-term contracts. And for them to do it, I believe they have to also believe that for every year they're into those long-term contracts, they see benefits. Otherwise, I would expect they might ask for a one-month contract to get the benefit, or a one-year. But they don't, they sign up for the long-term contracts because they believe that that will have long-term benefits for the industry.

16005. **MS. CHAHLEY:** Well, okay. But Mr. Carruthers, just before then -- let me just ask you one thing as a follow-up to that point before we break for lunch.

16006. The shippers, assuming that they're getting a higher price in Asia -- and I want to talk about that after lunch but they are getting a benefit from this pipeline and they're getting a higher price for their product, assuming that's right. And of course they would think that it was a good deal then.

16007. My questions though this morning are to try -- this last bit are to try to understand the economic projections that every other producer of Western Canada crude will also get those benefits through to 2048 and that then those benefits will then feed in to the rest of the economy such that Dr. Mansell can predict that they'll impact on all of us.

16008. So the point you're making is not the point that I'm concerned about in this stage of the argument. We're -- I'm sort of assuming that, for the moment -- certainly it's benefit to them, but it's the greater Canadian benefit that's been put forward that I want to explore.

16009. And we can maybe pick that up after lunch. I'm happy to ---

16010. **MR. JOHN CARRUTHERS:** No, fair enough. I take your point, and you get back to the information that Muse Stancil provides that addresses the second part of that, so I understand that.

16011. **MS. CHAHLEY:** Yeah. And so I think that we should move on from this point to another point. I think we've got as far as we can on this.

16012. And if it's a convenient time to break, Madam Chair.

16013. **THE CHAIRPERSON:** Thank you, Ms. Chahley. I agree with you that it is time to move on to the next line of questioning.

16014. And we will take a break now and come back at 1:30.

16015. Thank you very much, everyone.

--- Upon recessing at 12:34 p.m./L'audience est suspendue à 12h34
--- Upon resuming at 1:33 p.m./L'audience est reprise à 13h33

16016. **THE CHAIRPERSON:** If I could get everyone to take their seats, we'll get ready to get underway. Thank you.

16017. Thank you very much, everyone. Before we get underway, is there -- are there any preliminary matters to be raised at this point?

16018. **MS. BRENDA GAERTNER:** Yes, Panel, it's Brenda Gaertner for Coastal First Nations, and I have one very brief moment of your time this afternoon, if I could.

16019. As you know from the previous letter I've sent to the Panel, I'm new on this file, very, very new on this file. I've just recently been retained so I can ask the questions of Coastal First Nations of this panel. And I did my best to clear as much as I could this week, and I've been here for as long as I can.

16020. And I'm very grateful for the change in order so that I may ask my questions last, and I'll see you in the week following this one to do that.

16021. But having spent a day and a half with you for -- as my first opportunity, I thought it would be useful to provide by letter to counsel of Enbridge a few questions of pure data that I'm needing in order to complete my review of the review material.

16022. Counsel for Enbridge has kindly agreed to look at that list. He saw a preliminary draft of it yesterday, and I've got the final to him in hand now. And I understand he's willing to speak to his panel with leave of you. And I would ask that leave be granted on the condition that he only speaks to them on the data requirements, not perhaps why I'm asking the question or otherwise but simply the data requirements that are listed in the letter.

16023. And I understand he's willing to do that, that he can speak to that himself. And if so, I understand that the panel members will make great effort to get that information to me as soon as possible, so I can use it effectively next week in my preparation and not waste time here trying to get basic data from them in my questions.

16024. So if that's okay, I ask leave of this Panel for that to occur.

16025. **MR. ROTH:** Sorry, Madam Chair, that was the offer, to try and expedite the cross-examination, we're certainly not undertaking to -- at least, I haven't talked to the witnesses about what's being requested to provide everything.

16026. But certainly, what we can readily provide in a short turnaround we would be prepared to provide Ms. Gaertner to expedite her cross-examination. And the leave is being requested for me to speak to -- or for counsel, all of us to speak to our witnesses just regarding the matters requested in the letter.

16027. **THE CHAIRPERSON:** Are there any parties who object to this proposal?

--- (No response/Aucune réponse)

16028. **THE CHAIRPERSON:** Ms. Gaertner, the Panel grants your request and reminds you to look at Rule 38 of the Board's Rules of Practice and Procedures as the general guidance for the typical interactions or lack thereof that occur.

16029. In this particular case, the Board does grant your application for counsel of Northern Gateway to speak to the witness panel with respect only to the specific data requirements that are outlined in your letter.

16030. **MS. GAERTNER:** Thank you.

16031. **THE CHAIRPERSON:** Seeing no one else coming up to the microphone, I don't believe there are any additional preliminary matters this afternoon. So Ms. Chahley, we'd invite you to continue with your questions.

16032. **MS. CHAHLEY:** Thank you.

16033. The techs have moved my mic because they are suggesting that people are having as hard a time hearing me as I have hearing some others. So please, if it's still a problem, wave at me and we'll keep it straight.

JOHN CARRUTHERS: Resumed
PAUL FISHER: Resumed
NEIL EARNEST: Resumed
ROBERT MANSELL: Resumed
ROLAND PRIDDLE: Resumed
JACK RUITENBEEK: Resumed
MARK ANIELSKI: Resumed

--- EXAMINATION BY/INTERROGATOIRE PAR MS. CHAHLEY: (Continued/Suite)

16034. **MS. CHAHLEY:** I think where I want to go now, members of the panel, is to talk a little bit about the impact of the price lifts. I want to come back to talk about the price lift in Asia a little later on. I think I told you before lunch we were going to do that right away, but let's just leave that aside and talk about the impact of the price lift.

16035. I think I understood you, Dr. Mansell, to suggest -- I think it was you, this morning, to me or maybe it was Mr. Earnest, that the increase in price that would be projected wasn't going to make a difference to the refineries, that they wouldn't pass that on to consumers. Was that you, Dr. Mansell?

16036. Just remind me; I can't remember.

16037. **DR. ROBERT MANSELL:** I believe I indicated that most likely, at least under the types of conditions that prevail today, the cost would be borne by the refineries, that is, there would be a reduced margin.

16038. I indicated that if there was a full cost pass through, it would amount to up to one and a half cents per litre measured in terms of gasoline prices.

16039. **MS. CHAHLEY:** Okay, one and a half cents at the pump, okay.

16040. So if we could look at your report, Dr. Mansell, and that would be the second report I'd like to look at, so Exhibit B83-4 please. And I think where I'd like to go first would be to Table 2.4, which is on page 29 of that paper version.

16041. We don't have a screen, Madam Clerk.

--- (A short pause/Courte pause)

16042. **MS. CHAHLEY:** Thank you.

16043. So it's B83-4, and page 29. This is the second report of Wright Mansell. So that 29 is not an Adobe number; we're looking for Table 2.4.

16044. **DR. ROBERT MANSELL:** I believe it's on page 51.

16045. **MS. CHAHLEY:** Oh, sorry. Okay, my mistake. I was looking at the old Table 4. I apologize. Page 51. Thank you.

16046. Dr. Mansell, in this table, we see the gross price uplift as the first column to the left of the year -- or to the right of the year, correct?

16047. **DR. ROBERT MANSELL:** Sorry. Did you say to my right?

16048. **MS. CHAHLEY:** I just want to get us in the same -- sorry?

16049. **DR. ROBERT MANSELL:** You said to the right; it's to the left.

16050. **MS. CHAHLEY:** To the left.

16051. **DR. ROBERT MANSELL:** "Gross Revenue".

16052. **MS. CHAHLEY:** Well, to the right of the year column. To the left is -- and the gross price uplift that you have calculated there is in Canadian dollars; correct?

16053. **DR. ROBERT MANSELL:** Yes, correct.

16054. **MS. CHAHLEY:** And so when I compare that number to the Muse Stancil gross price uplift that was contained in the table that Mr. Earnest reminded us of earlier this morning, their price or their number is calculated in Canadian dollars that were at par. So the U.S. dollars and the Canadian dollars were the same amount; correct?

16055. **DR. ROBERT MANSELL:** I'm not sure, but in Table A-18 in the Muse Stancil report, we have, for example, just take the first year, 2019, the number in the Muse Stancil report is $4,997.2 U.S. and if you divide that by 0.95 to adjust for the exchange rate, the .95 cent Canadian dollar, you get $5,260. And that is the value of the price uplift at Edmonton.

16056. **MS. CHAHLEY:** Okay.

16057. **DR. ROBERT MANSELL:** I would just remind people that we did make some minor adjustments in the last two columns as a result of the revisions that were introduced by Mr. Earnest earlier. So there have been some slight changes in those numbers. I indicated that the net revenue uplifts are decreased by about 1 percent.

16058. **MS. CHAHLEY:** Yes, we going to -- I'm going to take you through your steps. So maybe it's faster if we work together.

16059. So you took Mr. -- the Muse Stancil uplifts from their second report or gross revenue uplifts, you translated them into .95 cents Canadian dollars for this report; correct?

16060. **DR. ROBERT MANSELL:** That's correct.

16061. **MS. CHAHLEY:** Although in your report, you said that you would start with the dollar on par and then you would decline it. By the time we got to 2019, it had hit the .95 cent assumption that you'd made and that carries on for the ---

16062. **DR. ROBERT MANSELL:** It doesn't decline because of the Northern Gateway. The assumption is that since the Canadian dollar is based on fundamentals today, overvalued as I indicated by about 10 cents, we had a transition period where we moved to this longer run value which we set at 95 cents.

16063. So by the time you get out to 2019, we have a 95-cent dollar.

16064. **MS. CHAHLEY:** Okay.

16065. And just so that -- and we can see a good example of that just looking at this number, so if -- just going back, the number that you had taken and you just read it out to me is from Table A-17 for the first column ---

16066. **DR. ROBERT MANSELL:** Sorry, it's Table A-18.

16067. **MS. CHAHLEY:** Yeah, sorry, A-18 was 4,997.2 million U.S.

16068. **DR. ROBERT MANSELL:** Yes.

16069. **MS. CHAHLEY:** When you translated that into 95-cent Canadian dollars it goes up to 5,260 Canadian?

16070. **DR. ROBERT MANSELL:** Correct.

16071. **MS. CHAHLEY:** And that's -- you've explained, right, the math. So that's an example that we can see.

16072. Moving the value of the price from U.S. to Canadian dollars when the Canadian dollar is lower than par, actually puts more Canadian dollars in the hands of the producers than the American equivalent number; correct?

16073. **DR. ROBERT MANSELL:** Correct.

16074. **MS. CHAHLEY:** So the price exchange rate -- sorry, the dollar exchange rate assumption that you apply in this case makes a greater benefit to the producers than if the dollar was at par for every year of the report?

16075. **DR. ROBERT MANSELL:** I think one would have to qualify that to be accurate because producers have assets and liabilities in both Canadian and U.S. dollars and -- so I'm not sure. It probably depends on what producer you're talking about.

16076. In general, in terms of somebody who just looks as paying in Canadian dollars for oil, you're right that, as the value of the Canadian dollar goes down, for any given amount in U.S. dollars, the -- my number for Canadian dollars required to pay goes up.

16077. **MS. CHAHLEY:** Yeah.

16078. **DR. ROBERT MANSELL:** Yeah.

16079. **MS. CHAHLEY:** Okay.

16080. And I know that's an easy that's an easy assumption for you, but my mind always turns it around. So in doing this, that's why your numbers on that first column are higher than the Muse Stancil numbers. They are equivalent, it's just that exchange rate issue at play.

16081. That was the intention; correct?

16082. **DR. ROBERT MANSELL:** There was no intention other than we had decided what would be a fair expectation in terms of the exchange rate -- the Canadian-U.S. exchange rate -- once we chose that, we just took his U.S. dollar values and converted using that exchange rate. Which is, as I indicated, the long term was 95 cents.

16083. **MS. CHAHLEY:** Okay.

16084. Well, let's just talk about that very briefly; I think other people might ask you more about exchange rate.

16085. But when you say "long term is 95 cents", I think you have said yesterday that that was your view because of the very long historic relationship between the Canadian and the U.S. dollars.

16086. Is that correct?

16087. **DR. ROBERT MANSELL:** I indicated that, historically, -- to the extent that we can rely on history -- there have been very, very few periods where we've maintained the value of the Canadian dollar above the U.S. dollar and that certainly has some influence on my thinking.

16088. However, as well, when I look at the situation today and I look at what commodity prices are and the value of the Canadian dollar is at least 10 percent higher than it would be based on those fundamentals, it points to the fact that you have other issues.

16089. For example, the relative weakness of the U.S. economy and, in addition, the large foreign investment inflows to the Canadian economy.

16090. And the question is whether or not those things will be maintained. Will those things always work in our favour so that we have this artificially high Canadian dollar?

16091. And my judgement is, probably, it would be reasonable to temper that somewhat and -- so we've argued for a 95-cent dollar.

16092. I think the -- a lot of analysts still use a 90-cent or 85-cent Canadian dollar based on long-run fundamentals. As I mentioned, things like productivity differences, it's probably closer to 85 cents than it is to a dollar in terms of exchange rate.

16093. **MS. CHAHLEY:** And would you acknowledge for me that, by you using a different exchange rate assumption than Muse Stancil did, it adds to the complication of comparing these tables?

16094. **DR. ROBERT MANSELL:** Sorry, if you could point me to the table that you're referring to, that ---

16095. **MS. CHAHLEY:** Well, even just this first one, comparing the 5,260 to the 4,497, one has to remember: Oh, right, that was Canadian and U.S. dollars.

16096. It just makes it harder to match things up. Can you agree with me about that?

16097. **DR. ROBERT MANSELL:** In Table A-18, it says quite clearly: “Real Millions of 2012 U.S. Dollars per Year.”

16098. **MS. CHAHLEY:** Okay.

16099. **DR. ROBERT MANSELL:** And so I have no choice, he doesn’t list the Canadian dollar value there; it's all in U.S. dollars.

16100. **MS. CHAHLEY:** Yeah.

16101. **DR. ROBERT MANSELL:** In my analysis, I have converted everything to Canadian dollars.

16102. **MS. CHAHLEY:** But you understand that, in the Muse Stancil report, they used it at par -- on-par dollar, one-to-one dollar?

16103. **DR. ROBERT MANSELL:** Well, just for a few minor adjustments on tolls as I recall.

16104. But perhaps Mr. Earnest should clarify that.

16105. **MS. CHAHLEY:** Okay.

16106. Well, I'm just -- we can move on from this point, you've explained why you did it.

16107. So if we look at the second column in the Table 2.4 there, we see that you show increased cost to refineries and, again, that’s in Canadian dollars. So the discrepancies between yours and the Muse numbers -- I again assume are exchanged -- explained by the different exchange rates assumption; is that correct?

16108. **DR. ROBERT MANSELL:** That would be correct.

16109. Those numbers are just from Table A-20.

16110. **MS. CHAHLEY:** Okay.

16111. **DR. ROBERT MANSELL:** So just to give you an example, for 2019, the value in A-20 in the Muse Stancil report is 948.9.

16112. If you divide by .95 to make the exchange rate adjustment that number is 999, as shown in the table.

16113. **MS. CHAHLEY:** Okay.

16114. Now -- and then, you were about to remind us -- and I said we'll get to it -- that there's an additional adjustment that you raised to this table caused by the adjustment that Muse made in our -- in the direct evidence yesterday ---

16115. **DR. ROBERT MANSELL:** Yes.

16116. **MS. CHAHLEY:** --- to one of the numbers.

16117. And so you had said this -- I wrote down that the 999 should actually be 1083.6; is that correct?

16118. **DR. ROBERT MANSELL:** That’s correct.

16119. **MS. CHAHLEY:** And that improvement of a few -- of about what -- that relationship of the improvement it would have carry on right down the whole line of refinery impact; is that right?

16120. **DR. ROBERT MANSELL:** It's a different percentage. I only gave you the first number.

16121. If you add all of those numbers up ---

16122. **MS. CHAHLEY:** M'hm.

16123. **DR. ROBERT MANSELL:** --- in the original table -- and I'm talking about the column “Increased Cost to Refineries” -- the number is 1424. -- sorry, 14240.4 and, if you look at the revised number, sorry, I didn’t do that, I didn’t to make that change.

16124. But it would be higher. The revised number would be higher.

16125. **MS. CHAHLEY:** So this -- just so I understand, the 14240.4 total there, where are you getting that from?

16126. **DR. ROBERT MANSELL:** I didn't. I don't show the total on that table.

16127. **MS. CHAHLEY:** Do you show it anywhere else in the report?

16128. **DR. ROBERT MANSELL:** No, I don't.

16129. The only total that's there is under the "Net Revenue Uplift".

16130. **MS. CHAHLEY:** Okay.

16131. I'm not trying to trick you; I think maybe you do show us. Can you -- there's a number that's close.

16132. Can we go to page 143 of this same exhibit? B83-4, that would be Base Case Table. This is in the second part of your analysis, Dr. Mansell, where you looked at the cost benefit analysis.

16133. If I could take you to the Base Case Table for that, so it's 143. It's almost at the very end.

16134. **DR. ROBERT MANSELL:** Just to clarify, in terms of the previous discussion, that total that's shown in Table 2.4 is in the third column, which is the net ---

16135. **MS. CHAHLEY:** Yeah, okay.

16136. **DR. ROBERT MANSELL:** --- revenue uplift.

16137. **MS. CHAHLEY:** And I'm going to come to that third column in a minute but I think that -- I want to relate this increased cost to refineries in 2.4.

16138. So if you look at this Base Case Chart on page 143 of the same document -- and Madam Clerk, we're going to look at the very middle of the table. So under the word -- there. And then if you can go down a little bit.

16139. See that column there, Dr. Mansell? Are you there?

16140. **DR. ROBERT MANSELL:** So this is the column that reads, "Cost to Canadian Refiners or Consumers"?

16141. **MS. CHAHLEY:** Yes, is that the same set of numbers as the ones that you used for increased cost to refiners?

16142. **DR. ROBERT MANSELL:** Yes, so for example the first number in the negative -- in the bracket -- sorry -- is 999.

16143. **MS. CHAHLEY:** Oh.

16144. **DR. ROBERT MANSELL:** And that is the number we just discussed from Table 2.4.

16145. **MS. CHAHLEY:** So if we go down ---

16146. **DR. ROBERT MANSELL:** That shows as a ---

16147. **MS. CHAHLEY:** --- so we can the whole list there. There, stop there, that's good.

16148. **DR. ROBERT MANSELL:** Yes.

16149. **MS. CHAHLEY:** And -- just a sec.

16150. So is that set of numbers -- and -- and perhaps before I ask you about the total.

16151. Madam Clerk, if you can stay on that same orientation and move so that we can see the far left-hand side column of the table where the year is -- there we go.

16152. We see just -- on the far left column there where the year -- you see the year is listed from 2010 and then it goes to 2028 and then there's a dot dot dot to 2047. I assume you included data in the -- in the years not in the table but you just didn't list it out. Is that a fair assumption, Dr. Mansell?

16153. **DR. ROBERT MANSELL:** This -- sorry, could you just repeat that?

16154. **MS. CHAHLEY:** Looking at the year column of this table we have the year from 2010 to two 28 -- 2028 ---

16155. **DR. ROBERT MANSELL:** Oh, sorry.

16156. **MS. CHAHLEY:** --- and then we have 2047 to -- and 2048 listed. So there's a chunk of years that aren't shown. There's the little dotted line.

16157. Is it fair to say there would have been values for those years in the columns but you just didn't list them out there -- included in any totals -- they're just not listed on the sheet. Is that a fair assumption on my part?

16158. **DR. ROBERT MANSELL:** That's correct.

16159. **MS. CHAHLEY:** Okay. So then if we can zoom back over to where we were, Madam Clerk, which is under "Cost to Canadian Refineries". There we go.

16160. So we don't have all of the numbers in that column, but those numbers that are in that column, or would have been in that column, they're the same ones in the second column of Table 2.4. Is that correct?

16161. **DR. ROBERT MANSELL:** Yes, which are the same numbers from the Muse Stancil study for each of the years, each one ---

16162. **MS. CHAHLEY:** Right.

16163. **DR. ROBERT MANSELL:** --- adjusted by the ---

16164. **MS. CHAHLEY:** Yeah. Well, except, of course, Muse Stancil only went to -- they only went 18 years out and you went 30 years out, right? So you must have extrapolated the numbers at some point. I think from -- if we -- or if I remind you about Table 2.4 from 2035 to 2048 you -- I think -- extrapolated and used constant number to -- to move to the far future, correct?

16165. **DR. ROBERT MANSELL:** That's correct.

16166. **MS. CHAHLEY:** Okay. And so just under that column there we see the total 12,000,626. Is that the total that you had originally got for that column?

16167. **DR. ROBERT MANSELL:** That is the sum of the cost to Canadian refineries or consumers over that entire period.

16168. **MS. CHAHLEY:** Okay.

16169. **DR. ROBERT MANSELL:** To 2048.

16170. **MS. CHAHLEY:** With that -- before you had the adjustment for the new -- the stuff that came up yesterday, right?

16171. **DR. ROBERT MANSELL:** Yes, those numbers have not been adjusted.

16172. **MS. CHAHLEY:** Okay, and so the -- is the 14,000 -- sorry -- 14,240,000,000.4 the replacement for the 12626?

16173. **DR. ROBERT MANSELL:** No, I'm sorry. I -- I wanted to clarify that number ---

16174. **MS. CHAHLEY:** Okay.

16175. **DR. ROBERT MANSELL:** --- that I read you before. I was trying to get the number from the right -- from the right-hand column in 2.4 as opposed to the middle column.

16176. **MS. CHAHLEY:** So does -- do you have the revised number for this middle column or should we just work with the 12.5 billion that's there?

16177. **DR. ROBERT MANSELL:** As I indicated the -- at the end of the day the changes to the net revenue uplift are fairly small. There's about a 1 percent reduction. In the case of some of these costs it's a bit more than 1 percent, but ---

16178. **MS. CHAHLEY:** Okay.

16179. **DR. ROBERT MANSELL:** --- working with these existing numbers will certainly provide answers very, very close to what we had. I'd -- I don't believe any of those changes that I -- we introduced as a result of Mr. Earnest's revisions are material. So...

16180. **MS. CHAHLEY:** Okay. So whether it's 12.5 billion or another billion -- we're -- we're in the ballpark is what you're saying, and close enough. Okay.

16181. So let's just work with that total so I could take that 12626 although that's in the other analysis and put it into Table 2.4 as the total if I wanted a total there; correct?

16182. **DR. ROBERT MANSELL:** Correct.

16183. **MS. CHAHLEY:** Okay. And just so that we -- Madam Clerk, could we just slide back up to the top of that column there.

16184. So on this part -- and this is taken out of the second part of your analysis. Here where you use that number you -- you headed it "Cost to Canadian Refineries or Consumers". Is that because this is the price lift that's passed on from the producer to the refinery and either the refinery or a consumer is going to bear it?

16185. **DR. ROBERT MANSELL:** Yes, as I indicated it depends on conditions and, as I mentioned, under the conditions we observed today and in recent past it would be paid by refiners through reduced margins. However, if there was -- there were conditions so that the -- you had full cost pass through that would be paid by consumers. So it's really a -- realistically over a long period of time some combination.

16186. **MS. CHAHLEY:** So I want to explore that. Why -- why would the refiners just absorb $12 billion of cost over the next 30 years?

16187. **DR. ROBERT MANSELL:** In that case, because they can't pass it along because the alternative, which is imports of gasoline, would be less expensive.

16188. **MS. CHAHLEY:** Okay, so…

16189. **DR. ROBERT MANSELL:** So they would not want to reduce the capacity utilization in their own refineries.

16190. **MS. CHAHLEY:** So the Canadian refineries -- I think I understand now -- you're saying -- I'm sorry, I'm trying to be mindful of the microphone and keep everything straight. The Canadian refineries -- I think that you said earlier -- are currently, as best you can tell, charging the world price for gasoline or other refined products. Is that correct?

16191. **DR. ROBERT MANSELL:** I'll ask Mr. Earnest to comment on this. I don't know if it's the world price but it's the -- the prices for refined products seem to be set mostly in line with competition from imports for those products.

16192. **MS. CHAHLEY:** Is that what's happening Mr. Earnest?

16193. **MR. NEIL EARNEST:** I would agree with that characterization. I mean, refined product prices throughout North America kind of move up and down together. You -- you don't for very long periods of time see big price dislocations between different regions of the North America because you can move the product around by pipelines and so on and so forth.

16194. I mean, for example, Chicago typically trades at 3-4 cents a gallon over the U.S. Gulf Coast and, not coincidentally, that is the approximate pipeline tariff for shipping refined product from Houston to Chicago.

16195. The Midwest is a net importer of product, so if -- if the Chicago refiners tried -- tried to charge 10 cents a gallon over the Gulf Coast you'd simply ship more north or mix more product pipeline at Gulf Coast plus 4 cents then the Chicago refiners start losing sales pretty quickly.

16196. And conversely the Chicago refineries don't really have any reason to price their gasoline on average below the U.S. Gulf Coast because they always know that at the margin somebody has to bring in that barrel in the Gulf Coast at Gulf Coast plus, say 4 cents.

16197. That dynamic in different ways manifested throughout North America.

16198. **MS. CHAHLEY:** And that same thing is applying in Canada too, is that correct?

16199. **MR. NEIL EARNEST:** I would -- yes. North America -- when I say "North America" I mean Canada and the U.S.

16200. Counsel, just to elaborate further ---

16201. **MS. CHAHLEY:** Thank you.

16202. **MR. NEIL EARNEST:** --- if you'd like. There's -- there's considerable connectivity between the pricing dynamics in the Upper Midwest and Ontario particularly. Those -- those prices move generally in tandem. Western Canada generally floats at a Chicago plus type pricing relationship. Atlantic Canada is heavily -- pricing there is heavily influenced by the cost of imports, particularly from Western Europe, imports of finished product. And then all these mechanisms act to keep prices, if you like, in equilibrium.

16203. **MS. CHAHLEY:** I'm just looking for a reference.

--- (A short pause/Courte pause)

16204. **MS. CHAHLEY:** I'm sorry, if I could just have one minute?

--- (A short pause/Courte pause)

16205. **MS. CHAHLEY:** Thank you.

16206. Mr. Earnest, I think I gave everyone a copy or you got a copy of a Conference Board of Canada report that I had handed out earlier as an aid to cross-examination. And Madam Clerk, there you are. I would like you to go to page 19 of that report.

16207. Yeah, I'll give you a chance to catch up. It's the green one.

16208. **THE REGISTRY OFFICER:** AQ3.

16209. **MS. CHAHLEY:** Thank you.

--- AID TO CROSS-EXAMINATION NO./AIDE AU CONTRE-INTERROGATOIRE No. AQ3:

Conference Board of Canada report

16210. **MR. NEIL EARNEST:** I think we now have it.

16211. **MS. CHAHLEY:** Sorry? You got it? Okay, thank you.

16212. Okay, so this column on the right of page 19 talks about imports into Canada, and it states in that first paragraph at the top of page 19 on the right that the number of imports have increased since the 1980s, and it says:

> *"The number has increased dramatically since then [being the 1980s], with imports averaging 276,000 barrels per day over the last five years. The U.S. accounts for 40 to 60 percent of the imports in any given year, but Canada also receives volumes from -- in essence, from Europe and from Russia."* (As read)

16213. So then we see:

> *"The net export position of refining industry varies for product. Motor, gasoline and diesel account for about 50 percent of all imports of refined products, but these -- yet these same products make up the bulk of the refining industry's exports."* (As read)

16214. Is that consistent with your understanding in terms of Canada, that we have both gasoline coming in and gasoline going out?

16215. **MR. NEIL EARNEST:** Yes, it is.

16216. **MS. CHAHLEY:** Okay.

16217. And then it goes on in this report to talk about the fact that there's a different sort of situation with turbo jet fuel. That's at the bottom of that same column on page 19.

16218. So what I'm understanding you to say is that, because we import gasoline into Canada even though we also export it, we're tied to the same market pricing through Chicago and other -- and the Gulf Coast.

16219. Is that correct?

16220. **MR. NEIL EARNEST:** Yes.

16221. A rising tide floats all boats, if you like. Product prices throughout North America generally move up and down, not exactly in tandem, but certainly, over the medium-term, they do.

16222. **MS. CHAHLEY:** Okay. All right.

16223. So then, if the refinery in Canada wanted to pass on this extra cost that we saw, the total of 12.5 billion over 30 years, what I'm understanding you're saying is it would be a problem because the imported gasoline would then be favoured by the consumer and they wouldn't be selling their gas.

16224. Is that basically how I should understand that?

16225. **DR. ROBERT MANSELL:** As Mr. Earnest explained, there are a number of elements that go into those decisions, and the refiner would be balancing those and making a decision based on a whole number of range of things.

16226. But one of them would be the alternative, which would be importing or exporting the refined product, usually over fairly short distances except if you're on tidewater.

16227. **MS. CHAHLEY:** In terms of how you did the analysis, Dr. Mansell, in the first part, in the impact analysis of your second report, you included that as a cost to refineries when you ran it through the models to get the impacts.

16228. Is that correct?

16229. **DR. ROBERT MANSELL:** That's correct. We did that.

16230. **MS. CHAHLEY:** And no part of it was allocated to being a cost in consumers' hands at all; correct?

16231. **DR. ROBERT MANSELL:** The impact wouldn’t be that different. It's more tractable to model it as if it was absorbed by the refineries.

16232. As I indicated, the cost to consumers would work out, at most, to be a penny and a half per litre. And to try and measure that impact on something like consumer spending would be -- it's such a small amount, it would be many, many decimal places and it would be much more difficult to keep track of.

16233. **MS. CHAHLEY:** Okay.

16234. It's -- if we take your value of 1.5 cents at the pump -- I mean, I get what you're saying. I might not even notice that when I'm filling up my car and late for the hearing.

16235. But we saw from the base case table I just took you to it adds up to $12.5 billion. It is a significant amount of money in the end.

16236. If $12.5 billion were added to consumer costs, if the refineries passed all of it on, that would be a measurable impact, wouldn't it?

16237. **DR. ROBERT MANSELL:** It would be measurable, but it would -- the -- at the end of the day, I don't know if you'd get a significantly different result in terms of the overall impact.

16238. What you would have to do is, for the 35 million consumers, factor in an extra cent and a half on each litre and then distribute that among all of the 700 and some commodities. It would be a very difficult task.

16239. And so the question at the end of the day is: Would you get any significantly different result if you did it that way as opposed to netted it out at the front end at the level of the refinery?

16240. The other way to look at it is, just in terms of the overall impact on consumer expenditures for the average person, it is still a very, very small number that you have to deal with. Granted, when you multiply it by 35 million people, then it becomes a larger number. And then, when you add it up over time, it becomes a larger number.

16241. Would it be any significantly different than the number we discussed for the costs passed on to refiners? I doubt it. It wouldn't be significantly different.

--- (A short pause/Courte pause)

16242. **MS. CHAHLEY:** Let me just cover off a couple of points here. Let's finish with the consumers first.

16243. So when you -- if we look back -- we're going to leave that one for now, Madam Clerk. We'll come back to it. And go back to Exhibit B83-4, page 51. There we go. Good.

16244. So in this table, what you did was you took the cost of that impact to the refiners off of the net revenue uplift -- of the gross revenue uplift to give a net number; correct?

16245. And that's the number that then got fed into the economic models as you described this morning and led us to Table 3.5 on page 60.

16246. Is that correct?

16247. **DR. ROBERT MANSELL:** It was done with more detail in terms of the insertion into the model but in the aggregate the number would be the net revenue uplift.

16248. **MS. CHAHLEY:** Okay, so Madam Clerk, if we could just go to page 60 on the screen so that we're all there. Table 3.5, so it's the one below. There we go. Thank you.

16249. So there's that number, 114804, as the "Producer Revenue Uplift"; correct?

16250. **DR. ROBERT MANSELL:** Yes, that's correct.

16251. **MS. CHAHLEY:** And again, I note what you said that this would have been down by about 1 percent with the correction. But we're just going to work with the old numbers because I am accepting what you said, that there's not a material difference in the end. Is that fair enough?

16252. **DR. ROBERT MANSELL:** That's fair.

16253. **MS. CHAHLEY:** Okay. So what we saw from this is that when you ran that number on direct impacts over the price lift, it became -- it was a benefit and it improved GDP. But you also said there were no indirect or induced impacts from that; correct?

16254. **DR. ROBERT MANSELL:** Correct.

16255. **MS. CHAHLEY:** And that's because, as I understand it, the money at this stage of the analysis, goes into the hands of those producer companies and it might sit there or something else might happen, and you go on in the analysis to talk about reinvestment. But at this stage, there's no economic assumption that it's going to have any further impact. The company is not necessarily going to go buy an iPod if we take the example from yesterday.

16256. **DR. ROBERT MANSELL:** At that stage, the most immediate impact is it feeds directly into, if you like, the Statistics Canada measures of gross domestic product, and it would go into those provinces based on production of oil and gas.

16257. **MS. CHAHLEY:** Because they get more price, they record more GDP, and it's a direct line?

16258. **DR. ROBERT MANSELL:** Yes.

16259. **MS. CHAHLEY:** Okay.

16260. **DR. ROBERT MANSELL:** I really should say production of oil, not gas in this case.

16261. **MS. CHAHLEY:** Thank you. Okay, so if instead of putting the increased cost to refineries in at this stage, which is part of that net number, the 114804, instead you had analyzed those as increased cost to consumers, wouldn't there have been increased costs that would be indirect and induced as well because of the nature of consumers?

16262. **DR. ROBERT MANSELL:** Well there would but in the next instance, of course, we've got the reinvestment by producers that is spread across provinces. And in the case that you're suggesting, I would start to spread that not among producers but consumers.

16263. And so it would be somewhat different, probably not widely different. The difference would be primarily Ontario because Ontario as a consuming province would be consuming some Western Canadian crude oil. The other provinces, they're both producers and consumers.

16264. **MS. CHAHLEY:** So would it be fair to say that if the consumer indirect and induced costs had been included, that the numbers would be lower in terms of the overall benefit?

16265. **DR. ROBERT MANSELL:** No, I'm saying the number probably wouldn't be significantly different but the distribution might be somewhat different at that stage.

16266. **MS. CHAHLEY:** Okay. And just to finish off this discussion of consumers, consumers are going to be impacted at the pump for the cost of gasoline, but do you agree with me that they will also be impacted in terms of the costs of energy as it affects them generally, the cost of food which uses energy would go up, for example?

16267. **DR. ROBERT MANSELL:** I don't entirely agree with the first statement you made, that it would necessarily go up. I said in certain circumstances the price of gasoline might go up by 1.5 cents a litre. I also indicated that in the circumstances we face for some time now, we have increasingly -- increasing trade across the border in terms of refined products. It probably would be absorbed mostly by the refiners.

16268. So I don't -- I'm not accepting your argument that under most conditions it would be passed along to consumers.

16269. **MS. CHAHLEY:** Okay, so let's agree to disagree on that point. If though it had been passed to consumers, consumers would be impacted not just in the price of their fuel they're buying for their car or other vehicles at the pump, they would be impacted in how they use energy products generally, and I used the example of food. To produce our food, energy is purchased by the producers, and that is rolled into the cost of food.

16270. Would you agree with me?

16271. **DR. ROBERT MANSELL:** I don't know if realistically you could measure it.

16272. Let's say it's 1.5 cents a litre and as you rightly mentioned, you probably -- it's buried in the day-to-day variation. To what extent does the price of food vary as a result of this daily variation in 1.5 cents a litre? In general, if you looked at food, I think the number is about -- up to, not an average, but up to 10 percent could involve the -- it could involve the price of energy. Now, that's all energy, that's not just gasoline.

16273. But if you assume that that was true for gasoline, and 10 percent of 1.5 cents a litre is a very, very small number. And one would have to ask, would that -- you know, would a merchant be changing the price of bananas because the price of fuel for driving their trucks went up by 1.5 cents a litre?

16274. **MS. CHAHLEY:** Yeah, okay, but we have big huge farming operations in Alberta and in Canada, not just the merchant with his one truck. It's my understanding that the value of energy in agriculture is closer to 40 percent of their agricultural costs or energy costs.

16275. And so it may well be that the -- my point is that the food producer, whatever their costs are, they're going to pass those costs onto the food consumer. Do you agree with that?

16276. **DR. ROBERT MANSELL:** Yes, I guess it depends on which consumer you're talking about. If it's another producer that has a very energy-intensive process, it will cost more. I think if you're talking about an average, if we're talking about consumers purchasing food products, I can't imagine it having any significant effect.

16277. **MS. CHAHLEY:** Well, again, we're -- okay, you don't think it would matter. What about -- I mean ---

16278. **DR. ROBERT MANSELL:** I'm simply saying it's too small. I mean, we could argue that if it was .001 cents that would be -- we should measure that, but I'm just saying it's -- it's just not material in terms of the decisions that typically are made by consumers and producers. There's no significant dislocation. There's certainly no significant increase in the consumer price index.

16279. **MS. CHAHLEY:** Well, I think you say that in your report because these kinds of commodities aren't included in the consumer price index measurement basket. So they wouldn't apply. That's what I think you said in your report; is that correct?

16280. **DR. ROBERT MANSELL:** No, but I'm -- I'm just taking the case where let's assume all of it is passed along to consumers. Let's assume that it's 1.5 cents a litre. If you factor that into what it would do to the consumer price index, it's virtually immeasurable.

16281. **MS. CHAHLEY:** I guess, Dr. Mansell, can we just look for a minute together at Table 3.1 -- sorry 3.3. So go back to page 58, Madam Clerk, just one page before -- one page before, 58.

16282. So there you have the impacts from construction and you see that the investment number that was used in the top right corner is $6393 million, and we saw from the base case table that this cost was 12.5 billion.

16283. Now, you've noted for us that the impacts on construction of investing that much money creates an -- well, you know, a measurable change to the GDP and other factors. Why would it be any different if we're measuring $12.5 billion impact on consumers?

16284. It may not be exactly those numbers. I'm not suggesting it would be exactly but, you know, here we have half as much added to construction, why wouldn't there be a measurable difference when it's consumers? I don't understand.

16285. **DR. ROBERT MANSELL:** So your precise question is in the first table, we're just looking at the impact of the construction associated with 6.4 billion?

16286. **MS. CHAHLEY:** I'm saying -- let me ask the question more clearly.

16287. Here we have 6.4 billion added to the economy in investment and construction and it made a measurable difference in your model. Why wouldn't 12.5 billion added to the consumers' budget make a measurable difference as well? It's twice as much as the investment in this part in construction.

16288. Why would it be immeasurable and unimportant when it's in the hands of consumers but when it's in the hands of construction companies it's measurable and important?

16289. **DR. ROBERT MANSELL:** Well, because you've just carved off one little piece, the construction. When we're talking about Northern Gateway pipeline, for example, we're talking about construction and operations.

16290. Now, in those numbers I've already deducted the cost to refineries which, over the entire period, amounts to something like 12 billion, I believe is the number that you were using, 12 ---

16291. **MS. CHAHLEY:** That was the number we had, 12.6.

16292. **DR. ROBERT MANSELL:** Twelve point six (12.6).

16293. **MS. CHAHLEY:** Yes.

16294. **DR. ROBERT MANSELL:** Twelve point six (12.6) billion.

16295. **MS. CHAHLEY:** Okay. Okay.

16296. **DR. ROBERT MANSELL:** So in other words, I've already netted that out.

16297. **MS. CHAHLEY:** Well, I'm sorry, you had it netted out under the table -- it applies in table -- how you did it -- sorry. I've lost my page.

16298. **DR. ROBERT MANSELL:** In terms of the impacts, we actually deducted the 12.6 billion in the impact study and in the cost benefit study we put that in as a cost.

16299. **MS. CHAHLEY:** Yeah. But I'm just -- I'm not -- because -- I've taken you to the cost benefit study because it's a way to get the total. But in the impact study in Table 3.5, you took it out as a cost to the refinery.

16300. All right, I think we'll move on to our next question here.

--- (A short pause/Courte pause)

16301. **MS. CHAHLEY:** Okay. So thank you, Dr. Mansell. Let's now say -- let's -- Madam Clerk, if we could just put Table 2.4, page 51 up so that we have that there.

16302. So we -- if we can move on, then. So what you did with this table in not taking it out for consumers is you took it out for the costs to refineries, the 12.8 billion over 30 years.

16303. So what impact is measured of that on the refineries in your analysis?

16304. **DR. ROBERT MANSELL:** It's not measured in terms of the individual cost of refinery -- to refineries, it's measured as a cost to the industry. So it's the oil and gas industry, including refining.

16305. **MS. CHAHLEY:** So in the model, what happens is the producers brought in extra money on the assumption here that they would be able to earn more on their barrels, and that's column 1. We took off the cost to refineries from that increase to the industry and we got a net revenue uplift, and that's what you used.

16306. But for the refineries themselves, who are absorbing the 12.6 billion, and in your opinion, not passing that on to the consumers in the large part because of what Mr. Earnest has explained to us about how they really can't because that's not the pricing market that they face, wouldn't there be an impact on the refinery operation by absorbing that money?

16307. **DR. ROBERT MANSELL:** I'll ask Mr. Earnest to comment.

16308. I would point out that it may not be the refiner -- a specific refinery owner; it's the industry as a whole. It's not necessary that the cost be absorbed by the refinery. It could be absorbed by the producer, who happens to be -- have an integrated operation.

16309. **MS. CHAHLEY:** Okay. Now you lost me because we're adding that cost on to the cost of each barrel that each refinery is bringing in each day to whatever number of barrels they need. So how is that not something that the actual individual refineries will have to deal with on a daily basis?

16310. **DR. ROBERT MANSELL:** Well, for example, if it's an integrated producer that has production -- upstream production and downstream refining and so on, it would be absorbed.

16311. Now, if it was an Imperial Oil, for example, they would end up with -- part of that would offset their gain, so their net gain would be less. It wouldn't necessarily translate into Imperial closing a refinery or reducing the payments to workers in the refinery, for example.

16312. **MS. CHAHLEY:** So an integrated producer, one that both owns the production and owners the refinery, you're saying that they may actually take the loss at the production level, not pass it to the refinery, because they have control over those choices themselves because they're integrated; correct?

16313. Is that what I'm understanding you to say?

16314. **DR. ROBERT MANSELL:** They make decisions on the basis of the larger industry that they're in.

16315. **MS. CHAHLEY:** Or they might equally decide to take that cost at the refinery level instead. That would be a choice for them. Is that correct?

--- (A short pause/Courte pause)

16316. **DR. ROBERT MANSELL:** Sorry. I missed your last question.

16317. **MS. CHAHLEY:** You said that an integrated company that had both production and refining and perhaps, in the middle, upgrading if need be, that they might choose to take that increased cost at the production level rather than charging themselves that extra money at the refinery level; correct? And so -- go ahead.

16318. **DR. ROBERT MANSELL:** Sorry. It would be a decision based on the economics they face. It would be a decision on royalty regulations and so on. It would be a decision on a lot of factors that they would make.

16319. **MS. CHAHLEY:** So at that stage, the integrated company is going to try to maximize its profits and minimize its expenses within the laws of taxes and royalties and various other costs and debt ratios and things for them. They're going to -- that would be the focus of that integrated company.

16320. **DR. ROBERT MANSELL:** M'hm.

16321. **MS. CHAHLEY:** And they may equally choose to take that cost at the refinery level and take the benefit at the production level if that made sense, too.

16322. **DR. ROBERT MANSELL:** Yes. And it could be a situation where the margins in a particular period are significant, they're high. And so what this means is the margin would be reduced for a period of time, and so the loss would be in that sense.

16323. **MS. CHAHLEY:** So from that is what I am hearing you say, so we can't -- we ought not to jump to the conclusion that each refinery is going to bear that cost given that we have integrated refineries in Canada?

16324. **DR. ROBERT MANSELL:** I think the circumstances will -- will vary. There are probably cases and periods of time where that increased cost to their feedstock will cause their margins to go down and they may simply go down from a period of a very high level or a higher than average level to an average level. That probably won't significantly affect their behaviour.

16325. In a circumstance where the margins are very, very thin and then they go down, it would probably affect their behaviour. How might they respond, they might decide to invest in better technology, more efficiency, it's just pretty hard to say how that that they would respond.

16326. **MS. CHAHLEY:** But certainly another response might be for them to cut back production because they have less money to buy barrels of oil?

16327. **DR. ROBERT MANSELL:** Well, Mr. Earnest can comment more but typically refineries need to operate at a fairly high capacity rates. And ---

16328. **MS. CHAHLEY:** So reducing production is not likely to be an option, is your thought?

16329. So then the only other way to absorb that money would be to reduce their other costs such as labour; is that correct?

16330. **DR. ROBERT MANSELL:** They may simply write down their investments. I mean it's no different than any other business; the same is true in the oil and gas industry. If oil and gas prices go down, probably they're less likely to reduce their labour expenditures. Probably what happens is the shareholders take the hit. And that's the way these things are absorbed in a modern market-based economy.

16331. **MS. CHAHLEY:** We're going to keep our employees and make the shareholders pay?

16332. **DR. ROBERT MANSELL:** Sometimes.

16333. **MS. CHAHLEY:** Okay. But sometimes they're going to lay off employees in the short or the medium term and not ---

16334. **DR. ROBERT MANSELL:** Well I mean if you're talking ---

16335. **MS. CHAHLEY:** --- reduce their profits.

16336. **DR. ROBERT MANSELL:** You need to run this equipment, there's a limit to their -- there a certain number of people that are required. Many of these facilities have to be operated at near capacity and for safety and practical reasons you're typically not going to lay people off.

16337. **MR. NEIL EARNEST:** Counsel, if I could elaborate on Dr. Mansell's comments.

16338. **MS. CHAHLEY:** Sure.

16339. **MR. NEIL EARNEST:** My first job is in a refinery; I've spent my adult life in the refining sector. Refiners and refineries don't vary their employment levels based on what the short term refining margin is, they just can't, it's just not a practical option for them.

16340. **MS. CHAHLEY:** Okay. But if the refineries knew that they were going to be hit as a group, we have -- as I understand it we've got about 19 refineries in Canada, not all of them I think produce or deal with Western Canadian crude; is that correct?

16341. **MR. NEIL EARNEST:** There's 15 fuel refineries in Canada plus two asphalt, one lube and one pet cam facility.

16342. **MS. CHAHLEY:** Yeah.

16343. **MR. NEIL EARNEST:** Yes.

16344. **MS. CHAHLEY:** And I want to look at them directly quickly in a minute. But if they know that they're going to get hit because these projections have told them over the next 30 years with $12.5 billion extra cost, although they might not respond in the short term, if they know this is coming for the next 30 years isn't it reasonable that they might make longer term plans, like either cutting production or laying off people or even closing?

16345. **DR. ROBERT MANSELL:** Ms. Chahley, what we're talking about is a 2 or $3 change in a world when this often happens on a weekly or sometimes a daily basis.

16346. At present there's just a huge discount on those feedstocks used by Western Canadian refineries, so to suggest in that type of environment that, you know, a $2 increase would cause them to rethink their business, it just doesn't -- doesn’t strike me as sensible.

16347. If you were in a situation where everybody was just at the margin, it would probably be a somewhat different world. But in the world we live in where right now we're talking about a $30 discount on it, it's very difficult to argue that we should have a bigger discount because consumers would get hurt or refiners would get hurt by an increase in price, when in fact the decrease in price is undermining the most -- of the most basic industries in Canada in terms of the generation of export values and so on.

16348. Most of the product in the case right now is 75 percent, but on an incremental basis it's much higher, most of that is exported. The feedback to prices to domestic consumers is relatively small compared to the export revenues. That’s really no different than a lot of other industries. If grain farmers get more for their wheat, yes, we might have to pay a little more for bread but the value of the wheat overwhelms the amount that we have -- that we spend each year on bread because most of the product is exported.

16349. So just to give you some context, that’s the framework within -- where I'm trying to answer some of these questions.

16350. **MR. NEIL EARNEST:** Counsel, if I could perhaps give us more context if you like. If we could turn up Exhibit B83-3 which is the Muse Update Report, you can go to Adobe page 70, Table A-15 and scroll down a little bit.

16351. Probably the easiest place to articulate or to demonstrate the impact or, if you like, or the lack of impact on Northern Gate when the economics are refining, I think it can be observed in these differentials we see for Western Canadian crude versus LLS, Light Louisiana Sweet or Gulf Coast light sweet benchmark crude.

16352. If we just look at Lloydminster Blend for example, it -- as you move through time, go from left to right, the differential widens. We start out in the first column which is year 1818 (sic) at $18.13 under the Gulf Coast price, as you move through time it widens.

16353. As we move through time, for the Canadian Refiners the price of their primary feedstocks from Western Canada is moving down relative to the cost of accrued feedstocks for their refining competition ultimately on the U.S. Gulf

Coast. I mean their world is getting better; their margins are expanding over time. This is with Northern Gateway.

16354. Now, if we go to the next table, Adobe page 71 and look at exactly the same series, Lloydminster Blend versus LLS, it starts in year 2018 at negative $19.70 and it again widens. Without -- with Northern Gateway their margins improved, without Northern Gateway their margins of Canadian refining improve even more. But nonetheless, in either case it does improve.

16355. Northern Gateway is not going to have to shut -- in my view, have to shut down Canadian refining capacity. The four fundamentals for a Canadian refining I think are very strong. They're sitting on top of a regional market that somewhat distanced through outside competition and they're located in an area where local crude supply is expanding. And over time I would anticipate, with or without Northern Gateway, the cost of their feedstocks would be moving down.

16356. So this is -- this is not a sad tale for the refineries, they're in pretty good shape.

16357. **MS. CHAHLEY:** Mr. Earnest, I might have missed some of that but what I think you said is that their price of their feedstock is going down whether there is Northern Gateway or whether there isn’t; is that correct?

16358. **MR. NEIL EARNEST:** That’s correct, counsel.

16359. **MS. CHAHLEY:** And so the price increase is going to reduce that drop that you project that they will see by the amount of the price increase over time?

16360. **MR. NEIL EARNEST:** To the extent that higher cost is not passed on to the end user, that’s correct.

16361. **MS. CHAHLEY:** Well we have Dr. Mansell saying -- and I think you said as well -- because they can't compete with the refined products at a different price, that there's a good likelihood they won't pass it on to the end used to the consumer?

16362. **MR. NEIL EARNEST:** That’s a distinct possibility. I mean the historical experience has been that -- perhaps said differently, the market offers no guarantee to the refiners of a given margin, not does it offer the crude producer any guarantee of a given margin. The market is what it is.

16363. **MS. CHAHLEY:** I guess, you know, we on the labour side have difficulty because we keep hearing refineries are uneconomic, the margins are so small that we can't -- they have to have small -- cheaper feedstock or they're going to lay everyone off and close. And I guess what I'm hearing you say is that’s not exactly an appropriate characterization.

16364. What I meant to do though is I’d also like to look at the other impact that the pipeline will have on refineries while we're sort of in the middle of this and this. The reduction of feedstock, as you told us in your report, Mr. Earnest, that the 525,000 barrels a day are going to come out of the market and I think that your tables tell us from where.

16365. So if we could just walk through those quickly. If I could get -- we're still on the same report, this is good, if we could go to Table E-9 which is at page 58.

16366. So if we looked at the -- let's look at the 2018, I think you're telling us on here this is the “Disposition of Canadian Synthetic and Light, Medium”, in the Northern Gateway case.

16367. So if we go to the Canadian Light, Medium Conventional there, -- oh, sorry.

16368. **MR. NEIL EARNEST:** Regulatory Officer, I believe it's Adobe page 61, we're looking for.

16369. **MS. CHAHLEY:** It's page -- Mr. Earnest said it's Adobe page 61. So there we go, thank you. Thank you.

16370. So if we go midway down there, "Canadian Light, Medium Conventional", I see what you're saying here. Am I interpreting this right? The amount of production from the -- in Western Canada of that grade, after Northern Gateway, is going to be 110.1 thousand per day.

16371. Is that correct?

16372. **MR. NEIL EARNEST:** No. That's the volume processed.

16373. The volume of Canadian light and medium conventional crude process in Western Canadian refineries in that year.

16374. **MS. CHAHLEY:** Okay, so that' how much will be going into the refinery?

16375. The amount into the refinery?

16376. **MR. NEIL EARNEST:** Sorry, I may have missed something about your question.

16377. Repeat it, please, counsel.

16378. **MS. CHAHLEY:** So the 110.1 barrels a day -- or thousand barrels a day, that is -- as I interpret this -- you tell me if I'm mistaken -- is the amount of, in this case, Canadian light, medium conventional that is going to go into Western Canadian refineries at the front end?

16379. **MR. NEIL EARNEST:** Yes. Yes, that is correct.

16380. **MS. CHAHLEY:** Okay.

16381. So that's our number for conventional medium. If we look at the same table at the top, we see *"Sweet Synthetic"*.

16382. Sweet synthetic is similar to what we've been talking about, synthetic crude oil; is that correct?

16383. **MR. NEIL EARNEST:** Yes.

16384. **MS. CHAHLEY:** So that's that partially -- it's the upgraded bitumen product?

16385. **MR. NEIL EARNEST:** Well, to be precise, it could be either an upgraded bitumen or a conventional heavy product.

16386. **MS. CHAHLEY:** Okay.

16387. **MR. NEIL EARNEST:** But, yes.

16388. **MS. CHAHLEY:** I'm just thinking -- okay, because you've got -- fair enough.

16389. So here we have 245.9 thousand barrels going into the refineries in 2018.

16390. Is that correct?

16391. **MR. NEIL EARNEST:** Correct.

16392. **MS. CHAHLEY:** Okay.

16393. And then, I want to get the heavy amount. I think I need you to go to Table A-12. It's page 62 of the hard copy. So it's the second page of Table A-12. At the bottom, it says *"All Heavy Grades"*.

16394. And I see 152.4 thousand barrels going into the refineries per day. Is that correct?

16395. **MR. NEIL EARNEST:** Correct.

16396. **MS. CHAHLEY:** And is there anything else going into the refineries that year that we've missed?

16397. **MR. NEIL EARNEST:** Yes.

16398. If we -- turn back to Adobe page 61, Table A-9, the *"Sour Synthetic"*, there in the middle of the table, *"Canada 106.4 (sic)"*. A portion of that is processed in Western Canada. It's processed in both Western Canada and Ontario, and I haven't disaggregated here in this particular summary table.

16399. **MS. CHAHLEY:** I'm sorry, I didn't hear the last you said. You haven't?

16400. **MR. NEIL EARNEST:** The Sour Synthetic process in Canada of 108.4 ---

16401. **MS. CHAHLEY:** You haven't divided that up?

16402. **MR. NEIL EARNEST:** I'm not subdivided in the summary table between Western Canada and Ontario.

16403. **MS. CHAHLEY:** Okay.

16404. Help us out because we don't know what that is. What is sour synthetic? And I'll tell you why we don't know. Because it doesn't seem to be equivalent in the CAPP forecasts as any such thing.

16405. So help me out, what is sour synthetic? What is it used for?

16406. **MR. NEIL EARNEST:** Sour synthetic is an upgraded heavy oil, either an oil sands bitumen or a conventional heavy like a Lloyd heavy or something, that has been -- whereby the density has been decreased and those residual fractions have been removed.

16407. But -- it's primarily produced by Suncor, but the upgrader has not removed all the sulphur from the synthetic oil. So rather than making it a light, sweet, synthetic oil, what they're making is a sour, synthetic oil, and it tends to be heavier than the sweet synthetics.

16408. **MS. CHAHLEY:** And is it -- go ahead.

16409. **MR. NEIL EARNEST:** And the gravity, as I recall, tends to run down around 24/25 degrees API versus the sweet synthetic is more like a 30/31 degrees API.

16410. **MS. CHAHLEY:** So is it used as a diluent? Is it a blending material?

16411. Is that what it's used for?

16412. **MR. NEIL EARNEST:** No, no, it's a refiner feedstock.

16413. It goes -- well, Suncor processes a fair whack of it at their Sarnia refinery, and they also send some down to their Denver refinery. And there are several other refineries in North America that process -- as you can see, counsel, there's not a lot of it produced.

16414. It's -- I really only keep track of it because it influences the resid balances in the refineries.

16415. **MS. CHAHLEY:** Is it fair for us to have assumed that it's an Ontario product and it really has very little role to play in Western Canada and in this analysis?

16416. **MR. NEIL EARNEST:** Well, I guess, I'm not quite sure what analysis we're talking about.

16417. It is what it is. I'm not sure I can answer your question.

16418. **MS. CHAHLEY:** Okay, well, maybe let me ask it a different way.

16419. You added it back into these tables. It had been left out. Why was it left out?

16420. Is that because it's not that important in terms of Western Canada production or Western Canada oil?

16421. **MR. NEIL EARNEST:** No, it was left out because I made a mistake.

16422. **MS. CHAHLEY:** Okay.

16423. But you can't help me out with how much of it is going into the Western Canada versus the Eastern Canada refineries?

16424. **MR. NEIL EARNEST:** I can answer that question, just not with these summary tables.

16425. **MS. CHAHLEY:** Okay.

16426. **MR. NEIL EARNEST:** I would have to refer to a more detailed document, which I'd be happy to do, but I can't do that from Table A-9. That's all.

16427. **MS. CHAHLEY:** Is it something that we can see in the CAPP forecast somewhere?

16428. **MR. NEIL EARNEST:** The sour synthetic?

16429. No, no, that's my estimate as to what the split is. I believe, counsel, if my memory serves, CAPP does mention ---

16430. **MS. CHAHLEY:** So which -- which year are you looking at now, the 2012 or the 2011?

16431. **MR. NEIL EARNEST:** I'm specifically looking at the June 2012 CAPP forecast.

16432. **MS. CHAHLEY:** Okay, so that's AQ1, Madam Clerk.

16433. Can you show us where it would be?

16434. **MR. NEIL EARNEST:** No, no, it's not broken out separately as a line item. It's my recollection they discuss it in a footnote, which I'm trying to track down.

--- (A short pause/Courte pause)

16435. **MR. NEIL EARNEST:** I don't know that this will clearly answer your precise question, counsel, but if you go to page 38 of this CAPP 2012 forecast and look at -- that would be the page in the report, not the Adobe page number. It's almost at the very end.

16436. **MS. CHAHLEY:** They should match because there's no -- page 38. It's a table called "Appendix B2".

16437. **MR. NEIL EARNEST:** Correct.

16438. **MS. CHAHLEY:** It is Appendix B2 that you're looking at? Yes.

16439. **MR. NEIL EARNEST:** Correct.

16440. At Footnote 2 we see there:

> *"Includes: a) imported condensate b) manufactured diluent from upgraders"*

16441. And then, finally:

> *"c) upgraded heavy volumes coming from upgraders."*

16442. I believe this represents both the Albian heavy grade coming out of the

Scotford Complex as well as some of the sour synthetics. That's my recollection.

16443. **MS. CHAHLEY:** So then, the oil sands -- under the "Oil Sands" line in the middle, that Footnote 2 is attached to the heading "Oil Sands Heavy".

16444. **MR. NEIL EARNEST:** M'hm.

16445. **MS. CHAHLEY:** So that's what you're saying? Is that number from CAPP would include what you are including here as sour synthetic.

16446. That's your understanding?

16447. **MR. NEIL EARNEST:** Yes, recall that I start with CAPP's -- their "Oil Sands Heavy" line that I disaggregated it into *Cold Lake*, *Athabaska SynBit*, *Athabaska DilBit*, *Lloyd Heavy* and a little bit of sour synthetic. That's all.

16448. **MS. CHAHLEY:** Oh, okay.

16449. So that line "Oil Sands Heavy" is what then became the different pieces of Table A-9, and, I mean, the other tables too?

16450. **MR. NEIL EARNEST:** Really more ---

16451. **MS. CHAHLEY:** Or Table A -- I'm sorry.

16452. **MR. NEIL EARNEST:** Or Table A-12 ---

16453. **MS. CHAHLEY:** A-12.

16454. **MR. NEIL EARNEST:** --- and beyond rather than A-9.

16455. The only component of A-9 is the sour synthetic but most of the A-12 -- sorry, conventional heavy is identified separately in CAPP, but the rest of it is my work.

16456. **MS. CHAHLEY:** So just before we leave CAPP, can you show me where that same oil is going into refineries?

16457. I mean, we have it coming out of refineries. You said it's a -- or it's produced in Suncor, for example, or produced in Suncor -- from Suncor Sarnia's upgrader, is what I think you said earlier.

16458. So does it also go into the refineries to be used in Canada?

16459. **MR. NEIL EARNEST:** I understand your question to be: Does sour synthetic, which is mostly produced by Suncor, is it processed by Canadian refiners?

16460. **MS. CHAHLEY:** Yeah, as a refinery input now.

16461. **MR. NEIL EARNEST:** Yes, it is processed -- I mean, refinery regards, you know, crude oil, sour synthetic, it's -- they're all feed stocks.

16462. I mean, the label is kind of immaterial. They all are various natures of hydrocarbons that the refiner separates into various finished products.

16463. **MS. CHAHLEY:** But you can't -- I mean, you can't tell me how much you're projecting will be in Western Canada, though.

16464. I mean, would it be typical for the output from Suncor Sarnia to be coming to Western Canadian refineries for further processing, or are they sending it to somewhere in Western -- you know, Western United States or Western -- Eastern United States or Eastern Canada?

16465. **MR. NEIL EARNEST:** Well, now that I think about it, counsel, again, I can give you that number. Just not from this summary table. It would take me a couple of minutes to dig it out.

16466. This would include the sour synthetic that the Suncor Edmonton refinery processes that it gets down from the Fort McMurray facility. It also -- if memory serves, the Co-Op Regina refinery processes some sour synthetic. Sour synthetic is processed at the Suncor Sarnia refinery, the Suncor Denver refinery.

16467. Flint Hills, Pine Bend, I understand, has processed sour synthetic from time to time and I believe some of the other Chicago heavy sour refiners have also processed the material from time to time.

16468. **MS. CHAHLEY:** Okay.

16469. We are interested in whether or not your forecasts amount to a decrease and what a decrease that would be to the feed stock to Canadian -- Western Canadian refineries.

16470. So maybe if we could take our break now, Madam Chair, that would give Mr. Earnest a chance to look at that other table. He said it would take him five minutes or so.

16471. Is that possible? And then, we could just finish this off.

16472. **THE CHAIRPERSON:** Ms. Chahley, could you just clarify one more time what it is you're wanting the Panel to answer?

16473. **MS. CHAHLEY:** We're interested in identifying what Mr. Earnest's forecast is for the amount of oil going into Canadian refineries once Northern Gateway is in place to -- so that we can determine whether that's reduced or not from what it would be without Northern Gateway.

16474. We have three of the numbers from his tables, but the 110.1 that he's -- sorry, 110.8 -- or 108.4 for sour synthetic is not broken down by Western and Eastern Canada. He's indicated that he has that information, but he'll just have to dig it out.

16475. So if he can give me the number for Western Canada, then we'll be able to add up the numbers and see if, in fact, there is a diminishment or an improvement to the feed stock going into Western Canadian refineries.

16476. **THE CHAIRPERSON:** Mr. Earnest, is it clear to you what you need to provide in this case in order to move forward?

16477. **MR. NEIL EARNEST:** It is, Madam Chair.

16478. **THE CHAIRPERSON:** Then, let's take a 15-minute break and come back at 3:15. Thank you, everyone.

--- Upon recessing at 2:59 p.m./L'audience est suspendue à 14h59
--- Upon resuming at 3:21 p.m./L'audience est reprise à 15h21

16479. **THE CHAIRPERSON:** Ms. Chahley, please proceed when you're ready.

JOHN CARRUTHERS: Resumed
PAUL FISHER: Resumed
NEIL EARNEST: Resumed
ROBERT MANSELL: Resumed
ROLAND PRIDDLE: Resumed
JACK RUITENBEEK: Resumed
MARK ANIELSKI: Resumed

--- EXAMINATION BY/INTERROGATOIRE PAR MS. CHAHLEY: (Continued/Suite)

16480. **MS. CHAHLEY:** Thank you.

16481. Mr. Earnest, have you managed to find the number for us?

16482. **MR. NEIL EARNEST:** I have, counsel.

16483. For the base case ---

16484. **MS. CHAHLEY:** Okay.

16485. **MR. NEIL EARNEST:** --- or, said differently, in Northern Gateway turnoff, the volume for all years of the forecast period of sour synthetic processed in Western Canada totals 67.5.

16486. **MS. CHAHLEY:** Sixty -- sorry, 67.5?

16487. **MR. NEIL EARNEST:** Yes. Thousands of barrels per day, 67.5.

16488. **MS. CHAHLEY:** So that's Western Canada.

16489. So that would be -- where would I put that? Which table should that go into?

16490. Sorry. That's not a fair question. I was asking you to tell me to divide up one of your tables. So we're Table A9. If we were going to take the sour synthetic and put into Western and not Western, we'd be adding -- taking the 108 and splitting it out there?

16491. Is that right?

16492. **MR. NEIL EARNEST:** I may have misheard your question slightly, counsel. You would ---

16493. **MS. CHAHLEY:** I want to know what goes into Western Canada, yeah. Go ahead.

16494. **MR. NEIL EARNEST:** In Table A9, ---

16495. **MS. CHAHLEY:** Yeah.

16496. **MR. NEIL EARNEST:** --- the row that's labelled -- for sour synthetic that's labelled "Canada" reads 108.4.

16497. If you like, you can desegregate into Western Canada and Ontario/Quebec, and the two numbers, respectively, would be 67.5 and 40.9, back to your total of 108.4.

16498. **MS. CHAHLEY:** So then adding on to my list of what's going into Canadian refineries, then, I would have -- I'm going to remind you -- 110.1 conventional light medium -- and that came from A9 -- sweet synthetic of 245.9, heavy grade crude oil grades, which would be 152.4.

16499. And now you're saying I would add an extra 67.5?

16500. **MR. NEIL EARNEST:** Correct.

16501. **MS. CHAHLEY:** And that would give me the total in 2018?

16502. **MR. NEIL EARNEST:** Correct.

16503. **MS. CHAHLEY:** So 565.9 is what I get.

16504. **MR. NEIL EARNEST:** I agree with that number, counsel.

16505. **MS. CHAHLEY:** Sorry. I'm thinking it's 575.6. Let's just get it right.

--- (A short pause/Courte pause)

16506. **MS. CHAHLEY:** Yeah, 575.9 I think is the right number.

16507. **MR. NEIL EARNEST:** I agree. I thought -- that's the number I thought I was agreeing with.

16508. **MS. CHAHLEY:** That's what you thought I said the first time. Okay, all right. Okay, thank you.

16509. And then is it fair for me to understand that, for the most part -- and there's one point where it changes. That's your prediction for how much will go into Western Canadian refineries throughout your entire forecast period; is that correct?

16510. **MR. NEIL EARNEST:** Well, it changes in year 2021, as you can see in Table A9 in the row in the sweet synthetic for the Western Canada category. It jumps from 546 -- I'm rounding now -- to 315.

16511. **MS. CHAHLEY:** So what ---

16512. **MR. NEIL EARNEST:** Now I'm just projecting the start-up of the third phase of the Northwest Upgrader project.

16513. **MS. CHAHLEY:** So that's what that is. That's the third phase of the Northwest Upgrader adds that extra production.

16514. And beyond that, is it fair to understand that you've -- that your projection is there would be no more upgrading and no more refining in Western Canada throughout your projection period, which would take us to 2035; is that correct?

16515. **MR. NEIL EARNEST:** No.

16516. **MS. CHAHLEY:** Did I miss something else?

16517. **MR. NEIL EARNEST:** I don't, counsel, project the volume of Western Canadian crude converted into a light sweet synthetic for the purpose of this analysis. CAPP does that. The volume of light sweet synthetic crude is -- that's used in this analysis comes from CAPP.

16518. The Northwestern Upgrader is a bit of a different -- a different project in the way CAPP handles it. CAPP treats it -- and I don't call it as treatment, but the way CAPP treats North West Refinery is refining, it's simultaneously a consumer heavy oil and a producer of synthetic -- or sorry, producer of a finished product.

16519. And so they -- the way they treat it -- or think about it in their -- in their forecast, they have the Northwest Upgrader upgrading bit -- and if this is too much detail, just let me know and I'll stop talking -- producing synthetic. And simultaneously, when they -- when CAPP talks about the Western Canadian market for crude, they include Northwest Upgrading refining bit as a refinery. But ---

16520. **MS. CHAHLEY:** Okay. So you're saying it's -- because it's in both places, you treated it slightly differently too, be just disposition. Is that ---

16521. **MR. NEIL EARNEST:** Yeah, because it's the way CAPP treats it. I treat -- I'm consistent with the way CAPP is developing, as I understand the way CAPP is developing their supply outlook, yes.

16522. **MS. CHAHLEY:** Okay.

16523. **MR. NEIL EARNEST:** But it's -- as you can see, it's a very small change in some very big numbers.

16524. **MS. CHAHLEY:** Okay. So if I could just, again, Madam Clerk, go to AQ-1, which is the CAPP 2012 forecast. AQ-1, and let's go to page 11, which is a chart.

16525. **MR. NEIL EARNEST:** Okay.

16526. **MS. CHAHLEY:** So I think we've just established with this sour synthetic getting added in that your projection of what's going in in 2018 is the same as what they say went in in 2011.

16527. So I'm sorry, I'm on page 11, Madam Clerk, or pretty close. It's the other way, Madam Clerk, sort of the middle of the document. It's Topic 3.1.

--- (A short pause/Courte pause)

16528. **MS. CHAHLEY:** Oops. Okay, well maybe I can ask the questions without the document up there because you have a copy in your hand, Mr. Earnest, don't you, of the CAPP 2012?

16529. **MR. NEIL EARNEST:** I do.

16530. **MS. CHAHLEY:** So on that Figure 3.2, I think now that we understand about the sour synthetic number, it looks like the demand in 2011 that existed is similar to what you put in in 2018, the 575.5 or 577; do you agree with me?

16531. **MR. NEIL EARNEST:** I would, counsel. I guess the observation I'd make that this has nothing to do with Northern Gateway, the volumes I had being processed in Western Canada. All those numbers we added up are from the base case, the no Northern Gateway case. And for the change case or the Northern Gateway case in the year 2018, I have exactly the same throughput of crude oil in the Western Canadian refineries.

16532. I'm not changing the throughput of crude oil in Western Canada at all, with or without -- or to say it differently, Northern Gateway does not change the throughput of crude in any of the Western Canadian refineries.

16533. So I think what this debate is, at the end of the day, about is whether or not, in the base case, I've got the right volume of crude processed in Western Canada, which is a legitimate debate, I suppose.

16534. I would just point out that in 2018 the total supply volume of crude coming out of Western Canada some four-odd million barrels a day, so if we move volume consumed locally up or down a little bit, it's not going to materially change the benefit estimate for Northern Gateway.

16535. **MS. CHAHLEY:** But if you see on that same 3.2 that CAPP is estimating that what will be demanded in Canada by 2020 is 632 barrels.

16536. **MR. NEIL EARNEST:** Well ---

16537. **MS. CHAHLEY:** And you haven't added those in.

16538. **MR. NEIL EARNEST:** Well ---

16539. **MS. CHAHLEY:** Or is that just -- is that the Northern Upgrader difference?

16540. **MR. NEIL EARNEST:** No, again, to put in perspective, counsel, if I'd added at 55 -- if I'd increased refinery runs in Western Canada by 55,000 barrels per day in 2018 ---

16541. **MS. CHAHLEY:** Actually, to be fair to you, Mr. Earnest, I just did the math and, actually, I think that amounts to the amount you added in for Northwest, so I'm just going to withdraw that question.

16542. Three fifteen (315) minus 245 is about 60.

16543. **MR. NEIL EARNEST:** Sorry?

16544. **MS. CHAHLEY:** Three fifteen (315) minus 245 is about 60, so I -- the 56 increase matches your increase. Okay.

16545. And just so I understand, when the sweet synthetic was left out of the tables -- and you have to -- sour synthetic was left out, and you understand that's what we had to work with until yesterday -- that was just an oversight, that was just a mistake, a typo kind of mistake on your part?

16546. **MR. NEIL EARNEST:** It was a mistake I remain potentially irritated by. Yes, it was a mistake.

16547. **MS. CHAHLEY:** Okay. You do understand we spend a lot of time on this too. We're potentially irritated, but not at you.

--- (Laughter/Rires)

16548. **MS. CHAHLEY:** Why wouldn't it have been caught sooner?

16549. Was there any particular reason or just this internal office stuff?

16550. **MR. NEIL EARNEST:** Sorry, counsel, I -- I totally missed your question.

16551. Could you repeat it, please?

16552. **MS. CHAHLEY:** I -- I'll just withdraw it. It's not -- an -- I don't need to pursue that.

16553. Okay, just give me a minute.

--- (A short pause/Courte pause)

16554. **MS. CHAHLEY:** Sorry, Mr. Earnest, if you could look to table 8. This is B83 -- B83.4 and it is the hard page 57. I think they're very close now to the OW ones in here,

16555. Sixty (60), I'm told. Thank you.

16556. Okay. So we -- oh, I gave you the wrong number. Oh man. I'm getting tired. I apologize.

16557. B83.5 -- or dash 5. I apologize. So ...

--- (A short pause/Courte pause)

16558. **MS. CHAHLEY:** No. It's B83-3. The second Muse Stancil.

16559. Yeah. And it's Adobe page 60.

16560. Now, my friend has all this on his iPad. I should have done that.

--- (Laughter/Rires)

16561. **MS. CHAHLEY:** I mean, I'm going to do that for the rest of the hearing.

16562. Adobe page 60. Okay.

16563. So we see here that we have -- what year am I worried about -- at the top, just what we see is going on Northern Gateway, in 2018, 19 and 20, we've got light and heavy and then subsequent is heavy only, and what we wanted to do is understand what was going to where.

16564. So we're together here so I think then we look to table A-11 first -- and you can correct me if I'm wrong -- but that will show me where this synthetic and light medium conventional is going; correct?

16565. **MR. NEIL EARNEST:** I believe you want to go to A-9, counsel, on Adobe page 61.

16566. **MS. CHAHLEY:** Okay.

16567. Why am I thinking A-11?

--- (A short pause/Courte pause)

16568. **MS. CHAHLEY:** If we could look at the disposition in A-11 then what -- I think that isolates us more to Northern Gateway, doesn't it, in case there was other exports going in the first case?

16569. **MR. NEIL EARNEST:** Well, A-11 is the difference of disposition from a -- a case with Northern Gateway operational and a case without an operational.

16570. **MS. CHAHLEY:** Right.

16571. **MR. NEIL EARNEST:** The change case versus the pace case, that's all.

16572. **MS. CHAHLEY:** So it shows us exactly what would be attributed to Northern Gateway. It's what's going by a Northern Gateway in this.

16573. Isn't that correct? Or am I misunderstanding something?

16574. **MR. NEIL EARNEST:** No, it's not what's really what's going by Northern Gateway.

16575. This is capturing all the -- all the impact on disposition of Western Canadian crude ---

16576. **MS. CHAHLEY:** Okay.

16577. **MR. NEIL EARNEST:** --- due to Northern Gateway but it's not telling you where the barrels -- really on Northern Gateway were actually going.

16578. I mean, they're going to Northeast Asia ---

16579. **MS. CHAHLEY:** Okay.

16580. **MR. NEIL EARNEST:** --- that category. It doesn't tell you which particular specific country in Northeast Asia, I suppose.

16581. **MS. CHAHLEY:** Okay.

16582. All right, so if we look at -- if we look at A -- A-11 since we're there, under "Sweet Synthetic", we see that it shows 130.6 barrels to Northeast Asia; correct?

16583. **MR. NEIL EARNEST:** Correct.

16584. **MS. CHAHLEY:** And if we compare that to A-9, we see the same thing: 130.6 barrels going to Northeast Asia.

16585. So it's -- it's the same data.

16586. **MR. NEIL EARNEST:** Agreed.

16587. **MS. CHAHLEY:** Okay, for 2018.

16588. And then, if we look at A-9, we see no light, medium conventional going to Northeast Asia.

16589. **MR. NEIL EARNEST:** Agreed.

16590. **MS. CHAHLEY:** And the same on A-11.

16591. And we're clear, no sour synthetic is going to Northeast Asia either; is that correct?

16592. **MR. NEIL EARNEST:** Agreed.

16593. **MS. CHAHLEY:** Okay.

16594. So now if we go onto the next product so we can look at -- I guess -- A-12 or A-14.

--- (A short pause/Courte pause)

16595. **MS. CHAHLEY:** So let's just start with A-11. Sorry, we did A-11. Start with A-12.

16596. Here, we see going to Northeast Asia, and -- and in this, I'm seeing nothing going anywhere else in Asia so far, but if we look at A-12, we see it's now broken down to China, Japan, Korea, Taiwan, and Northeast Asia.

16597. Do you see that in A-12?

16598. **MR. NEIL EARNEST:** Those countries are all Northeast Asia collectively, counsel.

16599. **MS. CHAHLEY:** Right.

16600. And so the earlier tables that we looked at didn't have them broken down by country but table A-12 shows them broken down by country now.

16601. **MR. NEIL EARNEST:** Oh, so it does. I ...

16602. **MS. CHAHLEY:** Okay?

16603. **MR. NEIL EARNEST:** That was an oversight for certain grades, at least.

16604. **MS. CHAHLEY:** So if we look, for example, at A-12 under "*Cold Lake Blend*" -- so that's the first page of A-12, at the bottom -- we see 289.2 barrels going to China and we also see 289 barrels going to Northeast Asia.

16605. I'm assuming that's just a doubling up there; is that correct?

16606. **MR. NEIL EARNEST:** What you have is a Northeast Asia or rather it's a subtotal of the four countries above it, and when this -- when this table was printed, we should have -- well -- well, not exactly hidden the -- or at least closed the China, Japan, Korea and Taiwan rows in all three of these sets here.

16607. **MS. CHAHLEY:** So that's why it got printed double, it's just the total ---

16608. **MR. NEIL EARNEST:** Yeah.

16609. **MS. CHAHLEY:** --- amount?

16610. **MR. NEIL EARNEST:** I mean, if you go down this table then look at Athabasca DilBit, for example, counsel, you'll see it's -- we don't report the disposition to individual countries.

16611. This is ...

16612. **MS. CHAHLEY:** Okay.

16613. So, just on that, was it your intention to -- to divide up the disposition by country or was there a reason why you didn't want to report it by country?

16614. **MR. NEIL EARNEST:** No, not really.

16615. I mean, if you look at -- well, if you can scroll down, please, to the next page to the Athabasca DilBit category.

16616. **MS. CHAHLEY:** Yes.

16617. **MR. NEIL EARNEST:** Just stop there if you like.

16618. If you look at the entire category, *"Athabaska DilBit"*, I'm aggregating a number of refineries in Ontario and Quebec, a bunch in the Rockies, in the Midwest, in the Mid-Continent, California, U.S. Gulf Coast.

16619. There's -- I'd have to add them up -- there's a couple of dozen refineries in the U. S. Gulf Coast. I'm also aggregating Northeast Asia. I'm not treating it really any differently than any of these other sub-markets.

16620. The tables get very long if you report each individual refinery and country.

16621. **MS. CHAHLEY:** But can we agree that it was -- that the oil going on Northern Gateway and then going by boat as far as your tables go, was going to China; correct?

16622. **MR. NEIL EARNEST:** No, I disagree with that, counsel.

16623. Just looking at what we had here, *Athabaska SynBit*", year 2020, we've got Athabaska SynBit flowing to Korea, Taiwan and ---

16624. **MS. CHAHLEY:** Oh, sorry, I missed that.

16625. **MR. NEIL EARNEST:** --- and China.

16626. **MS. CHAHLEY:** So the synbit is going, in later years, to other places, okay.

16627. And was -- but, clearly, that's not all going on Northern Gateway. It's too much.

16628. **MR. NEIL EARNEST:** We have rail, counsel.

16629. In the base case, recall ---

16630. **MS. CHAHLEY:** Yeah, exactly.

16631. So that's the projection there, is that some of that -- because once we get to 2024, you've got far too much to fit into Northern Gateway under the Athabaska synbit going to the Asian countries?

16632. **MR. NEIL EARNEST:** Oh, absolutely.

16633. Recall that for the base case, we wanted to avoid a Southern scenario against which we would measure the benefits of Northern Gateway, which would have been huge.

16634. And if I could trouble the Regulatory Officer to go to Adobe page 42 of this document, this Figure 8 here, this is the base case. And as you can see, looking at the red line, that is the volume of Canadian crude flowing to Asia via rail. You have one or more British Columbia reports, and this is in the base case.

16635. And so I would point out that the base case against which we're measuring the benefits of Northern Gateway already includes very sizeable volumes of crude moving to Asia already.

16636. So, you know, I agree that the volume moving by rail to Asia via rail doesn't match the volume capable of Northern Gateway until we get out pretty late in the forecast period but, nonetheless, I think it's a point worth making that, even the base case, we've got significant volumes of crude moving to Asia.

16637. And all else equal, if we had not permitted rail to take barrels from Western Canada to British Columbia and then to Asia, we had forced it all to go by rail to the Gulf Coast, and then we had started up Northern Gateway, we would have had captured greater benefits for Northern Gateway.

16638. I would say this is a quite conservative analytical assumption.

--- (A short pause/Courte pause)

16639. **MS. CHAHLEY:** Okay.

16640. Mr. Earnest, I need to ask you this, and I don't want to go into a whole rehash of this morning but, in that table, there are no -- no Northern Gateway base case. Once rail got up to enough -- a sufficient volume, would it capture the same high prices that you're predicting for Northern Gateway?

16641. Would it cause the same premiums to occur? It's a slower incline.

16642. **MR. NEIL EARNEST:** The short answer, counsellor, is "no".

16643. This is the base case. This is a case against which we are measuring the economic benefit to turning on a big pipeline. It is what it is.

16644. To repeat my earlier observation, if we had developed a base case which said we don't want to ship any Canadian crude via rail to British Columbia to send on to Asia or perhaps California, we could have done that. We would have been moving more by rail to the U.S. Gulf Coast, but we certainly could have done that analytically.

16645. My only point is, had we chosen to do that, just make a base case where everything goes out by rail to the Gulf Coast, and then turned on Northern Gateway, and so for the first time in year 2028, if you like, there's a half-million barrels a day going west, we would have done a bigger benefit estimate. That's all.

16646. **MS. CHAHLEY:** Okay.

16647. **MR. NEIL EARNEST:** We tried to develop an economic analysis for Northern Gateway that was reasonable and balanced and this is just part of why I believe we've got an economic analysis that's reasonable and balanced.

16648. **MS. CHAHLEY:** Okay, so going back to where we were, we were looking at where's the oil going, and we had 130.6 of the -- sorry, now, I've lost my table, from A-11. We had synthetic and light, medium conventional going to Northeast Asia in 2018.

16649. We had 282 barrels -- sorry, 89.2 barrels going -- of Cold Lake Blend going to Northeast Asia, and that's from Table A-12 in 2018.

16650. And that equals 419 -- point 8. So where's the rest of the stuff for the pipeline? What else was going into this to equal the 500 that we saw at the beginning in Table A-8?

16651. **MR. NEIL EARNEST:** (Off mic response)

16652. **MS. CHAHLEY:** Well, ---

16653. **MR. NEIL EARNEST:** Sorry, I'll just repeat for the Court Reporter.

16654. It's not all going to Asia. I'd have to take it out of the more detailed tables I've got elsewhere, but a portion of it looks like it's going out of Puget Sound or California.

16655. But I'd have to dig it out.

16656. **MS. CHAHLEY:** Okay, I totally missed that.

16657. So not all of the 500 thousand barrels that are going on Northern Gateway that we saw in A-8 in the early years are going to Northeast Asia. Is that what I think you just said?

16658. I'm sorry. I'm having trouble hearing you. Is that what you said?

16659. **MR. NEIL EARNEST:** That's my supposition.

16660. I'd have to go back to detailed tables, counsel, to track that down, but that looks like what's going on here.

16661. **MS. CHAHLEY:** And I think you said you were recalling that some part of it was going to Puget Sound instead?

16662. **MR. NEIL EARNEST:** Again, counsel, I'd have to go back to detail tables.

16663. **MS. CHAHLEY:** Okay.

16664. **MR. NEIL EARNEST:** That is a permissible option in the optimization model where you can ship from Kitimat via tanker down to the Puget Sound.

16665. I mean, from a port to a port.

16666. **MS. CHAHLEY:** Okay.

16667. **MR. NEIL EARNEST:** That's a possibility, that's all.

16668. **MS. CHAHLEY:** So -- but then, those barrels wouldn't be getting the premiums that you predict in terms of the extra price in Asia; would they?

16669. **MR. NEIL EARNEST:** Well, it's -- we're trying to capture or assess the economic impact of turning on a big pipeline.

16670. And, at the end of the day, the prices in the Pacific, be it in the Northeast Asia or Puget Sound or California, or Singapore or Jamnagar in India just have to be high enough such that the crude flows.

16671. If the crude flows west and it's not flowing south to the U.S. Gulf Coast and you're not cramming another half a million barrels a day of crude into those U.S. Gulf Coast refineries or somewhere else in North America, that creates the dynamic where you're moving the Edmonton price up.

16672. I talk about this in the text, counsellor, and we looked at that earlier on in this cross-examination, I believe it's page -- Adobe page 34, we talked about that specifically.

16673. **MS. CHAHLEY:** Okay. I guess it's time to talk about the premium that will come from going to Asia though. I mean there's one thing for it to go up -- based on the things we talked about this morning -- in North America.

16674. But you've also predicted in your two reports that there will be a premium paid for barrels because they're being sold in the Asian market; is that correct?

16675. **MR. NEIL EARNEST:** That is correct, counsel.

16676. **MS. CHAHLEY:** And again, I do appreciate the overall argument that as long as people want to send their oil on this pipeline and they're getting a price to which makes them satisfied with that sale after the cost of tolling, that the shippers have an economic interest in the pipeline.

16677. But part of what's before the Panel and what's of concern to the intervenors is that there's also this case of this many dollars is going to be of economic benefit to Canada, not just to the industry. So that's why I'm going into unpacking a lot of these details, just so that we're clear.

16678. So in the first report which is B1-4 Appendix A, at page 6, if we can go there please.

--- (A short pause/Courte pause)

16679. **MS. CHAHLEY:** That's not right, oh that's the -- I wonder if anyone has the Adobe number for page 6 of the Muse first report to help Madam Clerk out?

16680. **MR. NEIL EARNEST:** B1-4, counsel.

16681. **MS. CHAHLEY:** Yeah B1-4, but the Adobe page number for page 6. You don't have me there, okay.

16682. **MR. NEIL EARNEST:** The Muse report starts on Adobe page 45.

16683. **MS. CHAHLEY:** Forty-five (45).

16684. **MR. NEIL EARNEST:** Was that your question?

16685. **MS. CHAHLEY:** That will help us to get -- start closer, yeah. Thank you, that's very helpful.

16686. Okay, here -- let me find my reference.

--- (A short pause/Courte pause)

16687. **MS. CHAHLEY:** So on page 6 at the top -- a little bit further in, Madam Clerk, there I think. It says:

> *"For 2016, Muse is estimating that the delivered cost for Arab Light to a northern Chinese refinery will be US$80.31/bbl, whereas the delivered cost of Arab Light to Houston is estimated at US$78.71/bbl. The higher delivered cost (US$1.60/bbl) is attributable to the 'Asia premium'..."*

16688. Now, was it correct for me to understand that that meant that part of the price increases as you put through your charts included this $1.60 premium?

16689. **MR. NEIL EARNEST:** There's not a one to one rate relationship again, counsellor, and it's discussed in detail in responses to a number of commentary by the intervenors about this Asia premium observation here.

16690. Certainly the fact that, at least historically -- and it's our view that going forward crude prices are higher in northeast Asia than they are and will be on the U.S. Gulf Coast and for that matter more generally the Atlantic Basin -- is a key reason why Northern Gateway will have economic benefits.

16691. If the prices aren't higher going west versus your alternative going south or perhaps east, the shippers won't use it and point in fact they probably won't even sign up for long-term commitment and the thing will never get built.

16692. But if you have higher prices the pipeline gets moved -- gets used. And if the pipeline is used and is exporting a half a million barrels a day plus the crude from North America to the Asian markets, there will be -- that will influence -- effect the pricing dynamics in Western Canada itself.

16693. As we discussed at some length this morning, again, you know, you no longer have to cram another half million barrels a day of crude oil into your least attractive from a pricing perspective customer in North America.

16694. But once Northern Gateway fills, an additional price increase in Asia really doesn't matter anymore, it doesn't change the Edmonton price, it's not changing the throughput on Northern Gateway when Northern Gateway is full.

16695. An analogy -- the current analogy I'd offer is the Pegasus pipeline, the Pegasus pipeline connects Canada to the Gulf Coast, Pegasus is full. It's got a tariff of seven bucks, the differential is 30, it's not setting the price, no more than Northern Gateway would.

16696. **MS. CHAHLEY:** But what I want to talk about is what are the opportunities to capture higher price in Asia in the long-term. I'm going to say that I'm assuming at the time you wrote the Report Number one, you based this on your understanding of those prices as stated and that's what you saw to be the premium; is that correct?

16697. **MR. NEIL EARNEST:** This was our estimate of the premium which is a -- if you like a derived differential from where we establish our Gulf Coast and Singapore pricing levels.

16698. **MS. CHAHLEY:** Okay. And when you wrote Muse 1, this first report, did you expect that premium would continue to apply for the 10-year projection period?

16699. **MR. NEIL EARNEST:** Well, marginally counsel, I would say that we anticipated a forecast that prices would be higher -- continue to be higher as they have been historically in Asia versus the Atlantic Basin, yes.

16700. **MS. CHAHLEY:** Okay. And I believe that you've set those out in your tables and in this report it would have been ---

--- (A short pause/Courte pause)

16701. **MS. CHAHLEY:** So it's Table A-17 in both reports I believe; is that correct? That shows what the price difference was estimated to be but that also includes both North American and the Asia; is that correct?

16702. **MR. NEIL EARNEST:** Sorry counsel, which table are you referring to again?

16703. **MS. CHAHLEY:** A-17 and I think it's the same number in both reports. That one says that it's the "Edmonton Netback Prices Northern Gateway Less Base Case".

16704. **MR. NEIL EARNEST:** Yes, I agree, that's what it says.

16705. **MS. CHAHLEY:** And that price increase that's shown there would include both the increase that might come from the higher price in Asia together with any impact of the North American market on price; is that correct?

16706. **MR. NEIL EARNEST:** No.

16707. **MS. CHAHLEY:** No?

16708. **MR. NEIL EARNEST:** Again, the price in Asia just has to be high enough such that the crude flows on Northern Gateway.

16709. Think of it this way, counsel, if we can go back to our real world example rather than perhaps speculate about the future and talk about Pegasus again.

16710. Somebody is shipping on Pegasus and they're paying seven bucks toll and the price of the crude oil -- heavy crude oil in the Gulf Coast is $30 more than what that shipper paid for at Hardisty. And so that benefit, that $23, that's to the shippers' account. Whoever is shipping on Pegasus is capturing that arbitrage opportunity, if you like. What it's not doing -- what Pegasus is not doing is acting to raise the entire price structure in Western Canada to -- by $23.00.

16711. So as you change the Asia price, up or down, as long as the price is high enough to incent shippers to go west is not changing the Edmonton price, no more than Pegasus is changing the Edmonton price today. It's not acting as a price-setting mechanism. But that's not to say, if you turn off Pegasus or if you turn off Northern Gateway, it's not going to impact the price in Western Canada. Once you do that then you change the distribution pattern.

16712. If you shut off Pegasus today, you're going to have another 100,000 barrels a day of Canadian heavy at Hardisty to do something with and you don't have very many options right now.

16713. That $30 differential we're looking at it'd be -- it's 35-40, it'd be a problem; it would be a real problem.

16714. **MS. CHAHLEY:** Okay, so -- and to some degree you're just helping me to understand your evidence this morning a bit too and that's helpful but what I want to understand is -- for Table A-17 in both reports or if there's another table, is how much of the predicted price increase that then Dr. Mansell took and put into his models to determine the impact on GDP and what have you, how much, if any of that, is related to the price that might be obtained in Asia once the pipeline is started?

16715. We heard from Mr. Fisher that he expects it to be full from Day 1 or close to full; it's 25,000 barrels left over.

16716. **MR. NEIL EARNEST:** If we can turn to -- in this document -- Adobe page 60 -- no, sorry, 100 or 101, maybe?

16717. **MS. CHAHLEY:** Okay.

16718. **MR. NEIL EARNEST:** And -- we got close, Table A-15, please.

16719. This table is simply the estimate of the price of all these various grades of Canadian crude at Edmonton. The next table, Table A-16, is simply the estimated price of exactly the same grades of crude, produced in exactly the same volume, at Edmonton, without Northern Gateway.

16720. The table you referred me to, counsel, just a minute ago, Table A-17, is simply the difference between these two tables; one minus the other.

16721. And so embedded in the price -- that we're estimating Table 15 with Northern Gateway and at Table 16 without Northern Gateway -- is all the stuff embedded in the base case, in the case of Table A-16, what pipelines are turned on or off, is Keystone XL turned on or off, at what capacity, so on and so forth.

16722. And Table 15 just says: Look, all we're going to do is turn on Northern Gateway and assess the price impact at Edmonton.

16723. And I'll say it again, you only need a price in Asia that's sufficiently high enough, relatively alternative for the Western Canadian producer, such that Northern Gateway has used and it acts to shift, to move half a million barrels a day of crude out of North America and put it somewhere else. And once you do that, you'll get a price reaction at Edmonton.

16724. I don't know how to explain that differently, counsel.

16725. **MS. CHAHLEY:** I think -- I think I understand what you're saying.

16726. What you're saying is: It doesn't really matter what the price is in Asia on your predictions, as long as it's a big enough price to get the shippers to continue to send their oil there.

16727. So it might be that the price in Asia is not that much higher than the cost of shipping in the Edmonton price but if that was enough to make them see it was worth their while then -- then all of the rest of it flows.

16728. And I don't know what that would be. Would that be a dollar more than the Edmonton netback price to somewhere else? Would it be like 10 cents more?

16729. How much more would it be, the price to incent them to use the pipeline?

16730. **MR. NEIL EARNEST:** Well, keep in mind in the context -- the specific context of Northern Gateway, at least for the first 15 years, we'd have committed volumes on it and so their economics are a bit different than a spot toll or an uncommitted shipper.

16731. But setting all that aside, you know, theoretically, you only need a netback price going west that's a penny higher than a netback going south. I mean a penny is better than nothing; right?

16732. **MS. CHAHLEY:** Well, a penny on a half a million barrels is quite a lot added up.

16733. **MR. NEIL EARNEST:** No quarrel, Ma'am.

16734. If it -- that's why the benefits of this pipeline get very big, particularly, as you move through time. It's fairly small uplifts compared to -- applied to large volumes.

16735. **MS. CHAHLEY:** Okay, so although when we read your report -- the part I just showed you -- where you said $1.60 is the difference in price in Asia, what I'm hearing you say is that really is not part of what's in A-17.

16736. That might be something in the shipper's hands that might go up or down as the price in Asia fluctuates but it really doesn't matter to A-17.

16737. Is that a correct understanding? As long as they're flowing their oil in the first place?

16738. **MR. NEIL EARNEST:** Yeah, I mean, we're pointing to -- to be precise -- at Asia premium we've been talking about is the difference at Ras Tanura or between the price for Arab light, medium and heavy delivered to Asia versus the price of the same grades delivered to the United States; it's not actually an Asia price.

16739. But that's just -- I'm just trying to express -- point to some history, if you like, of the pricing relationships between the Pacific Basin, the Atlantic Basin to support our view that, yes, both today and going forward higher prices in the Pacific Basin versus the Atlantic Basin will incent the shippers to move oil west.

16740. And the pipeline would be thus used and useful.

16741. **MS. CHAHLEY:** Now, just so that -- okay.

16742. I just need a minute to frame my question properly.

--- (A short pause/Courte pause)

16743. **MS. CHAHLEY:** So I think what you're saying is any concern that I or my clients or other intervenors might have as to how the price in Asia might go up or down or be determined between Asian-based producers and -- who have refineries in China but who are shipping from Canada, you're basically saying that's all irrelevant, as long as it's a dollar -- or a penny more, that's all we need.

16744. And maybe even less of a penny if they've committed to that contract for 15 or 20 years.

16745. Is that correct?

16746. **MR. NEIL EARNEST:** Sorry, counsel, could you repeat your question?

16747. And perhaps -- and perhaps break it down into pieces, I think it might be helpful?

16748. **MS. CHAHLEY:** Yeah.

16749. I mean, a lot of the concern that's been expressed by the intervenors and in some of the intervenors' evidence which I believe you've read at least some of or as much as you could have, because your refer to some of it in your reports, has been that part of the benefit that's being put forward here that's been run through the macro models to increase GDP is based on market economics in China or Asia.

16750. And what I think I'm hearing you tell us is that that's just a mistake, that there really doesn't matter what the price in Asia is once -- it's enough to get people to get into sending stuff in the first place.

16751. Is that right?

16752. **MR. NEIL EARNEST:** In terms of assessing the impact on the Canadian oil industry, that statement is accurate.

16753. If the question is: Would the price of crude oil in Asia influence the economics of the shippers? That's a different question, I'll give you a different answer.

16754. And more generally, I would submit that, you know, what China does or doesn't do in their internal market with pricing or price controls that is absolutely irrelevant. You know, the price in Asia for waterborne imports is primarily -- is heavily influenced by what the mid-East crude producers are doing. And they don't care if the Chinese government is subsidizing local consumption of fuel or not, and they're always seeking to maximize their realized sale price. And the Chinese refiners pay the same price for Arab light as does the Japanese refiners, the South Korean refiners, the Taiwanese refiners.

16755. You know, there's only one price at Ras Tanura for all barrels going east. Ras Tanura is the big load port in Saudi Arabia for -- for seven-odd million barrels a day of crude.

--- (A short pause/Courte pause)

16756. **MS. CHAHLEY:** Sorry, that's just not exactly what I expected to hear from my understanding of the report, so I just need a minute to regroup my thoughts, if you don't mind.

--- (A short pause/Courte pause)

16757. **MS. CHAHLEY:** Sorry, Madam Chair. This slight unexpected answer from where I sit -- and I'm sure that Mr. Earnest didn't think it was unexpected, but I did -- is just -- I need to regroup.

16758. And I'm just wondering if we're going to stop at 4:30 whether what makes more sense is just to stop now. It's almost 20 after -- rather than start a new line and be a little bit disorganized for a couple minutes.

16759. It's -- I'm in your hands. I'm happy to do whatever makes more sense for you.

16760. **THE CHAIRPERSON:** Thank you, Ms. Chahley. We always like to ensure that we're making the best use of hearing time as possible, and so if having the additional time would help you be better prepared for tomorrow, I think that's a very good plan.

16761. Before we stop for this evening though, the Panel understood that you had about eight to 12 hours of cross-examination or questioning, and I think we're sort of at about the eight-hour mark now.

16762. Could you give us an update as to are you still planning to be within your estimate that you provided?

16763. **MS. CHAHLEY:** Madam Chair, I think yes. I mean, I think we're at about eight now, and so I think yes, we'll certainly be within the eight to 12 is my expectation, again subject to us ending off in a tangent that I didn't expect or stopping early on a point that I'm not expecting.

16764. **THE CHAIRPERSON:** And the one thing the Panel would just ask your cooperation is, tomorrow when you come for the -- for your questioning, would you please have the Adobe page numbers ready so that we'll be able to move more effectively to the evidence that you're wanting to question on.

16765. **MS. CHAHLEY:** I'll sit down with my book and make sure they're there. I don't have any way to print them onto the documents, so if someone knows how to get them to print on -- otherwise, it's just a matter of writing them onto the pages.

16766. I don't get reliable internet in this room to be referring to the electronic copies as we go. So I'll do the best I can.

16767. **THE CHAIRPERSON:** Thank you, Ms. Chahley.

16768. With that, we'll complete for today and we will sit again at 9:30 tomorrow morning.

16769. Thanks, everyone.

--- Upon adjourning at 4:18 p.m./L'audience est ajournée à 16h18