BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In The Matter Of:	)	
Application No. 2013-01	)	
	)	
TESORO SAVAGE, LLC	)	Case No. 15-001
	)	
VANCOUVER ENERGY DISTRIBUTION	)	
TERMINAL	)	
	)	

HEARING, Volume 15

Pages 3439 to 3726

ADMINISTRATIVE LAW JUDGE CASSANDRA NOBLE

9:04 a.m.

July 20, 2016

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1 A P P E A R A N C E S (Continued)

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1 A P P E A R A N C E S (Continued)

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1 PROCEEDINGS
2 JUDGE NOBLE: We're back on the record
3 before the State of Washington Energy Facility Siting
4 Council, Case No. 15-001, in the Matter of Application
5 No. 2013-01, Tesoro Savage LLC Vancouver Energy
6 Distribution Terminal.
7 We have our list of witnesses for today.
8 Ms. Larson, are you ready to proceed with
9 the first witness?
10 MS. LARSON: Yes, Your Honor. Columbia
11 Waterfront LLC calls Jerry Johnson.
12 JUDGE NOBLE: Mr. Johnson, would you raise
13 your right hand, please.
14 (Witness sworn.)
15 JUDGE NOBLE: Thank you. You may be seated.
16 Ms. Larson, you may proceed.
17 JERALD JOHNSON,
18 having been first duly sworn,
19 testified as follows:
20 DIRECT EXAMINATION
21 BY MS. LARSON:
22 **Q. Mr. Johnson, would you please state your name**
23 **and spell your name for the record.**
24 A. My name is Jerald Johnson, J-e-r-a-l-d
25 J-o-h-n-s-o-n.

1 **Q. Did you prepare prefiled testimony for this**
2 **adjudication?**
3 A. I did.
4 **Q. I'm going to hand you a copy of it so you can**
5 **refer to it.**
6 MS. LARSON: Your Honor, in light of
7 Mr. Goodman's testimony yesterday and to avoid
8 duplication, Columbia Waterfront is withdrawing certain
9 paragraphs of Mr. Johnson's prefiled testimony. Those
10 are paragraphs 16, 31 to 35 --
11 JUDGE NOBLE: Hold on. I want to mark my
12 copy.
13 MS. LARSON: Okay. Sure.
14 JUDGE NOBLE: And the first one you're
15 withdrawing is paragraph 16?
16 MS. LARSON: Correct.
17 JUDGE NOBLE: Okay.
18 MS. LARSON: Paragraphs 31 through 35, 50
19 through 52 and 56 through 64.
20 JUDGE NOBLE: All right. Those will be
21 withdrawn from the testimony.
22 BY MS. LARSON:
23 **Q. Mr. Johnson, what's your current occupation?**
24 A. I am a consulting economist. I own a consulting
25 firm called Johnson Economics in Portland, Oregon.

1 **Q. Could you please give the summary -- the council**
2 **a summary of your background. The council has been**
3 **provided with a copy of your resume, which is**
4 **Exhibit 4002, but if you could expand upon that, please.**
5 A. Sure. I've been in the consulting community
6 working for 27 years. Experience or areas of practice
7 include land development, economic development, a lot of
8 issues on development economics, as well as fiscal
9 economic impact analysis.
10 JUDGE NOBLE: Before you proceed, I forgot
11 to say for the record that today's date is the 20th of
12 July. The people recording this have asked that the
13 date be included. Thank you. Sorry for the
14 interruption.
15 THE WITNESS: No problem. I also have to
16 remember to talk slower. I have a tendency to go
17 quickly.
18 JUDGE NOBLE: Oh, yes, very important.
19 A. We do a lot of work for public and private
20 sector clients. We have a fairly full array of broad
21 client base. And including a lot of work for port
22 districts as well as cities of Portland, Seattle and a
23 lot of different jurisdictions.
24 BY MS. LARSON:
25 **Q. Could you please provide a summary on your**

education.

A. I have dual undergrad degrees in economics and architectural design and a master's of urban and regional planning from Portland State University.

Q. And do you teach economics?

A. I teach classes at an adjunct faculty in Portland State's school of -- master's of real estate program in real estate finance and marketing analysis.

Q. Do you look at commodities markets as part of your work for ports?

A. We often do, typically because ports are involved in commodity markets and we're looking at capital improvements, like docks or deepwater ports or other activities that are really reliant upon understanding the commodity flows.

Q. Could you give the council some examples of that?

A. We've done work on an export dock in Newport, taken a look at deepwater draft port facilities in the Port of Coos Bay. We've done work for the Port of Portland, West Hayden Island. We've done oddball things on Hague fisheries and salmon fishing as well. We do -- basically in economics, we do a lot of applied economics, which means we take a look at what's available data and apply it to their particular

1 situation. Quite often when we're talking about
2 commodity flows, we're talking about --
3 **Q. Could you slow down a little bit, please.**
4 A. Sure. We're talking about fairly major capital
5 investments and really understanding those are
6 important.
7 **Q. Please summarize what you reviewed to prepare**
8 **for your testimony here today.**
9 A. Well, we did our own research and I reviewed
10 that again. We looked at the prefiled testimony of
11 Mr. Goodman, Mr. Schatzki, Mr. Roach. I viewed the
12 video testimony of Mr. Roach and Mr. Schatzki, and I was
13 actually present during Mr. Goodman's testimony
14 yesterday. We've also taken a look at some additional
15 updated information on the crude markets and taken a
16 look at the market analysis provided by Mr. Goodman in
17 support of his testimony.
18 **Q. Do you use the IMPLAN model, I-M-P-L-A-N model,**
19 **in your work?**
20 A. We do. It's a fairly common model.
21 **Q. Mr. Schatzki prepared three studies which were**
22 **attached to his prefiled testimony. They were admitted**
23 **as Exhibits 156, which was the -- his primary impacts**
24 **analysis, 157, which was his secondary impact analysis,**
25 **and 158, which was a statistical analysis. Did you**

1 review those studies?
2 A. We did.
3 MS. LARSON: Please pull up Exhibit 156.
4 A. Trying to think which tab that is in this
5 binder.
6 BY MS. LARSON:
7 **Q. It's not in there. It's Mr. Schatzki's.**
8 A. Oh, Mr. Schatzki's testimony.
9 **Q. Okay. So before we get to your prefiled**
10 **testimony, Judge Noble has asked that you rephrase the**
11 **opinions expressed in paragraphs 14 and 15 of your**
12 **prefiled testimony. And before you do that, would you**
13 **please confirm that when you were referring to**
14 **Appendix O in paragraphs 14 and 15 and throughout your**
15 **prefiled testimony, you are, in fact, referring to the**
16 **direct economics impact study prepared by Mr. Schatzki**
17 **in July 1, 2014, which was admitted as Exhibit 156?**
18 A. Yes, I believe those studies are identical.
19 **Q. All right. Turning to -- now to paragraphs 14**
20 **and 15 of your prefiled testimony, what is missing from**
21 **the analysis or approach taken by Mr. Schatzki in**
22 **Exhibit 156?**
23 A. I think at a broad-brush level, the primary
24 response I had to this analysis is, this is what I would
25 term a gross benefits analysis, in that it talks about

1 the benefits associated with a certain economic activity
2 of the calculated benefits, but it doesn't look at the
3 net benefits. So it doesn't take a look at alternative
4 uses, it doesn't take a look at the things you would try
5 to do if you were evaluating it as a public policy
6 agency trying to balance costs and benefits; it just
7 takes a look at benefits.
8 **Q. You indicated earlier that you referred -- you**
9 **viewed Mr. Schatzki's testimony on June 30th, correct?**
10 A. Yes.
11 **Q. During that testimony, Mr. Schatzki discussed**
12 **his response to your critique of Exhibit 156 and**
13 **indicated that he did not think that any of the four**
14 **criticisms that you had made of that study were valid.**
15 **Do you recall that testimony?**
16 A. I do.
17 **Q. Please summarize your understanding of that**
18 **testimony and your response to it.**
19 A. Sure. Actually it's interesting, he grouped my
20 disagreements into four areas, which I would generally
21 agree with, the four areas of disagreement that we had.
22 The first of these was the lease term. What I was
23 trying to point out, where they were forecasting based
24 on a 16-year time period which included the initial
25 ten-year lease plus one five-year extension, they had

1 two five-year extensions as part of the lease options
2 and one year of construction. We were trying to point
3 out that assuming the 16 years was a little bit -- was
4 beyond what you can actually assume, because you didn't
5 have the lease in place that guaranteed you would be
6 operating for that long.
7 I take a look at his argument that that's a
8 reasonable assumption, and it is a reasonable
9 assumption. We typically look at this in more of an
10 underwriting standpoint because we're often working for
11 the public agency and if we were working for a bank, we
12 would take a look at this and say, well, that's not a
13 guaranteed income stream; that's the optional income
14 stream at their expense, but we would be willing to
15 concede the point. I don't think what he did is
16 unreasonable.
17 **Q. And what was his second criticism?**
18 A. His second point is a -- what we thought was --
19 viewed as a double count, which is the income paid to
20 the port. And the income is paid as a combination of
21 lease payments, wharfage fees, a bunch of different fees
22 involved in there, and he's including that as revenue to
23 the port, which you're allowed to use that in IMPLAN if
24 that revenue is new taxes.
25 But the question -- this is actually termed as

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1 both a fee and a lease. A lease is a rent and a rent is
2 not new taxes; rent is payment for an asset. And so
3 it's not actually net new. It's merely -- it's really
4 indistinguishable from paying the rent from a private
5 sector developer or someone else who owns the property.
6 If we take a look at a fee, a fee is a term of
7 art, and a fee in a fiscal impact analysis implies it's
8 a fee for a service, which means it's neutral, which
9 means you're paying for something that is worth this
10 much that's going to cost this much to provide;
11 therefore, it's not a net new revenue generator. So
12 it's a really esoteric issue; it probably doesn't have
13 enormous impact on this model. It's a point we pulled
14 out. I don't actually pull away from the point. I
15 still would defend the point, but I think there's some
16 problems there, but I don't think it's that important.
17 The third one of these is counting indirect
18 impacts as direct impacts, which there's confusion on
19 this a little bit in that increasing iterations of this
20 project, we've basically got more ambiguity as to what
21 the direct impacts they were talking about were. But as
22 far as I can tell, it looks like we've got 149 on-site
23 jobs and 90 off-site jobs which relate to people like
24 pilots and railroad and basically suppliers and
25 contractors working for the facility.

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1 Typically, in IMPLAN, and, in fact, in
2 Mr. Schatzki's testimony he actually refers to what he's
3 talking about, he talks about it being companies that
4 goods and services is providing to the primary industry,
5 which is exactly what this is, and that would be defined
6 by IMPLAN as a secondary impact, not a primary impact.
7 The reason this is important is the way IMPLAN
8 works is you take the primary impact and it ripples
9 through the economy with your suppliers and then the
10 expenditures from that stays in the economy for a lot
11 longer. So the greater you make the initial impact, the
12 greater all the impacts are in total. So if that's
13 miscategorized, it becomes a real issue. Again, they're
14 esoteric issues. This is a fairly important esoteric
15 issue.
16 The fourth one is the alternative uses of the
17 site, which largely there's a footnote on page 5 of his
18 analysis, actually footnote 5, that we sort of laughed
19 about in the office as the get-out-of-jail-free
20 footnote, where I basically say, the port told me
21 there's no alternative uses for this property,
22 therefore, we assumed no alternative uses for the
23 property. So therefore there's no opportunity costs to
24 committing this very significant piece of property to
25 this particular use, which means I have no other

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1 alternative uses for that 16-year period that I could
2 use that site for. This is really where we see the
3 fundamental problem.
4 So the first three I think are somewhat minor.
5 This one is really the big issue, which is if I -- if I
6 can do something else with this site and the City of
7 Portland thinks you guys can do it -- I know the port
8 doesn't think you can do a deepwater facility. If
9 there's other uses for the site, those should be
10 deducted off of it. Again, this is the difference
11 between a gross and a net.
12 If you're doing a fiscal impact analysis, you
13 don't just take a look at the revenue from a site; you
14 take a look at the revenue less the cost incurred to
15 serve that facility. That's your actual fiscal impact.
16 Economic impact is you've taken a scarce
17 resource, a fairly large piece of industrial property --
18 which I could bring clients who would be willing to
19 develop that property on other uses -- and have
20 basically taken it off the market so there's no other
21 alternative use to it. So you count all the net impact
22 as if either it's a clear field development or it is
23 a -- is the proposed facility. And that's not the
24 choice.
25 The choice is basically there's alternative uses

1 for that facility which I'm assuming is why the port
2 actually controls the property because they think
3 there's alternative uses for it at some point.
4 **Q. So typically, how would you deal with**
5 **alternative uses --**
6 A. Well, we have conducted --
7 (Simultaneous discussion interrupted by
8 reporter.)
9 BY MS. LARSON:
10 **Q. I will ask the question again.**
11 A. Sure.
12 **Q. Typically, how would you look at and analyze**
13 **this issue of alternative uses of a site?**
14 A. We would take a look at an expected value of
15 outcome. So you have a proposal, you can run an IMPLAN
16 analysis, or whatever other type of analysis used on
17 that proposal, to identify what you think the economic
18 benefits are associated with that project.
19 Then you have to take a look at an alternative.
20 What's my alternative use for that site? What would the
21 economic impacts of that alternative use be? And what's
22 the value then, my net value?
23 So if I've got economic benefits in 16 years, in
24 this case $1.1 billion estimated by Mr. Schatzki, and my
25 alternative is worth $750,000, my actual net is 350 --

1 sorry, $350 million, not 350,000. So my net is
2 $350 million, and that's how I would take a look at
3 identifying what the net impact is. And I think that's,
4 from a policy standpoint, the appropriate way to take a
5 look at this.
6 **Q. During his testimony on June 30th, Mr. Schatzki**
7 **also discussed two studies that you performed in 2013**
8 **about development yield in Downtown Vancouver. Those**
9 **were -- he discussed Exhibit 5909, which was Johnson**
10 **Economics, Predicted Impacts on Development and**
11 **Redevelopment in Downtown Vancouver, and Exhibit 5913,**
12 **Johnson Economics, Estimated Economic & Fiscal Impacts**
13 **on the Columbia Waterfront Development. Do you recall**
14 **that testimony by Mr. Schatzki?**
15 A. I do recall it, yes.
16 **Q. Please summarize your understanding of that**
17 **testimony.**
18 A. I think the important thing of the testimony is
19 something that's been missing with this. Again, when we
20 did these previous analyses, these were evaluations of
21 what potential impacts would be. But there's a huge
22 distinction between both what I think Mr. Schatzki
23 understood between development yield and change in
24 pricing.
25 What we were taking a look at is a drop in

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1 development yield in one case of 30 percent. The other
2 one was somewhat more ambiguous. But development yield
3 doesn't mean that there's a change in pricing of
4 30 percent.
5 What happens in development is -- and this is
6 really an area we spent a lot of time with. Is you can
7 have a very minor impact -- a 5 percent, 10 percent drop
8 in achievable pricing can change development form. So
9 if I have -- if I'm underwriting a project in the
10 waterfront development, perhaps in Vancouver, and I
11 believe my achievable rents for rental apartments are
12 $3.50 a square foot, therefore, I can justify doing
13 high-rise construction because of the costs of that
14 development when I do my pro formas. If I drop a
15 10 percent drop on that and I say, instead of $3.50 a
16 square foot, my actual rents are -- I'm doing 10 percent
17 for easy math -- is $3.15 a square foot, what happens
18 now is my pro forma changes and I change my development
19 outcome. So my highest and best use analysis now says I
20 should do a five-story mid-rise construction over
21 structured parking, which is going to have a yield of
22 about 100 to 150 units an acre, as opposed to 200 to
23 300 units an acre for a high-rise development. So when
24 we talk about development yield, we're not talking about
25 a 30 percent change in price.

1 Over time I've seen the shift in Mr. Schatzki
2 where he started referring to development yield, which
3 to me implied that he started to understand what we were
4 talking about and it was dissimilar, but I do think it's
5 been presented like we're talking about a 30 percent
6 drop in pricing, and that was never what we had done.
7 It was always something smaller.
8 **Q. So when you're referring to pricing, are you**
9 **referring to the price of the land?**
10 A. No. Achievable pricing in rents, that
11 becomes -- achievable pricing for housing or office is
12 really what drives everything else, land values and
13 everything else. So when you have a drop in
14 perceived --
15 JUDGE NOBLE: Mr. Johnson, I have to
16 interrupt you and ask you to slow down a little bit.
17 THE WITNESS: Okay.
18 A. So when you have a drop in pricing, it affects
19 everything. It affects what you can underwrite as far
20 as development form, and then that also affects how much
21 you can pay for the land and what is the land worth.
22 So if I can take a 10 percent drop in pricing, I
23 may see a 50 percent drop in development yield and I may
24 see a 60 percent drop in land prices. That is not
25 atypical. You're talking about the delta you're

1 measuring which is just achievable pricing but has a
2 very profound affect throughout the entire stack of how
3 a development is put together.
4 BY MS. LARSON:
5 **Q. So is it correct to say that in Exhibits 5909**
6 **and 5913, you predicted a 30 percent drop in real**
7 **property values?**
8 A. The 30 percent drop in real property values is
9 property yield. So we didn't predict a 30 percent drop
10 in pricing. We just predicted a 30 percent drop in
11 actual yield, which means how much we actually built on
12 it; what it was worth when it was done.
13 So if you built out that project at a much lower
14 density, you would get a much lower yield. Wouldn't
15 reflect that your pricing per unit had changed that
16 much; it would reflect a minor change in pricing had a
17 profound change in outcome.
18 **Q. Have you changed the opinions in your**
19 **development yield studies as a result of Mr. Schatzki's**
20 **testimony?**
21 A. We haven't. We actually haven't been taken that
22 forward anyways. This was submitted by somebody else
23 from something else we had done previously. But there's
24 nothing in that study that we would necessarily change.
25 We would probably go back and take a better look,

1 because we've done a lot more research on impacts, and
2 evaluate different impact pieces, but I think the work
3 is fine. It's just being taken out of context and taken
4 away that is misread.
5 **Q. During his testimony on June 30th, Mr. Schatzki**
6 **also explained his assessment of potential impacts on**
7 **property values along the rail lines that would be used**
8 **for the Vancouver Energy project.**
9 A. Yes.
10 **Q. Do you recall that testimony?**
11 A. I do.
12 **Q. Please summarize your understanding of that**
13 **testimony.**
14 A. Well, Mr. Schatzki goes through and points out
15 what we would completely agree with them on if there's
16 no good, direct studies that really deal with this
17 situation that we could apply to it.
18 Whenever we start this type of analysis, we do
19 the same thing I'm assuming he does, which is you go out
20 and take a look at all of the literature and try to see
21 if someone's done the study which saves you money and
22 time that really applies exactly to what the situation
23 you looking at is.
24 In this particular situation, we're talking
25 about an existing freight line that has a marginal

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1 increase in freight traffic and has a change in the
2 nature of freight traffic with a higher percentage of
3 hazardous freight.
4 So if we take a look at the research, there's
5 very little in there that's any good. And, again,
6 there's lots of economic research out there. There's
7 not a lot of good economic research out there. So if
8 you go through and do your research, what you find --
9 and we found a lot of the same studies. We found a few
10 studies as well that he didn't put as much weight in,
11 which I understand he has a preference for hedonic
12 modeling, which I think is excellent modeling. It can
13 be done incorrectly, but I do think it's the right
14 development form. But they're very rare to find so it's
15 hard to find people who have really done good hedonic
16 studies because they require a lot of data and they're
17 quite costly to do.
18 So he came up with the conclusion that said it
19 was somewhere between zero and 1.5 percent impact on
20 pricing within a certain proximity or radius to the
21 tracks. And he took that -- and that was based on
22 studies that looked at one aspect of what this project
23 is, which is increased cargo traffic. It did not look
24 at increased or change in nature of cargo traffic
25 dealing with hazardous.

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1 We, through a few more studies, took a look at
2 the hazardous. In fact, some of the studies I thought
3 were really very well done. One of them that he
4 dismissed, are nuclear waste shipments that really
5 took --
6 **Q. I'm going to stop you there for a minute.**
7 MS. LARSON: Your Honor, the study that he's
8 referring to is Exhibit 4011, which the Port had
9 objected to and has now withdrawn that objection and
10 everyone else has stipulated to its admission, so I
11 would move its admission.
12 JUDGE NOBLE: I see. 4011 will be admitted.
13 MS. LARSON: And similarly, the Port had an
14 objection to 4015, which is a related study, and that
15 objection has also been withdrawn and I move its
16 admission.
17 JUDGE NOBLE: 4015 will be admitted.
18 BY MS. LARSON:
19 **Q. All right. So, Mr. Johnson, I believe you were**
20 **referring to 4011, which is a study by K. Gawande,**
21 **G-a-w-a-n-d-e.**
22 A. I'm glad you took a shot at --
23 **Q. I have no idea.**
24 MS. LARSON: Would you please pull up
25 Exhibit 4011.

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1 A. This is actually a study -- I guess I should
2 wait till we pull it up.
3 BY MS. LARSON:
4 **Q. I believe it's Exhibit J to your -- in your**
5 **binder.**
6 A. All right. This study was interesting in many
7 factors. One is it's a study that looks at -- it's
8 basically an impact as associated with hazard alone as
9 opposed to freight traffic. They're only moving once a
10 year. So you have one train a year. So it's not an
11 increase in freight traffic. It's a perceived impact in
12 hazard, which is unique in that it actually sort of
13 isolates that one issue.
14 The hazard, of course, is different between
15 nuclear and, you know, a crude train, crude-by-rail
16 facility, but a lot of times they're similar, I mean.
17 And so the issues we were trying to get -- to find some
18 studies that talk about the issues of hazard. Again,
19 when he said zero to 1.5 percent, that's --
20 Mr. Schatzki, that's based on one element of the change
21 we're trying to model here, which is increase in
22 traffic.
23 The second piece we're trying to model then and
24 onto it, there's an additional -- we would posit that
25 there's an additional potential impact associated with

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1 hazard, so is there anyone that studied hazard.
2 And in this case, this is a fairly -- in fact,
3 exceptionally well-done study. If you're used to
4 reviewing these studies, they did a great job. They did
5 a previous study, the first one that they had done,
6 which was not as well done, and the second one was
7 almost an apology for that, where they did it better.
8 What's interesting about the study, not only
9 that it found a fairly significant impact associated
10 with hazard, but it also showed a sustained impact
11 associated with hazard that's carried on through a
12 decade. So it's not a one-time thing that they were
13 cornered about it, then people felt more comfortable
14 over time; it was a long-term trend that basically has
15 been resilient.
16 **Q. So after your review of the literature and**
17 **including Exhibit 4011, what was your -- what is your**
18 **predicted range of impacts on property values along the**
19 **rail line?**
20 A. We -- trying to reflect the uncertainty in the
21 analysis that we put in our testimony, we put a very
22 large bracket in how we did it. We took a look at a
23 1.5 percent, and we took that as a floor, not a ceiling.
24 Because 1.5 percent is only from freight. And, again,
25 we have a hazard impact above and beyond that. We

1 didn't -- while we found it compelling in many of the
2 studies that there is a significant risk associated with
3 hazard, I think that's intuitive as well, we didn't feel
4 like we could actually put a number and say, look, it's,
5 you know, 6.3 percent.
6 So what we did is we ran -- we ran numbers with
7 an assumed impact of 1.5 percent, at 5 percent and
8 7 percent, which largely covered the range of impacts we
9 thought would be in that range. We don't have a strong
10 opinion of where they would be, but we would assume it
11 would be somewhere within that range.
12 **Q. I would like now to turn to paragraphs 28 to 30**
13 **of your prefiled testimony regarding oil pricing.**
14 A. Yes.
15 **Q. Would you please explain the research that you**
16 **performed and the sources you consulted to arrive at the**
17 **opinions in these paragraphs.**
18 A. The pipeline one is based off just some articles
19 we read from the Manhattan Institute from June of 2013.
20 A lot of the data is just coming directly from EIA,
21 which is a source both Mr. Schatzki and Mr. Goodman have
22 repeatedly cited. The graphics come right off their
23 website. In fact, they still have the URL if you want
24 to re-create them at the bottom of the graphics. If you
25 request them, to track, you know, West Texas

1 Intermediary versus Brent Crude Prices, for that time
2 frame, you'd come up with these numbers.
3 **Q. So could you just explain again who the EIA is?**
4 A. EIA is an agency that basically is a government
5 agency that just collects this data. I don't think
6 anyone contends that there's a particular bias in the
7 data; it's just data.
8 **Q. So the graphs that you prepared in Figures 1**
9 **through 3, did you manipulate that data, or did you just**
10 **present it in graphic form?**
11 A. Actually, 2 and 3 -- 1 was actually -- took
12 right off their website. Two and 3 is actually my
13 graphic, but just because we thought it looked better
14 than what they take off. We can download the data in
15 Excel files and then just make your own graphic out of
16 it, and so we did that.
17 **Q. So you already referred to the fact that**
18 **Mr. Roach and Mr. Schatzki and Mr. Goodman also relied**
19 **on data from the US Energy Information Administration.**
20 **Is this the type of information that experts in your**
21 **field typically rely on?**
22 A. Yeah, all of us used it. If you're looking for
23 this data, there's not a lot of sources and this one's
24 free, so yeah.
25 **Q. Since you prepared your prefiled testimony, have**

1 you reviewed additional information related to the
2 opinions in paragraphs 28 through 30?
3 A. We've taken a look at some of the -- we took a
4 look at Mr. Goodman's most recent graph he posted
5 yesterday. We get updates on oil prices constantly
6 because we're monitoring this for a lot of different
7 reasons, and it's almost daily that we get an update or
8 two, you know, where the crude prices are going and what
9 the shale field productions are.
10 MS. LARSON: Your Honor, there had been an
11 objection to these paragraphs, and given this
12 foundation, I ask the testimony in paragraphs 28 through
13 30 of Mr. Johnson's prefiled system be allowed.
14 JUDGE NOBLE: The objection is now
15 overruled. I had asked that it be further supported
16 with more foundation and I find that it has been.
17 BY MS. LARSON:
18 **Q. All right. Mr. Johnson, would you please now**
19 **briefly summarize the opinions in paragraphs 28 through**
20 **30 for the council.**
21 A. Well, in summary, our pieces -- this is a very
22 dynamic market and the economics of both production and
23 shipping changing dramatically. And one of the reasons
24 we point this out is, since we're looking at
25 socioeconomic impacts and we're doing forecasts that are

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1 implying a -- what we've called insignificant figures, a
2 level of precision that nobody's comfortable with.
3 While Mr. Schatzki's analysis might say
4 1.15 billion or 1.1 -- whatever it is, those are numbers
5 that no one has great comfort in obviously because we're
6 not quite sure what those numbers are. We don't know
7 what production levels are going to be. We're not sure
8 what's going to happen.
9 And the reason we pull this out is, most of the
10 planning for this, we initiated this project -- or we
11 initiated looking at this project, crude prices were
12 much, much high than they were. At that point in time
13 our early comments were, you know, this is a volatile
14 market. You should be tracking this market. There's a
15 lot of things that can go wrong. There's a lot of
16 reasons why you may not realize the forecasts that
17 you're incorporating and pretending that you have great
18 confidence in, because the market changes rapidly.
19 Subsequent to that earlier work we had taken a
20 look at, the market collapsed, now it sort of quasi
21 recovered, but it's recovered to a level that's less
22 than half of where it was when these things were
23 initially planned.
24 We point this out primarily because if we're
25 looking at this from a risk factor, if you're taking a

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1 look at economic impact, you should be taking a look at
2 expected values which is what we think will actually
3 happen.
4 So if I'm taking a look at -- it's almost your
5 Vegas odds thing. I say, look, if everything goes
6 right, everything goes according to form, I would expect
7 this impact, but there's a fairly high probability that
8 it will not go according to form. In fact, there's a
9 lot of information that's come out in the last year or
10 two that would give me great doubt that it's going to go
11 according to form and that the production levels would
12 be consistent as they were initially predicted. A lot
13 of things have changed. A lot of things will continue
14 to change.
15 This is a project that's being forecast over a
16 15-year time frame riding a roller coaster and we're
17 pretending that we know things that we don't know. And
18 the reason this is in here, that I want people to
19 understand, that when you're dealing with commodity
20 flows, take a look at all sorts of places. We've taken
21 a look at the liquified natural gas, which used to be at
22 import facilities when they tried to initially permit
23 those; now they're export facilities because the change
24 in the nature of what's going on. Things change a lot.
25 And so as we take a look at forecasts over this horizon,

1 there's a very high probability that they will not be
2 remotely close to what is being forecast, and it should
3 be understood from a policy standpoint that this is a
4 level of precision that you don't have.
5 **Q. All right. I'm going to switch topics now.**
6 MS. LARSON: Would you please pull up
7 Exhibit 158, which is Mr. Schatzki's hedonic study
8 statistical analysis.
9 BY MS. LARSON:
10 **Q. Are you familiar with this study, Mr. Johnson?**
11 A. I am.
12 **Q. You indicated that you also had reviewed**
13 **Mr. Schatzki's testimony regarding Exhibit 158 on**
14 **June 30th; is that correct?**
15 A. Yes, it is.
16 **Q. During that testimony, Mr. Schatzki stated that**
17 **based on the work documented in Exhibit 158, there was**
18 **no statistically significant impact on property values**
19 **in the Vancouver area as a result of the announcement of**
20 **the Vancouver Energy project. Do you recall that**
21 **testimony?**
22 A. I do.
23 **Q. Please summarize your understanding of that**
24 **testimony.**
25 A. Well, Mr. Schatzki did a hedonic modeling

1 exercise, which is provided in exhibit -- or summarized
2 in an exhibit, at which point he tried to take a look at
3 sales prices before and after announcement or general
4 understanding that this was being proposed and to see if
5 he could discern a statistical shift in pricing
6 associated with that announcement.
7 **Q. Do you have an opinion or a response to that**
8 **testimony?**
9 A. Yeah, we took a look at this testimony. First
10 of all, this is a study that would typically never be
11 done. You don't do these types of studies on
12 announcements. It's not a fact. There's a lot of
13 things announced that are not facts. And then the
14 degree to which people start to understand the
15 implications of the announcement could take some time as
16 well.
17 So first of all, the study itself is odd that
18 it's done when it's not an actual thing. I think if
19 people living in that community or are understanding the
20 history of the politics in the region may feel that this
21 has a very low probability of occurring, and it's hard
22 to know how they assess that. So he's looking for an
23 impact I think would be very hard to discern in any case
24 because I'm not sure it would be fully realized.
25 Secondarily, taking a look at the actual details

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1 of the model, there were a lot of issues we had with the
2 model. First of all, it had poor spatial variable. It
3 used ZIP codes. ZIP codes in this particular area don't
4 make a lot of sense. It included Fruit Valley, and our
5 understanding is Fruit Valley, there's not going to be
6 full oil trains from this facility going through Fruit
7 Valley. So it didn't seem like that made any sense to
8 include that particular area.
9 There was no variable to account for Columbia
10 River frontage or views, which, when you take a look at
11 hedonic modeling, what you do is you try to identify all
12 the things that would impact price so you can take those
13 out so you can understand what you can attribute to your
14 other cause. So they have things like number of
15 bedrooms and square footage, the spatial variable is a
16 neighborhood. So what's my neighborhood variable, how
17 much -- so I understand what the pricing should be based
18 on that neighborhood. And I should probably explain
19 that in more detail. That's why I said the spatial
20 variable is wrong and the ZIP codes include a lot of
21 pricing variability, much more than we would typically
22 be comfortable with in an analysis. So we haven't
23 accounted for all those things.
24 But above and beyond that, this rail line runs
25 along the Columbia River which has Columbia River

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1 frontage and views -- significant views from a lot of
2 different areas, and that should have at some point been
3 accounted for, because that clearly has an impact on
4 pricing of housing. And so typically in a hedonic
5 model, you would have done those things.
6 JUDGE NOBLE: Mr. Johnson, you're speeding
7 up again.
8 THE WITNESS: Sorry.
9 A. There's a time variability issue as well. He
10 used for a time thing, the monthly pieces and the
11 quarterly, which helps us understand seasonality. We do
12 understand prices fluctuate by seasons or certain
13 seasons where there's more activity and the prices go
14 higher, they go lower.
15 What's missing is this time period is from 2007
16 until relatively recently, which there's an awful lot of
17 noise as far as changes in home prices within that
18 period that are completely unrelated to the rail line,
19 and you have to identify that. And basically what he
20 should have done is included some sort of dummy variable
21 like a Case-Shiller type variable, which takes a look at
22 the actual change in the overall market and applied to
23 changes in home prices.
24 So even if I have a pricing impact that's
25 negative, but I'm in a market that's going up 7,

1 8 percent a year, which is what the Portland metro had
2 during that period, it's really hard to isolate out what
3 I think is going to be a relatively small impact in a
4 market with an awful lot of noise and upward momentum
5 related to the -- how hot that market has been.
6 BY MS. LARSON:
7 **Q. Does Mr. Schatzki's testimony or the study**
8 **presented in 158 -- Exhibit 158, change your opinion**
9 **that the Vancouver Energy project, if built and**
10 **operated, will result in negative property values along**
11 **the rail line in a range of 1.5 to 7 percent?**
12 A. It does not, no. And I applaud him for doing
13 the studies, trying to do something, because he knows
14 there's a gap in the analysis system. There's just --
15 this isn't the time you can do a study and I do think
16 he'd probably specify it better if he had more time.
17 MS. LARSON: No further questions.
18 JUDGE NOBLE: Cross-examination?
19 MR. DERR: Thank you, Your Honor.
20 CROSS-EXAMINATION
21 BY MR. DERR:
22 **Q. Mr. Johnson, my name is Jay Derr. I'm one of**
23 **the attorneys representing the applicant and I have just**
24 **a couple of questions for you. I'd like to start with**
25 **your prefiled testimony, paragraph 28.**

1 A. Yes.
2 **Q. Which now as I understand it you've laid a**
3 **foundation and it has been admitted. And I would like**
4 **to -- it sounds like from that testimony, your view is**
5 **that the crude-by-rail project is not needed or is**
6 **likely -- the need is likely to decline because**
7 **transportation of crude oil to PADD 5 will eventually be**
8 **replaced by pipeline infrastructure. Can you explain**
9 **what the basis of that opinion is?**
10 A. The pipeline infrastructure is not only for
11 PADD 5 from -- the issue you've got, if you're looking
12 at the economics from the production side from the
13 Bakken, is what is my actual price paid at the wellhead,
14 because that's who I'm going to sell to.
15 If I have pipeline infrastructure that has
16 increased that allows me to take it to other markets,
17 and the overall price less transportation costs is what
18 I get at the wellhead, so if I'm selling it in the Gulf
19 Coast and I'm getting, you know, $50 a barrel, crazy
20 math, and my transportation costs is $5 a barrel, am I
21 getting $45 at the wellhead? If I'm taking it from the
22 wellhead and I'm taking it by rail, do I want to sell it
23 by rail to the West Coast because the West Coast can
24 competitively pay the price less transportation costs to
25 purchase my oil at the same price I can sell it to other

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areas.

So the issue on pipeline infrastructure is pipeline infrastructure gets better and there's a discussion of expanding the pipeline infrastructure through Canada as well. There is lower cost alternatives for me to ship that oil. So if there's lower cost alternatives for me to ship that oil, I am indifferent where I sell it to. What I'm indifferent to is how much they're paying me at the wellhead for that oil and how much I can actually get for that oil.

So if I can ship it to places at a lower cost thing, it doesn't have to be -- the shipper -- or the person working the shale formation probably doesn't care whether California has adequate crude supplies. What they care about is how much people can afford to pay and how much they can support wellhead prices and that's where additional infrastructure and pipeline really favors a shift in where that production's going to go to final markets. It may be less of the production in the final market with lower price points goes to places that have higher transportation costs, which would be the crude-by-rail.

Q. So let me see if I can understand this.

A. Sure.

Q. Simple answer to a simple question. Basically

1 that comment refers to pipeline infrastructure taking
2 the crude someplace else, not to the state of
3 Washington, not to PADD 5?
4 A. It can take it either. It can either go
5 through -- up through Canada or down to the Gulf Coast.
6 But, yes, different places. I'm not proposing that
7 there's a pipeline proposed that would take it to
8 California.
9 **Q. Okay. Thank you. Switching gears.**
10 MR. DERR: Could you pull up Exhibit 1,
11 page 214.
12 BY MR. DERR:
13 **Q. This is the site plan that we've been using of**
14 **the project in the various areas. When they get it up,**
15 **I want to be sure you're familiar with this exhibit.**
16 MR. DERR: You may have to blow it up for
17 him to see it. We actually have it a form board
18 somewhere, but I'm not actually sure where the form
19 board went.
20 BY MR. DERR:
21 **Q. Are you familiar with this exhibit? Have you**
22 **seen this site plan before of the --**
23 A. I have.
24 **Q. So am I correct in explaining this is -- the**
25 **boxed areas basically identify the main areas of the**

1 project, the rail unloading area, the boiler area, the
2 storage area, the dock, the unloading area, or the
3 loading area, and then there is pipeline area kind of
4 that connects. Is that an accurate characterization of
5 this exhibit?
6 A. Seems like it, yes.
7 **Q. So my question, you talk about there -- I**
8 **believe your testimony was, you could bring other**
9 **clients to the port to use these properties. First**
10 **looking at the dock area --**
11 A. Yes.
12 **Q. -- don't marine -- clients who are doing marine**
13 **loading and unloading, don't they typically need a**
14 **laydown area for what they're loading and unloading?**
15 A. They do. In fact, we've -- yes, they do.
16 **Q. And so isn't -- doesn't this graphic show there**
17 **is no laydown area within the leased area for this**
18 **project, it's simply the dock?**
19 A. You have room for a break bulk facility in
20 there, though. This has been evaluated for -- by
21 another group as potentially for a break bulk.
22 **Q. Break bulk that would store the material right**
23 **on the dock?**
24 A. It's transfer. You take rail in and then you --
25 longshoremen move it and then transfer it to the ships.

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1 **Q. So you'd need additional -- my next question**
2 **relates to the rail unloading area. That area basically**
3 **covers the tracks and the unloading shed, but does not**
4 **include the center of the loop. So is it your testimony**
5 **that there are other clients that can use the tracks as**
6 **the laydown area for the marine cargo?**
7 A. No.
8 **Q. And how about the area that's leased for the**
9 **pipeline? The long skinny corridors that connect the**
10 **areas, are there other tenants that could use those long**
11 **skinny pipeline corridors?**
12 MS. LARSON: I'm going to object to this
13 line of questioning. Mr. Derr's questions are premised
14 on the assumption that, in fact, this infrastructure
15 exists and is permanent.
16 MR. DERR: No, they don't. They simply
17 identify the areas that are leased which he testified
18 could have alternative uses. And Mr. Alastair's
19 testimony indicated this was the best alternative use.
20 Mr. Schatzki's testimony addressed this issue. I'm
21 simply pointing out the facts of the specific isolated
22 areas that are included in this lease and in this
23 project.
24 JUDGE NOBLE: And the objection is that the
25 improvements have not yet been built and the question

1 seems to assume that they have been permitted to be
2 built?
3 MS. LARSON: Correct.
4 JUDGE NOBLE: I'll overrule the objection
5 and allow the answer.
6 THE WITNESS: I'm actually happy to go after
7 this, then.
8 A. Now that I understand what you're talking about,
9 when we talk about alternative uses, it would be that it
10 is not in place so therefore this site is freely
11 available to be developed for another use.
12 I don't question that the ports have made a
13 determination this is their highest and best use. That
14 doesn't mean it's their only use. So if my highest and
15 best use means it's going to pay me $5 million a year
16 and my secondary use will only pay me three and a half
17 million dollars a year, then, yes, $5 million a year is
18 my highest and best use. The question is, what is my
19 marginal impact, which is only one and a half million
20 dollars. Again, I'm making numbers up on this. But the
21 alternative use for this is, if this facility was not
22 put in place, what else could I do with this site as
23 configured, which doesn't include a lot of the
24 infrastructures he's talking about, including the
25 pipeline infrastructure.

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1 MR. DERR: I have no further questions.
2 Thank you.
3 JUDGE NOBLE: Ms. Larson, do you have any
4 redirect?
5 MR. BARTZ: Your Honor, excuse me.
6 JUDGE NOBLE: Good morning, Mr. Bartz. Of
7 course.
8 MR. BARTZ: Good morning.
9 JUDGE NOBLE: I don't know why I always
10 forget you.
11 MR. DERR: Because he usually sits in the
12 back row.
13 JUDGE NOBLE: That is it. It really is.
14 MR. BARTZ: May be the tail on the dog, but
15 we're pretty important too. Thank you very much, Your
16 Honor.
17 CROSS-EXAMINATION
18 BY MR. BARTZ:
19 **Q. Good morning, Mr. Johnson. My name is Dave**
20 **Bartz and I represent the Port of Vancouver USA. I've**
21 **got a couple of questions.**
22 A. Sure.
23 **Q. In your preparation for your testimony here**
24 **today, did you review Alastair Smith's testimony?**
25 A. I did not.

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1 **Q. In Exhibit 4010, in your testimony you mentioned**
2 **a study that ECONorthwest did about the Port of**
3 **Portland. Do you remember that?**
4 A. I do remember that.
5 **Q. And you talked about how it -- the statement you**
6 **made in your direct testimony was the Port of**
7 **Portland -- that study showed that the Port of**
8 **Portland's Terminal 2 is necessary for -- and the port**
9 **doesn't have enough land for its mid- and long-term**
10 **needs; is that correct?**
11 A. That is true, yes.
12 **Q. Are you familiar with -- that study was in 2012,**
13 **correct?**
14 A. Yes.
15 **Q. And today's 2016. Are you familiar with the**
16 **port's economic use, the Port of Portland's economic use**
17 **of Terminal 2 since that study?**
18 A. You mean the container port?
19 **Q. Yeah, Terminal 2, yes.**
20 A. Yes.
21 **Q. And what's your understanding of how well it's**
22 **been used since 2012?**
23 A. Yes, they've not been utilized. It has
24 certainly not gone by forecasts.
25 **Q. And have -- are you familiar with the**

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1 stevedore -- is a stevedore necessary to operate a
2 terminal like that, Terminal 2, a container port
3 terminal?
4 A. You know, I don't know. This isn't -- the
5 port -- terminal operations are not a specialty; that's
6 why I refer to other people's support.
7 **Q. Okay. For your testimony today, did you study**
8 **the break bulk market along the Columbia River**
9 **specifically?**
10 A. I have not, no.
11 **Q. Are you familiar with the usual length of a**
12 **break bulk contract?**
13 A. No.
14 **Q. Did you talk to anyone at the Port of Vancouver**
15 **to prepare for this testimony?**
16 A. I did not.
17 **Q. Did you talk to any of the Port of Vancouver's**
18 **tenants to prepare for this testimony?**
19 A. No.
20 **Q. In your prefiled testimony, there's no evidence**
21 **of any specific alternative available for use of this --**
22 **the leased areas as identified on the exhibit on the**
23 **screen; is that correct?**
24 A. Right, I did not identify a specific
25 alternative.

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1 MR. BARTZ: No further questions. Thank
2 you.
3 JUDGE NOBLE: Anyone else cross-examining?
4 MR. DERR: We've exhausted our side of the
5 case.
6 JUDGE NOBLE: Ms. Larson?
7 MS. LARSON: No redirect.
8 JUDGE NOBLE: All right. Council questions?
9 I'm looking to my right again.
10 Mr. Snodgrass?
11 MR. SNODGRASS: Good morning. Just a couple
12 of questions. The -- well, first, in regard to the
13 study regarding the nuclear waste. To what extent in
14 that study, and it's only just become available to us
15 and I'm trying to look at it but I can't tell too much.
16 To what extent does that -- was there any
17 assumption that -- or in the survey questions that
18 generated it, that there would be a possibility of
19 spillage of nuclear waste? Was there any history or
20 assumption of that? In other words, how analogous is it
21 to the current situation where there is a history of
22 incidents?
23 THE WITNESS: Yeah, there was no history
24 because they haven't been moving nuclear waste a lot, so
25 there wasn't great history out there. There clearly was

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1 a perception and, you know, there's a stigma obviously
2 to nuclear waste. So the impact areas they had were
3 actually quite wide, much wider than you would see with
4 an oil train, obviously, because radiation would have a
5 much broader impact.
6 MR. SNODGRASS: Thank you. In general, I
7 mean, one of our -- we have pretty broad statutory
8 charges in terms of looking at a range of impacts and
9 giving -- I don't remember the language exactly, but
10 considering issues that can't be fully quantified. And
11 so in terms of the economics here, that seems to present
12 a number of challenges and you sort of spoke from an
13 economist perspective about really needing the data.
14 THE WITNESS: Right.
15 MR. SNODGRASS: I guess, what advice would
16 you give us -- and I don't know if we can come up with a
17 page number, but just in thinking about the issue of a
18 hazard in the rail corridor, particularly given the
19 Mosier incident, I was sort of struck by the testimony
20 of the fire chief of Mosier, who said it really changed
21 his thinking of, yes, it could happen here, you know,
22 and this is somebody who was obviously involved in risk
23 planning and so should have a broad awareness of that.
24 Do you expect residential markets locally
25 will respond, even if it's not a dramatic uptick in

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1 negative pricing locally based on Mosier?
2 THE WITNESS: I think the Mosier would have
3 brought it to attention. Mosier didn't get as much
4 attention as, you know, some of the previous, more fiery
5 incidents that have gone on. If you'll read what's
6 going on in the market -- and, again, perception is the
7 market. We talked about impacts, and that's why it was
8 interesting with the nuclear studies, is they thought,
9 well, after, you know, 10, 15 years of no incidents,
10 that people dropped that risk discount and they haven't.
11 In fact, it actually increased marginally. Not that it
12 meant a lot. But it had pretty much stabilized.
13 So if we take a look at the nature of the
14 cargo, we would posit that the nature of the cargo is
15 going to increase the number. So, again, we take the
16 1.5 percent as a base, not a top. If you're trying to
17 talk about if you need to evaluate this -- and, again,
18 it's a difficult task because you guys are asked to
19 evaluate things that are difficult to quantify. In
20 economics we pretend to quantify things that we can't
21 quantify, so we have a lot of math, but it's still a
22 social science. So there's a lot of math on
23 assumptions.
24 If we take a look at this, the reason I did
25 a range of assumptions is primarily to point out not

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1 only what the potential impacts could be depending on
2 what you want to buy on your assumptions, but also the
3 fact that it's just discounted. It's talked about it's
4 negligible. 1.5 percent is negligible. 1.5 percent is
5 billions of dollars. It's a lot of impact. It's not
6 negligible when you take a look at it.
7 And if you take a look at -- this actually
8 came up, I found it interesting, in Mr. Goodman's
9 testimony, if you take a look at from the position of
10 the City of Spokane, which we also took a look at, City
11 of Spokane gets no economic upside. They just get oil
12 trains that run through. They get negatives only, so
13 their balancing act is easy; it's all negatives.
14 MR. SNODGRASS: Just along the lines of
15 things if we should consider -- and I don't know whether
16 we're able to price them or not -- well, for instance,
17 delay from railroad downtime, gate downtime, is that
18 something that should be part of the --
19 THE WITNESS: Yeah, we talked -- a lot of
20 stuff we did -- again, I don't think we had anywhere
21 near the budgets that they had on the proponent's side
22 to evaluate this stuff. So a lot of our work was
23 saying, you guys should take a look at this, this is
24 relevant, you should understand this and this should be
25 part of it, of what your evaluation is. And so a lot of

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1 it is almost a call like, look, you're discounting this
2 as insignificant except it's really significant and you
3 should take a better look at it and it's deserving of
4 more analysis.
5 MR. SNODGRASS: Should also -- you know, I
6 understand economic models, projections I've seen in the
7 past, it's certainly tax revenue generated and is fully
8 appropriate. To the extent in this case that we look at
9 the negative aspects and probability and consequence of
10 incidents, you know, there's been a lot of discussion
11 about what will the public cost be. To the extent the
12 private costs either to the applicant, the railroad,
13 shippers, others, from an incident, to the extent those
14 diminish tax values, at least in the state of Washington
15 or locally, should those be considered as part of the
16 negative impacts?
17 THE WITNESS: Well, yeah, and negative
18 impacts and diminished values -- keep in mind -- if you
19 took a look at some of these properties, and if you take
20 a 1 and a half percent impact on a $300,000 home and it
21 drops the value of the home $6,000, it probably won't
22 change your property taxes. The assessor is not going
23 to pick it up. He won't pay attention to it. Maybe,
24 but probably not. But what happens is people use their
25 home equity for a lot of things. That's purchasing

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1 buying power, and that is how well they feel. It's
2 almost impossible to, you know, calculate what the
3 wealth effect of that would be, but there would be one.
4 Because people would feel less well off.
5 The other thing we talk about, the fiscal
6 impact, and we've done a lot of fiscal impact -- and
7 fiscal impact should almost always be net. We will do a
8 gross if the jurisdiction will let us get away with it.
9 And again, I work for proponents more than I do for
10 jurisdictions. So we're happy to just tell you here's
11 how much money we're going to pay you. The real issue
12 for jurisdictions is how much money you're going to cost
13 us relative to what you're going to pay us and is that
14 adequate and what is my actual net benefit, because
15 everything I do and if I build a home, if I build an
16 apartment building, if I build an office building, I
17 build a factory, I have both revenues associated with me
18 as well as costs, and so an agency evaluating it should
19 be looking at what the costs are as well and balancing
20 those.
21 MR. SNODGRASS: Thank you.
22 JUDGE NOBLE: The court reporter is looking
23 at me again.
24 THE WITNESS: Too fast.
25 JUDGE NOBLE: That means I need to tell you

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1 to slow down.
2 Any other council questions? Mr. Paulson?
3 MR. PAULSON: Mr. Johnson, just a couple of
4 questions. Let me -- if I may. Let me get it straight.
5 You don't, I assume, market port properties or anything
6 like that?
7 THE WITNESS: No.
8 MR. PAULSON: Okay. So when you talk about
9 other optional uses and you mention grain, are you aware
10 of any kind of need for grain facilities on the Columbia
11 River in the Northwest?
12 THE WITNESS: We had been working with the
13 Port of Kalama and they just expanded their grain
14 facility, but I think that's going to take a lot of the
15 capacity for a while.
16 MR. PAULSON: Okay. You're probably aware
17 at the same time that United Grain Corporation at the
18 Port of Vancouver significantly expanded their capacity
19 in the last few years?
20 THE WITNESS: I did -- wasn't aware of that.
21 MR. PAULSON: Are you aware that the newest
22 grain facility in the -- I think in the country was
23 built at the Port of Longview six, eight years ago?
24 THE WITNESS: No.
25 MR. PAULSON: Okay. Looking at that map,

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where would you site an office building around the terminal in that location? Around the loop track or next to the steel facility or in the Subaru facility?

THE WITNESS: If you were doing an office building on here?

MR. PAULSON: Uh-huh.

THE WITNESS: Without understanding the details of the analysis and what actual infrastructure is in place, you may put something along the waterfront that's related to industry use. Be more of an industrial use office, but there's a lot of industrial use office out there.

MR. PAULSON: Okay. Are you aware of any other property the Port of Vancouver is in the process of developing along the turn down river from this site for other uses?

THE WITNESS: No. I mean, this -- the hotel -- the old hotel property?

MR. PAULSON: No, down river.

THE WITNESS: No.

MR. PAULSON: All right. No other questions.

JUDGE NOBLE: Mr. Lynch is next.

MR. LYNCH: Good morning.

THE WITNESS: Morning.

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1 MR. LYNCH: Thank you for your testimony
2 this morning.
3 My questions have to do with the alternative
4 use scenario that you've suggested. Do you remember the
5 Port of Portland study in reference to the Port of
6 Vancouver saying that the Port of Vancouver might fall
7 quite a bit short, I'm paraphrasing, in the amount of
8 land needed for containerized shipping?
9 THE WITNESS: I don't remember that detailed
10 point, but I read that study before because we've --
11 we've reviewed it as part of the -- Portland's land use
12 issues.
13 MR. LYNCH: And what -- does it go into your
14 thinking at all, the length of time this land has not
15 been in use?
16 THE WITNESS: No. I mean, the land,
17 particularly when they're owned by port districts or
18 public agencies, will sit in nonuse for long periods of
19 time, different holding cost parameters. If this was
20 held by a private agency or a private person, my
21 expectation is they might have found a productive use
22 for it.
23 MR. LYNCH: I guess I'm not quite sure -- I
24 guess my thinking is the ports are always trying to get
25 tenants where they can.

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1 THE WITNESS: Right.
2 MR. LYNCH: And I'm not quite sure of your
3 answer. Did you -- can you say that again?
4 THE WITNESS: I'm saying that while I would
5 take a look at it and say, yes, it's been vacant for a
6 long time, so the question is will nothing else come
7 along. All vacant sites have been vacant for a long
8 time virtually by definition. So I would take a look at
9 it. I'm just saying it doesn't preclude that something
10 more interesting could be done there, and if the port
11 had made it available in certain terms, potentially
12 something else could happen. And in any case, something
13 should have been evaluated. Even if it's just storing
14 Subarus on it.
15 MR. LYNCH: And I guess one of my questions,
16 then, is when you try to plug in a value, then, for what
17 the -- for the opportunity cost for what they could be
18 doing, I'm just wondering how far you carry out the
19 calculations, because if you say, well, they could be
20 using break bulk storage, and then they need to modify
21 the port in order to do that, in order to do that they
22 have to -- and you can get quite a string down the line.
23 And so I'm just wondering at what -- how do you end up
24 then plugging in a value? Because I'm just thinking in
25 another area of law with -- let's just say, you're

1 trying to figure in child support for somebody who's not
2 working, you just impute minimum wage; you say, well, at
3 least they can get a minimum wage job, but I'm just
4 trying to figure, is there some sort of value, default
5 value that you plug in in a situation like this?
6 THE WITNESS: Yeah, and we didn't put a
7 value in on it. We just said it should be done. If
8 you're going to do a default value, you could just do an
9 appraisal of the site and say, here's what the site's
10 worth, I'm assuming a certain level of return on it for
11 the port, that would be an income issue for the port.
12 If you're trying to get economic activity,
13 you would have to assume a development thing. And maybe
14 the development is some warehouse distribution uses on
15 there. You have to develop a development program that
16 would make some sort of sense and then run those numbers
17 against it. Again, we didn't run the numbers so we
18 don't have a balance. We're saying just merely that
19 numbers should have been run.
20 MR. LYNCH: I'm just wondering at what point
21 does it become speculation?
22 THE WITNESS: It is speculation, as I would
23 think a lot of the forecast is speculation as well.
24 They're more grounded speculation because we have a plan
25 and we have an understanding of what they hope to do or

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1 expect to do. But again, it's a plan of what they
2 expected to do two years ago in a very different market.
3 MR. LYNCH: Thank you.
4 JUDGE NOBLE: Mr. Stone?
5 MR. STONE: Good morning, Mr. Johnson. If a
6 component of a property's value is a scenic view from
7 that property and a new activity is introduced to the
8 neighborhood, but that activity does not affect the view
9 from that property, how could it decrease the property's
10 value?
11 THE WITNESS: The -- if it doesn't affect
12 the view, it doesn't. If you're talking about the
13 hedonic modeling discussion I had? Yeah, the hedonic
14 modeling, what you want to do is, you take a look at the
15 price and then you figure out what are the components of
16 that price, what can I attribute to square footage, what
17 can I attribute to bedrooms, what can I attribute to
18 school districts and all the variables you would
19 typically take a look at.
20 One of the variables that would affect that
21 price would be that it had a view, potentially, or
22 frontage. So if I'm taking a look at a statistical
23 analysis and I'm taking a look at three different sales
24 and one of the sales, maybe in a later year, happens to
25 be a waterfront sale, but I didn't include waterfrontage

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1 as a variable, what it means is I would attribute that,
2 wow, that sold for a lot of money, sale prices must be
3 going up, because I didn't have a variable that
4 accounted for the fact that the reason that price was
5 high was explainable outside of just the time series
6 that was a difference in that price.
7 So when I'm trying do a hedonic model, I
8 want to get as many explanatory variables in there as
9 possible that explains what's going on in the pricing.
10 And when you're running along something like a river,
11 that's a big variable you probably would have wanted to
12 include.
13 MR. STONE: Okay. So I just want to be
14 clear. I thought you were suggesting that the increased
15 train traffic nearby these view properties would in
16 itself decrease the value -- decrease the value of those
17 properties?
18 THE WITNESS: Not from impact of the view.
19 I'm just saying that the view would've been an
20 explanatory factor as to why the price was a certain
21 level. And so when you're running this type of
22 analysis, you want to be able to explain all the
23 variation and the pricing that you can explain outside
24 of what you're trying to find. That's how hedonics
25 work, is you -- I can explain everything else with other

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1 variables that are easily understandable, so what's left
2 over, I can attribute to whatever I think my event is.
3 But since I haven't explained all my variables and left
4 out a really important one, then my hedonic modeling is
5 going to be less effective.
6 MR. STONE: Thank you.
7 JUDGE NOBLE: Any other questions, to my
8 right?
9 Questions to my left?
10 Mr. Rossman?
11 MR. ROSSMAN: Thank you for your testimony
12 this morning. I have questions about a few areas of
13 your testimony and the information you prefiled on your
14 other analysis.
15 And I guess I would like to start with
16 property taxes, and I -- I recall a couple of tables
17 where you showed a property tax loss associated with the
18 potential reduction of property values, but I think your
19 testimony today was you wouldn't expect to see a loss
20 there?
21 THE WITNESS: It's -- you would have a loss
22 and that has actually changed the real market value so
23 it would imply a loss. The question for an individual
24 property owner is would the assessor pick it up or not.
25 They probably would over time, but it would be a while.

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1 So, yes, it's inexact. The theory is that real market
2 value reflects real market value. The practice is
3 there's a little stickiness in the values, the assessor
4 doesn't move them as quickly as you'd like, so it
5 doesn't always occur exactly when that change in real
6 market value would occur.
7 MR. ROSSMAN: Okay. So you do think there
8 would be a loss of tax revenue to the local
9 jurisdictions but it would have sort of a delay?
10 THE WITNESS: Yes.
11 MR. ROSSMAN: Okay. And I just want to
12 clarify. Are you describing that as a net loss to the
13 jurisdiction or an actual loss to the amount of revenue
14 collected by the jurisdiction or just the proportion of
15 that revenue paid by residents in that area?
16 THE WITNESS: Well, it depends on the type
17 of bonding they have. Some are based on millage rates,
18 so it's actually not lost. If you really broke out the
19 thing, some of the bonds just means you've changed the
20 allocation. So when your property taxes -- some go to
21 bond and indebtedness, the revenue would still accrue to
22 the jurisdiction, just the other people would pay a
23 little bit higher for the bonded indebtedness. For the
24 millage rate pieces, that would be a net loss.
25 MR. ROSSMAN: Okay. Are you familiar with

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1 Washington's property tax system at all? It's a little
2 unique, so I guess I'm just wondering if your testimony
3 is sort of informed by our system itself or just
4 generally how property taxes work.
5 THE WITNESS: We have done work in
6 Washington with their property tax system, but they're
7 nominally besides --
8 MR. ROSSMAN: Sorry?
9 THE WITNESS: There could be something I'm
10 missing, and I'm open to what you've got.
11 MR. ROSSMAN: I believe we're relatively
12 unique in that we're a property tax-based system, so the
13 local jurisdiction sets an amount to be collected and
14 then the assessor determines what each property pays
15 into that total.
16 THE WITNESS: So it would be different. So
17 if you're in that type of a situation, what that means
18 is it's lost revenues from those properties and just
19 increased taxes for the remainder of the population,
20 yeah.
21 MR. ROSSMAN: Okay. Turning to the
22 discussion of the sort of primary and secondary impacts
23 in the IMPLAN model, and I have to say I'm a little less
24 familiar with IMPLAN than some other models, but I
25 understand there's typically a number of different ways

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1 to approach input/output modeling. And what I'm most
2 familiar with involves estimating a change in the output
3 by an industry and then looking at what the associated
4 impacts would be.
5 THE WITNESS: Right.
6 MR. ROSSMAN: But it looks like here, the
7 data that was put into the model is some employment,
8 direct employment and then also some annual spending.
9 THE WITNESS: Right.
10 MR. ROSSMAN: And I guess I'm wondering,
11 based on your knowledge of IMPLAN, how does that -- how
12 does the allocation of what's entered affect what comes
13 out of the model in terms of how it sees primary versus
14 secondary impacts, if you see what I mean?
15 THE WITNESS: Yes. In IMPLAN, everything is
16 the inputs. Anybody can run it. But you can make it
17 say lots of things if you put -- like any great model,
18 if you put a different input in, you can get a different
19 output.
20 The issue with the value-added, which is
21 really, you know, it's gross product, that's what you're
22 looking for, the value-added, because that's your impact
23 and that either goes to wages, it goes to profits, to
24 shareholders and it goes to taxes, all of which are net
25 new. And what he did was largely consistent with that,

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1 although we -- I had some -- took issue with some of the
2 things he called direct. I thought they were indirect.
3 And the issue is also with the tax pieces. Is it a tax
4 or is it a fee or is it rent? Because rent isn't
5 value-added, rent is a cost of doing business and
6 shouldn't be included.
7 Again, when you look at the model, there's
8 many ways to do it. You can have a lot of varying
9 outputs because of it. I think we laid out what I felt
10 were the issues that I had trouble with on the modeling.
11 I don't think what he did is necessarily different --
12 necessarily wrong, except I think he did -- he was very
13 careful with his language. Mr. Schatzki I think really
14 understands this model because the things that I pulled
15 out as being issues, he actually identifies in his
16 footnotes as being issues. I relied on this assumption.
17 To me -- and we do a lot of consulting. We love when we
18 can say we relied on an assumption from so-and-so
19 because then you can wash your hands of it and you move
20 forward. It doesn't mean you have faith in the
21 assumption, just means you relied on it.
22 MR. ROSSMAN: Got it. And in terms of
23 the -- sort of the missing analysis of alternative uses,
24 I think I understand conceptually what you're getting
25 at, but I'm wondering is there -- are you familiar with

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1 any sort of standard for how that analysis should be
2 done here in terms of our statutes or WACs that would
3 call for such an analysis?
4 THE WITNESS: Basically -- and, again,
5 traditionally you'll get a gross benefits analysis,
6 that's what people will submit, and then you're supposed
7 to figure out what the net is and make it up on your own
8 knowing that it's something less than the gross. And we
9 didn't go through the analysis where we actually figured
10 out what the net was because, again, we don't know the
11 property nor did we feel it was our role to go through
12 all of that. We just pointed out that it should be
13 done.
14 Now, you can do a full IMPLAN analysis of
15 other alternative use. You can do something simpler and
16 just say this is an investment, a return, so I have an
17 asset that has a certain value, this is what I see it
18 kicked off under this thing, what else could I do with
19 this asset, what other alternative uses there are. You
20 come up with a different program and you say, well, we
21 could have done it with this or this. And I think from
22 a port district, that's probably what you do to some
23 extent anyways. You try to say what's going to give me
24 the best bang for my buck. I've got economic
25 development mandates. What's going to give me the

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1 greatest return?
2 But the greatest return -- you can't just
3 take that number that that return is. You've got to
4 take a look at the net. How much greater is that than
5 my alternatives?
6 Right now the alternative assumption is that
7 the alternative is zero. Which is less than what
8 they're getting now. They're getting revenue on it now
9 just by leasing it to park stuff on it. You know, if
10 you just want to make this a giant storage yard or a --
11 or a ministorage, you could do that too.
12 MR. ROSSMAN: I mean, in terms of additional
13 analysis that should be done to get an appropriate
14 analytical sense of the benefit of this project, storage
15 would be a negligible economic impact?
16 THE WITNESS: Oh, yeah, very little.
17 MR. ROSSMAN: So are you suggesting that's a
18 viable alternative that we should use?
19 THE WITNESS: Well, I threw it out there
20 just because it's silly to say it's zero. Again, you're
21 being provided with a gross impact analysis. You should
22 know that the net is less than that. The degree to
23 which the net is less than that is what confidence you
24 have this alternative use would have some other value.
25 MR. ROSSMAN: Okay. Turning back to the

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1 property value question for a moment. I'm struck by the
2 fact that we have a bit of a natural experiment here in
3 that there's been an increase of crude-by-rail traffic
4 from approximately zero to a certain level and my
5 understanding is that the level of traffic right now is
6 somewhere in the neighborhood of half what the total
7 would be if this project were permitted and that was
8 assumed to be a net increase of trains. And I guess I'm
9 wondering, what would be the time lag that you would
10 expect to start to see those changes in property values,
11 maybe based on the hazardous material study which I
12 haven't had a chance to look at?
13 THE WITNESS: What's interesting is it
14 becomes -- and this actually came out with the hazardous
15 stuff, the nuclear in South Carolina, is it actually got
16 a little greater over time as people understood it
17 happened.
18 While we've had an increase in oil train
19 traffic already, I don't think people are aware of it.
20 Until this fight in Vancouver and Clark County, based on
21 this particular facility came up, people weren't aware
22 that this was even occurring. I think Oregonians -- in
23 Oregon they were very happy because Portland stopped the
24 coal trains, or whatever, and tried to stop the oil
25 shipments to -- going through. I think they were

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1 surprised with the Mosier because they didn't realize
2 they were actually shipping crude-by-rail on the Oregon
3 side of the river. Again, there's a lot of lag between
4 people actually understanding what's going on and
5 perceiving it and incorporating it into their decisions.
6 MR. ROSSMAN: How much lag would you expect?
7 THE WITNESS: If it goes consistent with
8 what we -- the South Carolina one, which had a similar
9 dynamic. You had a bunch of -- a bunch of publicity
10 right away and then over time people became more aware
11 of it. And what happened with that -- what's
12 interesting in their later study is they actually broke
13 out based on socioeconomic issues like education and
14 income, more educated, higher income households
15 incorporated into their decisions earlier because they
16 had a more ready understanding of what it was.
17 The lower income ones actually incorporated
18 later, but put a greater risk premium on where they were
19 more concerned about it. But in that case it took fully
20 in place about three or four years before you actually
21 saw them sort of stabilize what the impact was. So once
22 it started going, it took several years before it
23 actually was incorporated into sort of the permanent
24 pricing dynamic.
25 MR. ROSSMAN: Okay. So fair to say, at

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1 least several years before one would expect to see that?
2 THE WITNESS: Before you get it fully in, I
3 think you see it phasing and then people are aware and
4 understand what it is.
5 MR. ROSSMAN: All right.
6 JUDGE NOBLE: Any other questions, to my
7 left?
8 Mr. Lynch has another question.
9 MR. LYNCH: Just a follow-up about the
10 affect on property values. Your testimony is
11 essentially that the hazardous shipments can affect
12 property values, but that's just a factor in property
13 values; is that correct?
14 THE WITNESS: Yes.
15 MR. LYNCH: So if all else being equal,
16 property values over time would go down slightly is what
17 you're saying?
18 THE WITNESS: You mean if it was just the
19 hazard alone?
20 MR. LYNCH: Yes.
21 THE WITNESS: Yes.
22 MR. LYNCH: But if there's significant
23 growth in the area, if industry is developing, there
24 could be -- that might, in fact, cause property values
25 to rise?

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1 THE WITNESS: Yeah. And Mr. Schatzki
2 pointed out in his testimony that if you have a
3 stronger, more robust economy, then therefore they can
4 increase property values.
5 But keep in mind the magnitude of what
6 you're talking about with this facility. It's like two
7 weeks of growth in Clark County Washington as far as
8 employment numbers. It's not a big number. The county
9 has been adding 8800, 9,000 jobs a year. This is not
10 enough that's going to affect the system in any
11 discernible way. This is a small little piece. Numbers
12 sound big because we're saying over a billion dollars
13 over a 16-year time horizon. You bring that down to
14 annual and you put it against what's actually going on
15 and it's not a big impact. It's a really negligible
16 impact.
17 MR. LYNCH: Thank you.
18 JUDGE NOBLE: Any other questions, to my
19 right? Questions based on council questions?
20 MR. BARTZ: Yes, Your Honor, I have a
21 couple. This is Dave Bartz for the Port of Vancouver.
22 Thank you.
23 CROSS-EXAMINATION
24 BY MR. BARTZ:
25 **Q. Briefly, Mr. Johnson, are you aware of**

1 restrictions on Washington ports and their use of land
2 along waterfront that they own?
3 A. Yes, you do have waterfront restrictions.
4 **Q. Okay. And are you aware of the restrictions on**
5 **the use of a port -- when a port owns land, are you**
6 **aware of the statutory restrictions on its use of that**
7 **land?**
8 A. No.
9 **Q. Okay. Is there any evidence you have that the**
10 **port has not well-utilized its available land?**
11 A. That wasn't a part of my research, so, no, I
12 don't have.
13 **Q. So the answer's, no, you don't have any evidence**
14 **that they haven't well-utilized their land?**
15 A. I haven't even looked at it.
16 **Q. Okay. So the answer's no?**
17 A. Yes.
18 **Q. Okay. Ports have a longer horizon on their**
19 **return on investment than private industry. Is that**
20 **fair to say?**
21 A. That's true.
22 **Q. And that's all ports, not just the Port of**
23 **Vancouver?**
24 A. Yes.
25 MR. BARTZ: Thank you. No further

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1 questions.
2 MR. DERR: Your Honor, if I may. I decided
3 to let the Port go first this time so they wouldn't be
4 forgotten.
5 JUDGE NOBLE: That's fair.
6 MR. DERR: I don't want Dave to feel left
7 out, even with me.
8 CROSS-EXAMINATION
9 BY MR. DERR:
10 **Q. Just one question about this net economic impact**
11 **analysis or fiscal impact analysis. I believe you**
12 **testified that there should be some subtraction for**
13 **costs associated with an incident; is that correct?**
14 A. Yes.
15 **Q. And do you factor in some version of probability**
16 **of that incident occurring in that subtraction?**
17 A. In some of the stuff we have submitted, we just
18 threw some random numbers out there. We're not
19 pretending we have those numbers. This is an actuarial
20 issue. So while there are low-probability, high-cost
21 incidents, episodic things out there, we didn't pretend
22 to organize this one. We just said that it's monetized
23 all the time by the insurance industry and here's how
24 you would typically do it.
25 So we threw some numbers in there, but they were

1 just numbers to show you how you would take a look at
2 that from an expected value standpoint.
3 **Q. So when the insurance industry, the actuarials**
4 **do this, do they take into account the probability of an**
5 **incident occurring?**
6 A. Yes.
7 MR. DERR: No further questions. Thank you.
8 JUDGE NOBLE: Ms. Larson?
9 MS. LARSON: No further questions. I think
10 we're done with the Johnsons.
11 JUDGE NOBLE: Thank you.
12 MR. DERR: Except for Attorney Johnson.
13 MS. LARSON: Except for Attorney Johnson.
14 MR. STEPHENSON: And Reporter Johnson.
15 JUDGE NOBLE: Mr. Johnson No. 3, you are
16 excused.
17 I think this is a good time to take the
18 morning break, so we will be in recess until 10:40.
19 (Recess taken from 10:25 a.m. to 10:45 a.m.)
20 JUDGE NOBLE: Now we're ready to go back on
21 the record. Ms. Boyles?
22 MS. BOYLES: Yes. I would like to call
23 Mr. Ernie Niemi to the stand, please.
24 JUDGE NOBLE: Mr. Niemi, would you raise
25 your right hand.

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1 (Witness sworn.)
2 JUDGE NOBLE: Thank you. Please be seated.
3 THE WITNESS: Thank you.
4 ERNIE NIEMI,
5 having been first duly sworn,
6 testified as follows:
7 DIRECT EXAMINATION
8 BY MS. BOYLES:
9 **Q. Mr. Niemi, could you please state your name and**
10 **spell your name for the record.**
11 A. My name is Ernie, E-r-n-i-e, Niemi, N, as in
12 Nancy, i-e-m, as in Mary, i.
13 MR. JOHNSON: Your Honor, before Ms. Boyles
14 continues with her questioning, I would like to put an
15 objection on the record. I guess it's best
16 characterized as a motion in limine with regard to this
17 witness and hopefully that way we can -- if, in fact,
18 you allow the witness to testify, I won't have to
19 continuously interrupt with objections.
20 The primary basis for the objection is that
21 we've been notified that this witness, who was not
22 previously identified, is a rebuttal witness who will be
23 providing rebuttal testimony to Mr. Casey, Mr. Schatzki
24 and Ms. Hollingsed's testimony. This witness has been
25 identified as an expert in economics, specifically

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1 natural resources economics and an expert in natural
2 resource damages issues. We would object to any
3 testimony from this witness regarding natural resource
4 damages because neither Casey, Schatzki or Hollingsed
5 refer to natural resource damages, the extent of those
6 damages or damages calculations. And there may have
7 been some issues about providing financial assurances
8 for those, but not the subject of natural resource
9 damages themselves. So we would object to any testimony
10 relating to those -- to that issue.
11 Moreover, as you know, we have consistently
12 taken the position that the calculation of potential
13 natural resource damages is one that's left to the
14 Department of Ecology in the future and so we have
15 confined our evidence to the ability to provide
16 assurances based on whatever that number should be in
17 the future.
18 And then with regard to any testimony about
19 economics issues, our objection is that this witness
20 could have been identified prior to the hearing, prior
21 to the witness identification deadlines and that, for
22 instance, if the witness intends to comment on
23 components of the economics benefits analysis, like
24 Mr. Johnson this morning, the opponents have had an
25 ample opportunity to provide that testimony and prepare

1 it for the hearing. So it's a case of, you know, late
2 notice.
3 MR. BARTZ: Excuse me, Your Honor, and the
4 Port of Vancouver -- Dave Bartz with the Port of
5 Vancouver, we would join in that objection. Thank you,
6 Your Honor.
7 JUDGE NOBLE. Ms. Boyles?
8 MS. BOYLES: Yes, Your Honor. We have
9 called Mr. Niemi as a joint witness sponsored by
10 Columbia Riverkeeper, the Counsel for the Environment
11 and the Columbia Waterfront LLC because of the live
12 testimony given by Mr. Schatzki, Ms. Hollingsed and in
13 certain circumstances echoed by Mr. Casey, who was also
14 a late fact witness, about some of the economic issues,
15 valuation of economic issues with respect to natural
16 resources damages and how you look at the full picture
17 of costs and benefits.
18 That was information that was not clearly
19 going to be part of this proceeding until we heard that
20 live testimony. Mr. Niemi has reviewed the testimony of
21 those witnesses via the recordings. The questions I
22 intend to ask him are limited to those particular areas
23 and call on the areas of Mr. Schatzki's discussion of
24 what the magnitude of an oil spill harm would be, what
25 the economic benefits of an oil spill would be and how

1 you actually value economic damages when you're talking
2 about things like insurance and financial assurances as
3 discussed by Ms. Hollingsed.
4 We provided this information to opposing
5 counsel on Saturday, July 16th. It is true that is late
6 and after the witness list, but it was as fast as we
7 could move to get Mr. Niemi here.
8 JUDGE NOBLE: Thank you. And I'm hoping
9 that if there are more motions in limine, we can deal
10 with them before we get started.
11 I am -- normally the remedy for -- or
12 alleged late disclosure is to allow access to the
13 witness. And in this case, access to this witness, I
14 assume, was provided along with a notice that he would
15 be planned when it was given on Saturday, July 16.
16 MS. BOYLES: Your Honor, we disclosed his
17 name. I provided his CV. The short exhibit that we
18 will introduce perhaps through his testimony and
19 discussed, in fact, on Monday, the extent of his
20 testimony, with Mr. Johnson.
21 JUDGE NOBLE: Did you provide an opportunity
22 for Mr. Johnson to query this witness?
23 MS. BOYLES: I did not invite Mr. Johnson to
24 query this witness, but I'm sure Mr. Johnson knows how
25 to ask to do so.

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1 JUDGE NOBLE: I'm sure he does.
2 Mr. Johnson, did you ask if you could
3 contact this witness to --
4 MR. JOHNSON: Your Honor, my objection isn't
5 about our ability to question the witness. What I -- my
6 primary focus is that this doesn't turn into
7 inappropriate surrebuttal and that it is confined
8 narrowly to the testimony -- responding to the testimony
9 of the witnesses that this witness has been called to
10 rebut quite specifically.
11 And in Ms. Boyles' description of what
12 Mr. Schatzki discussed in his testimony just now, for
13 instance the scope of impacts from an oil spill, I mean,
14 that's not an area that Mr. Schatzki was testifying
15 about.
16 So I'm most concerned that we tread
17 carefully here and, you know, we're prepared, we
18 reviewed the transcripts. So to the extent Ms. Boyles
19 will be asking specific questions about specific answers
20 from those witnesses and that testimony is properly
21 characterized and Mr. Niemi's testimony is confined to
22 those specific issues, we -- you know, we're prepared to
23 proceed. But I don't want it to turn into open season
24 for testimony that isn't something that -- is new that
25 was presented in our case.

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1 MS. BOYLES: Your Honor, I just want to --
2 may I just add, I have -- we have -- we're intent on
3 saying what -- where these issues were raised during the
4 live testimony. Some of the issues are things that were
5 not raised. And so there are issues where Mr. Schatzki
6 talked about or Ms. Hollingsed talked about an issue but
7 then did not provide a full picture. So there is also
8 an absence of information that we're talking about here
9 as well.
10 JUDGE NOBLE: I understand. All right.
11 Mr. Johnson, you did say that one of your
12 issues was that you were not notified, and from what
13 you're just saying, you're not really concerned about
14 that; you're more concerned about the nature of the
15 testimony.
16 MR. JOHNSON: Yes, Your Honor. And I think
17 the late notification goes to if this becomes testimony
18 about much broader issues, then it is problematic
19 because then we're going to have to bring back witnesses
20 later and it makes it more problematic.
21 JUDGE NOBLE: Yeah, you do have rebuttal
22 testimony made available to you, and I know that you are
23 intending to present rebuttal testimony so you will have
24 that opportunity.
25 With regard to natural resource damages, I

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1 do not agree that only DNR can decide what natural
2 resource damages are in a formal way. There is a
3 process regarding natural resource damages that the
4 State engages in. I understand that. But I cannot
5 agree that a witness should not be able to testify about
6 natural resource damages, what they are and what they
7 might be projected to be.
8 MR. JOHNSON: Well, Your Honor --
9 JUDGE NOBLE: This is an expert witness.
10 MR. JOHNSON: But this is rebuttal
11 testimony. So to the extent --
12 JUDGE NOBLE: Wait a minute. This is the
13 case, the opposition case. Rebuttal testimony truly
14 comes at the end of when both sides have presented their
15 case and there is a kind of surprise, they're not
16 expected testimony, and rebuttal testimony will come at
17 that point, after both sides have presented their cases
18 in chief.
19 Maybe it's just a difference in terms, but
20 this witness is testifying in response to the testimony
21 of the proponents. And I think Ms. Boyles' point is
22 reasonable that this witness should be able to perhaps
23 expand and present additional information that was not
24 covered by your witness, as long as it's the same
25 subject matter. And so that seems reasonable.

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1 MR. JOHNSON: I understand, Your Honor. And
2 I don't want to hold things up. I guess I would say
3 this, however. And I don't want to go round and round
4 about what's rebuttal and what isn't. But if, in fact,
5 based on your ruling right now, that the other side was
6 to try to present testimony outside of the scope that
7 Ms. Boyles provided, and it was quite specifically what
8 she characterized as rebuttal based on these three
9 witnesses, then that would be problematic for us because
10 we have prepared, assuming he would be allowed to
11 testify, to cross-examine him on those specific issues
12 related to those specific witnesses. We're certainly
13 not prepared to cross-examine him on other things.
14 Maybe we should see how it goes.
15 JUDGE NOBLE: Right. And trials being
16 rather a fluid process, I understand it might stray into
17 an area that you hadn't prepared for and so that would
18 be remedied with either the opportunity to do that and
19 bring the witness back or the opportunity to present
20 rebuttal testimony, which you've already reserved.
21 And so I am going to allow Mr. Niemi to
22 testify. I'm not going to overly restrict his
23 testimony, and you have the opportunity to raise
24 objections in the course of it and then I'll rule on
25 those as we go along. But there are other remedies that

1 we can utilize if in the event that they are needed.
2 MR. JOHNSON: Thank you.
3 JUDGE NOBLE: I will allow Mr. Niemi to
4 testify.
5 MS. BOYLES: Thank you, Your Honor.
6 JUDGE NOBLE: Overrule the objection.
7 BY MS. BOYLES:
8 **Q. Hello. Could you please give the council a**
9 **summary of your background.**
10 A. I am currently president of a consulting firm
11 called Natural Resource Economics in Eugene. I started
12 that firm four years ago. Prior to that, for about
13 35 years, I was a senior economist with another
14 consulting firm, ECONorthwest -- that's ECONorthwest,
15 all one word -- which has offices in Eugene, Portland
16 and Seattle.
17 My educational background is I have a bachelor's
18 degree in chemistry from the University of Oregon and I
19 have a master's degree in city regional planning from
20 Harvard University. And I'm sorry, I'm speaking a
21 little slow [sic], so I'll slow down. My areas of
22 expertise are natural resource economics and
23 cost-benefit analysis. I have taught courses on those
24 topics at the University of Oregon.
25 My research, particularly as it relates to the

1 issues before this council, involve doing research on
2 the economic consequences of the Exxon Valdez oil spill,
3 a spill from a shipwreck, the Kyowa Violet, that's
4 K-y-o-w-a, Violet, on the Island of Yap in the Pacific;
5 a train derailment in Northern California that spilled a
6 hazardous chemical into the Sacramento River; the
7 shipwreck of the New Carissa on the Oregon coast.
8 Over the last couple of years I have been
9 working with communities on the coast of Kenya to help
10 them understand the potential economic consequences of
11 a -- or an oil export facility that the government is
12 planning for that area. I have conducted dozens of
13 studies on the economies of the Pacific Northwest,
14 Washington, the Pacific Vancouver area and Oregon, and I
15 also conducted a lot of research on the relationship
16 between natural resources and, in particular, the
17 fisheries resources of this region and the economy.
18 From 2009 to 2012, I was the project manager for
19 what is, to my knowledge, the most current and most
20 detailed assessment of the economic import in salmon and
21 steelhead resources in the Columbia River.
22 MS. BOYLES: We have provided -- or
23 submitted what is Exhibit 5633, which is Mr. Niemi's CV,
24 and at this time I would move its admission.
25 MR. JOHNSON: No objection.

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1 JUDGE NOBLE: Exhibit 5633 will be admitted.
2 BY MS. BOYLES:
3 **Q. Could you please summarize what you have**
4 **reviewed to prepare for your testimony here today?**
5 A. I have reviewed by video the testimony of
6 Mr. Schatzki, Ms. Hollingsed, Mr. Casey, and I've
7 reviewed my own research and the research that I drew
8 upon on the topics that I considered relevant to the
9 testimony of those three individuals.
10 **Q. Thank you. During the testimony that you**
11 **reviewed of Mr. Schatzki, Mr. Schatzki elaborated on how**
12 **he believed and factored into his analysis the economic**
13 **benefits to a community or region from an oil spill. Do**
14 **you recall that testimony?**
15 A. Yes.
16 **Q. Did you hear him say that he did not look at**
17 **economic risks from an oil spill?**
18 A. Yes.
19 **Q. Did he miss something?**
20 A. Yes, he did. He actually extended that
21 statement when he responded to a question, I believe it
22 was from a council member, when he said he did not look
23 at risks. He then, however, pointed toward the ABT
24 report, which is spelled A-B-T. The ABT report does
25 quantify some of the economic risks associated with an

1 oil spill. And he observed that that report quantified
2 the potential economic costs from a vessel spill to be
3 $200 million, and he concluded that that was a small
4 amount relative to his calculation of the expected
5 benefits from this project which was, he estimated to be
6 $1.2 billion.
7 Now, the ABT report focuses on only a small
8 slice of the value -- or the cost that would result from
9 the spill that they analyzed. That small slice focuses
10 on what economists call the direct costs of a spill, the
11 direct costs in this case being the impacts on
12 recreational and commercial fishing. So it's an impact
13 on people who directly interact with the fish and the
14 river.
15 Far more important are what economists call the
16 passive-use costs from an oil spill like that. Passive
17 use refers to people placing a value on salmon. Because
18 of the existence of the salmon, they want the salmon to
19 continue to exist, not only in this generation but for
20 future generations.
21 The analysis that we conducted in 2009-2012,
22 which we conducted for the Department of Ecology and for
23 Bureau of Reclamation and which was subject to very
24 stringent peer review by the Department of Interior and
25 which is now the basis for the expenditure of funds to

1 support the implementation of a water resource
2 management plan in the Yakima River basin, our findings
3 in that analysis are that the direct-use costs -- or the
4 direct-use value of fish in the Columbia River represent
5 about 10 percent of the total value that Washingtonians
6 as a whole place on the salmon and steelhead in the
7 river. So the ABT report, then, represents about
8 10 percent of the total cost that would result from the
9 spill that they outlined.
10 We extended our analysis to look at the
11 potential benefit to Washingtonians, taking into account
12 both the direct benefits and the passive-use benefits
13 from an increase in population of about 180,000 adult
14 fish per year in the Columbia River basin. That
15 analysis found that for Washingtonians as a whole, that
16 value would be about $3.1 billion for 180,000 fish. If
17 you include Oregonians in that, it becomes about
18 $5 billion. Well, if an increase of 180,000 fish
19 creates a benefit of that amount -- or those amounts,
20 then the loss of 180,000 fish, all else equal, would
21 create a cost to Washingtonians and Oregonians of
22 roughly those amounts.
23 Now, in reality the costs would actually be
24 greater because people perceive the value of a loss to
25 be more important than the benefit of a gain. But if we

1 set that aside, then the loss of 180,000 fish per year
2 would impose a cost on all Washingtonians of about
3 $3.1 billion and for all Oregonians and Washingtonians
4 of about 5 billion.
5 If you scale that down to 130,000 fish, which is
6 a number that the ABT report estimated would be the
7 potential loss in fish, then the reduction of 130,000
8 fish, all else equal, would result in a cost to all
9 Washingtonians of about $2.2 billion, and for
10 Washingtonians and Oregonians of about $3.6 billion.
11 So where Mr. Schatzki compared $2 million from
12 the ABT report to his estimate of the benefits to
13 $1.2 billion, if you take into account the full total
14 value of the -- just the fish alone, so not taking into
15 account any other natural resource damages, then the
16 potential damage -- the potential cost from a spill
17 would exceed those benefits for Washingtonians alone by
18 about $1 billion, and if you throw Oregonians into that,
19 it's about $2.4 billion. And I want to make very clear
20 that this analysis does not include tribal values.
21 Tribal values, indigenous values, are distinct from
22 this.
23 **Q. And just to be clear for the council, the ABT**
24 **report that you're talking about is the report that's**
25 **been -- that will be discussed by a later witness for**

1 the Counsel for the Environment; is that correct? You
2 understand that?
3 A. That's my understanding.
4 **Q. Moving on to a slightly different question.**
5 **Could you summarize your understanding of what**
6 **Mr. Schatzki testified to with respect to the economic**
7 **benefits of an oil spill?**
8 A. Yes. Again, from my review of the video
9 recording of his testimony, his discussion began by --
10 and I don't recall whether it was in his direct or his
11 cross. He talked about his expectation that if there
12 were a spill and that spill resulted in a ban on
13 fishing, that the recreational fishers would go fish
14 some place else or that the commercial fishers would go
15 fish some place else or they would find some other job,
16 so that the net impact on employment and on value-added
17 would be smaller than it would be if you just considered
18 the initial direct effect.
19 He was then asked if the reciprocal of that
20 argument also applied to the creation of jobs from an
21 oil spill, from the cleanup. And he replied, no, that's
22 not the case; that with a cleanup the expenditures on
23 the cleanup, the expenditures on an accident or a spill
24 would be, quote, new money to -- new money, quote, to
25 this economy. And as new money it would have no effect

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1 on the rest of the economy.
2 That conclusion just does not correspond to
3 economic reality in any situation, let alone the
4 situation applies with an oil spill or an accident,
5 especially a severe spill or severe accident.
6 From my experience and from my review of spills
7 and accidents that have occurred elsewhere, especially
8 if they are severe, they're crises. And at that moment,
9 you start to pull workers from other places. So, for
10 example, one of the first things that happens is that
11 the police stop doing whatever else they would do and
12 they come to the accident site or the spill site and
13 they manage all of the chaos that is taking place right
14 there.
15 Another thing we see is that the local
16 government administration gets totally distracted by the
17 spill. So you see mayors and city council members, you
18 see city administrators spending almost all of their
19 time or, in many cases, more than full-time dealing with
20 the spill, with the cleanup and then later dealing with
21 the litigation that follows one of these events. As a
22 result, that city administration doesn't do what it
23 otherwise would have done and so you lose that
24 productivity.
25 For example, in Cordova, in Alaska, following

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1 the Exxon Valdez, the city government was unable to
2 apply for grants, they were unable to invest in
3 infrastructure maintenance and upkeep, and those things
4 just fell to the wayside because these people were
5 spending more than full-time dealing with the spill, the
6 cleanup and the litigation.
7 We also see that some workers get pulled
8 immediately into these -- into these events from other
9 jobs. So one of the things that we saw in the Exxon
10 Valdez and you see associated with other spills, for
11 example, is that -- one example is that people working
12 in daycare go and work on the cleanup because it pays
13 more. Okay. That's a very reasonable thing for them to
14 do. But when they do that, the work in the daycare
15 doesn't get done, so the economy loses that.
16 And you might say, well, that's fairly small.
17 But then what happens is that the parents who are
18 relying on that daycare so that they can go to their
19 jobs, they're stuck. And so you start to see these
20 ripple effects. You start to see some businesses that
21 actually go out of business because of one of these
22 events, because they suspend operations, they suspend
23 normal things that otherwise would've taken place.
24 Now, the model that Mr. Schatzki used simply
25 doesn't recognize all of that. His analysis didn't

1 recognize all of that and he alluded to that when he
2 said that, you know, this kind of offsetting behavior
3 would apply to the fishermen who are out of a job, but
4 it wouldn't apply in a situation where you are spending
5 new money on the spill and the cleanup.
6 The concerns about having displacement of jobs
7 and hence the value-added associated with those jobs is
8 especially severe in this particular metropolitan
9 economy which generally operates at or pretty near full
10 employment. "Full employment" means, by definition,
11 that everybody's working, everybody who wants to work is
12 working. So if you have a spill and suddenly you have a
13 demand for a thousand new workers, those thousand
14 workers have to come from some place else and there is
15 going to be a displacement in the economy when that
16 occurs.
17 Eventually the economy might be able to adjust
18 to some of that by finding workers from outside and
19 pulling them in, but that's, at best, a process that
20 takes a while, employers and employees incur costs to do
21 that and in some cases we see that the economy just sort
22 of breaks and it never gets fixed.
23 **Q. Thank you. I would like to turn now to some of**
24 **the testimony from Ms. Hollingsed that was echoed by**
25 **Mr. Casey regarding financial assurances and liabilities**

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1 as they relate to potential damages and the economic
2 impacts to the citizens of Washington and to the tribes.
3 You have done some assessment and publication
4 regarding this particular subject with respect to an oil
5 spill; is that correct?
6 A. I certainly have worked on oil spills that have
7 affected indigenous cultures in -- with respect to the
8 Exxon Valdez and with respect to the Kyowa Violet spill
9 on the Island of Yap.
10 **Q. And in your expert work and writing, do you --**
11 **what do you consider to be the full consideration of**
12 **damages?**
13 A. Well, the full consideration is that you have to
14 take account of everything. You don't just look at what
15 is financial. Financial generally -- the history of
16 that term is that it involved the exchange of cash. And
17 an awful lot of the impacts that occur, some of them are
18 called natural resource damages, but as I just tried to
19 explain, a lot of them operate within the structure of
20 the -- what we normally call the economy itself. A lot
21 of those don't get picked up by financial concerns why
22 this notion of financial transaction is.
23 So first of all, you want to take account for
24 everything. And another way of saying that -- that
25 economists use is you want to account for the monetary,

1 the market, you know, those effects that occur and
2 materialize through markets, as well as those effects
3 that don't materialize through markets. You don't have
4 monetary evidence of those effects.
5 **Q. Ms. Hollingsed testified, for example, that**
6 **cultural damages would only be covered by insurance if**
7 **they could be monetized, if you could put a dollar**
8 **amount on that and prove it. Do you have an opinion and**
9 **response to that testimony?**
10 A. Yes, from my -- again, my review of the video of
11 her testimony, she used the term "financial." The
12 insurance company would pay up only if a claimant could
13 demonstrate the financial cost.
14 I understood her to mean from being in these
15 situations before, that that means, one, the claimant
16 would have to actually provide the evidence that they
17 spent some money because of the spill.
18 In some cases over the last 20 years, 30 years
19 or so, you've seen the evolution of insurance covering
20 some costs where you don't have this exchange of money,
21 but economists have been able to demonstrate through a
22 credible economic analysis that, yes, there was a harm
23 and, yes, through these analytical approaches, we have
24 come up with a credible, reasonable estimate of the
25 economic value of that harm.

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1 What we often see, however, especially when you
2 have a spill or an accident that involves an indigenous
3 culture or a subsistence culture is that some of these
4 harms fall through the cracks. They just do not overlay
5 with the sort of western economic view of what an
6 economy is.
7 In these settings, the natural resource, so the
8 river or the fish or whatever in this instance, it does
9 several things. One is it provides sustenance. People
10 depend upon that. What it also does, is that it helps
11 define for the group what the group is. Are they a fish
12 people? Are they a seal people? Are they a shell fish
13 people? Are they a river people?
14 Within the group, these subsistence activities
15 help define who the individual is. So if somebody is an
16 especially good -- especially good at catching fish,
17 catching very big fish, they bring those fish back, they
18 distribute them within the entire community, that
19 defines who that individual is and that sharing binds
20 all of the families within the community together.
21 That's how these communities avoid stress and conflict.
22 In addition, the very process of going out and
23 fishing is the process that these communities use, these
24 cultures use to sustain themselves. It is within -- you
25 know, the adults taking the children out to fish, that's

1 how they say, here's where the fishing -- fish used to
2 be, but now they've moved over here. If the weather
3 looks like this, this is how you catch the fish. And
4 that's not something that you can just sit in the room
5 in the back of the house and explain that. You have to
6 be out there actually doing that.
7 What we found on -- for example, with the Exxon
8 Valdez and it -- something very similar happens with
9 other spills, is that native communities were no longer
10 able to fish, they were no longer able to hunt seals,
11 they're no longer able to harvest shell fish or seaweeds
12 or other products.
13 Well, the insurance company was able to say,
14 okay, you don't have food, don't have, you know,
15 X kilograms of fish per person per day, so they shipped
16 in container -- containers of food. Well, that takes
17 care of that. In some sense that's -- you know, that's
18 a transactional notion of a financial cost.
19 They were unable, however, to deal with these
20 other aspects of the value of the relationship between
21 the community and the resource. And so what we started
22 to see over time, a tribal elder explained to one of my
23 colleagues, the young men no longer want to go out and
24 fish. This was after the fishing ban was lifted. No
25 longer want to go out and fish because they like going

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1 to the container and getting steak from Texas, which is
2 what Exxon had shipped in.
3 Well, at that point the elders were saying, what
4 do we do? Because if the young people don't learn how
5 to fish, then who we are as a people, we will expire; we
6 will be gone.
7 What we also have seen is that you've started to
8 see the breakdown of the amity or what economists call
9 the social capital within these communities. Social
10 capital is a fancy word that we use for trust. And the
11 trust is the lubricant that allows different people to
12 conduct their business and agree that, well, they're
13 probably going to do the right thing and so we can
14 conduct business with a handshake rather than with a lot
15 of attorneys and contracts.
16 When that breaks down, the people that have done
17 the research, the follow-up research on the Exxon
18 Valdez, what we've seen in these communities is they've
19 become, quote, corrosive communities. People are no
20 longer helping. They are fighting. You find out that
21 the people who otherwise would have volunteered to be
22 the mayors and the city council members no longer want
23 to do that because there's just too much abuse. And so,
24 again, you start to see changes in the structure of
25 what's happening there.

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1 There is no way that I'm aware of for an
2 insurance company to turn to the economist and say, can
3 you put a value on these things? We just don't know how
4 to do that. And so there is real harm. We can all
5 agree that there is harm.
6 Ms. Hollingsed actually in her statement said
7 that she acknowledged that there are these effects and
8 she anticipated that it would be very difficult to put a
9 value on that. And what I'm saying is it's difficult
10 for a lot of them. It's impossible for some of the
11 others. Just cannot be done.
12 **Q. What's been marked as Exhibit 5632, it's right**
13 **in front of you, sir, is a short memo entitled**
14 **"Secondary Economic Impacts of Coastal Spills." Are you**
15 **familiar with this memorandum?**
16 A. Yes. I was the lead author of this memo.
17 **Q. Without describing the contents of the memo,**
18 **could you just describe when and why this memo was**
19 **written.**
20 A. Yes. Based on my experience at the Exxon Valdez
21 and the spills in the Pacific, somehow I started the
22 conversation with a man named Doug Helton. And at the
23 time, Mr. Helton was the point person from within the
24 National Oceanic and Atmospheric Administration, NOAA,
25 N-O-A-A, on oil spills or on shipwrecks. Previously

1 he'd been heavily involved in some of these spills in
2 the Pacific region. Later, as we -- as I knew him, my
3 understanding was he was the first person, for example,
4 who was on site with the BP spill in the Gulf.
5 And part of our discussion was just to exchange
6 information, but over time we started to both say that
7 you have the spill response events and processes that do
8 what they do. They focus on trying to clean up the oil.
9 But they leave unattended many of the legacy effects of
10 the oil and of the cleanup activities themselves, and
11 then the legacy of that in terms of what happens in the
12 communities and what happens with litigation.
13 And so over time, as we talked, he asked me if I
14 would put together this memo, which I did, with two of
15 my colleagues, and sent it to him. He was going to use
16 it with his -- you know, the people he worked with. I
17 remember that we submitted it for -- to be presented at
18 a conference on coastal spills. I didn't attend that
19 conference. I don't remember if one of my colleagues
20 attended it and presented it or not.
21 **Q. Does this memorandum basically summarize the**
22 **secondary impacts that you've been -- of oil spills that**
23 **you've been discussing today?**
24 A. It uses the term "secondary economic impacts."
25 Another way of talking about that is the -- when it's

1 talking about the changes in the structure of the
2 economy that occurs.
3 **Q. Let me stop you right there. I want to move**
4 **admission of this --**
5 MS. BOYLES: Your Honor, I want to move
6 admission of Exhibit 5632.
7 JUDGE NOBLE: Objection?
8 MR. JOHNSON: No objection.
9 BY MS. BOYLES:
10 **Q. Okay. Now you can continue.**
11 **JUDGE NOBLE: I was all ready to --**
12 A. Sorry for jumping the gun.
13 MR. JOHNSON: I'm sorry?
14 JUDGE NOBLE: I said I was all ready to rule
15 on an objection. You're not objecting?
16 MR. JOHNSON: I'm not objecting, Your Honor.
17 A. Some of the changes in the structure of the
18 economy resulting from a severe event like this occur
19 very quickly. You can have, for example, an explosion
20 that destroys the business right on site. A lot of what
21 happens occurs over time.
22 I talked about how the community structure can
23 change so that you no longer have mayors. You no longer
24 have people on the city council; they just don't want to
25 do it anymore. You no longer have people who want to

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1 work as the heads of city agencies.
2 You also can, over time, see that -- especially
3 with what's happening with the Internet and video and
4 all of that, that you can -- you can see -- imagine if
5 you have a situation where you have more than one event,
6 even if they are small events, that can go viral on the
7 Internet now.
8 You also have this disruption, especially in
9 indigenous cultures, of the relationship between the
10 culture and the resources and it's very hard to piece
11 that back together, especially if that community, the
12 families within that community are no longer helping one
13 another because they have this hiatus in the ability of
14 people to bring food and share it with their neighbors.
15 An awful lot of the follow-up research on the
16 Exxon Valdez and on other spills has focused on what
17 happens to the particular individuals. And in summary,
18 what you see is that these are very traumatic events for
19 many people within indigenous cultures, as well as
20 people outside of those indigenous cultures, that
21 somehow people feel they are violated, they become very
22 obsessed with these things, they have a very difficult
23 time responding to them; and the psychologists conclude
24 that you have in fact post-traumatic stress.
25 In the event of the Exxon Valdez oil spill, the

1 follow-up research has documented that a very high
2 percentage, far higher than you would expect, of the
3 people affected in the communities near Prince William
4 Sound and Kodiak Island still exhibit characteristics of
5 post-traumatic stress nearly 20 years later. So those
6 are -- these changes, these secondary economic impacts
7 that we described, my colleagues and I describe in this
8 paper.
9 JUDGE NOBLE: Just a minute. I'm not sure
10 that I actually said that Exhibit 5632 is admitted. I
11 want to make sure that it's on the record in the court
12 case. Thank you. Please proceed.
13 MS. BOYLES: Thank you, Your Honor.
14 And I have nothing further for Mr. Niemi.
15 JUDGE NOBLE: Cross-examination of
16 Mr. Niemi?
17 CROSS-EXAMINATION
18 BY MR. JOHNSON:
19 **Q. Mr. Niemi, I'm Dale Johnson, one of the**
20 **attorneys for the applicant. I just wanted to reflect**
21 **on your testimony about these values that are**
22 **noncompensable. Is that a fair way to characterize**
23 **them?**
24 A. There are some damages -- or there is some harm
25 that economists have a very difficult time and in some

1 instances are unable to quantify.
2 **Q. And are some of those that can be quantified**
3 **accounted for, for instance, in the natural resource**
4 **damages assessment context through approaches like**
5 **habitat equivalency analysis?**
6 A. Habitat equivalency analysis, or HEA, is what
7 ABT and its partner did in what's called the ABT report.
8 And that approach evolved out of this very difficulty
9 that everybody has in quantifying natural resource
10 damages.
11 So, for example, if somebody runs into your car,
12 we have a process and it works pretty well in figuring
13 out what is the value of that car. If you have a ship
14 that runs into the coast, we have a very hard time
15 figuring out how to place the damage on that -- directly
16 on that point.
17 Habitat equivalency analysis said, well, we
18 can't do that, so let's look elsewhere within the
19 ecosystem and see if we can't buy land or buy water or,
20 in this instance, buy marshland or wetlands and see if
21 we can't restore it in some cases, if it's already been
22 degraded, or actually create new wetlands if it was dry
23 land and we're going to now convert it into a wetland.
24 With the logic that if we do that, we somehow have
25 compensated for the injury to the habitat and the loss

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1 of resources.
2 Now, there's some very powerful assumptions to
3 get from A to Z in all of that and there's an awful lot
4 of talk, there's an awful lot of debate on how that
5 might work and the empirical issues of whether it
6 actually does work in a particular setting.
7 **Q. Thank you. And tribes are natural resource**
8 **damages trustees, are they not?**
9 A. That's my understanding, but I'm not an
10 attorney. So it's my understanding.
11 **Q. Okay. Fair enough. Isn't it true that tribes**
12 **have and can recover for services associated with**
13 **natural resources as distinct from damages that are**
14 **determined through the HEA process?**
15 A. Again, that's my understanding. But if you're
16 referring to a statute or a regulation, I'm not an
17 expert on that.
18 **Q. Okay. And back to this issue of non -- at least**
19 **monetarily noncompensable damages, how can a tribe or a**
20 **tribal entity be compensated for those damages? If not**
21 **financially, how?**
22 A. Well, first of all, let me observe that in my
23 experience quite often the answer is it doesn't. So you
24 sort of begin from that as a reference point.
25 **Q. Well -- okay. Let me stop you there. Let me**

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1 stop you there. It doesn't. What's the answer? What's
2 the answer for this project, then? Assuming there's a
3 risk of one of these damages, what is your answer to
4 address that concern?
5 A. The answer is complicated. So if you bear with
6 me.
7 **Q. Okay.**
8 A. Okay. Indigenous people look at these resources
9 in a different way than our western culture does. And
10 so if you go and ask, for example, how much compensation
11 do you need for the loss of fish, that's not even a
12 question in many instances that they will acknowledge is
13 a valid question. They just -- it doesn't make any
14 sense to them. So you have to recognize that and you
15 have to respect it.
16 So, again, as part of the process -- and that's
17 a difficult thing, is to respect that. You then have to
18 realize that it's not just coming up with a number and a
19 number of dollars, you know, cash; it also has to
20 involve a process.
21 So part of the validation of compensation in
22 some of these situations -- and I'm not saying that it
23 would apply necessarily to a particular situation on the
24 Columbia River because it is incident-specific, but part
25 of what has to happen in many of these situations is

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1 that the person or the individual that is viewed as
2 responsible for the -- for this damage, for this injury
3 to them, has to acknowledge that, has to somehow go
4 through -- and this isn't quite the right term -- but
5 some sort of purification process to atone for that
6 damage.
7 Within the Exxon Valdez, one of the -- one of
8 the statements that I heard several times from
9 indigenous people is that the day of the spill was the
10 day that the water died, because it no longer -- I mean,
11 it killed fish, it killed otters, it killed all sorts of
12 things, but it also killed their relationship to the
13 water.
14 So somehow you have to have a process -- for
15 example, if there were a spill in the Columbia River and
16 a claimant -- tribal claimant came up, picked up the
17 form and filled it out, what is the harm, the water
18 died, that person isn't going to be able -- and even
19 won't recognize the validity of the question, can
20 they -- that person fill in the blank, what is the
21 dollar amount. It has to be a process. It has to be,
22 you know, fixing it as best as we can. It maybe has to
23 be doing more than fixing it so that -- so that if you
24 kill 130,000 fish a year, maybe you have to boost that
25 up by 200,000 fish. And what sort of safeguards are you

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1 going to put into place, both technological and economic
2 and maybe even spiritual, to see that it doesn't happen
3 again.
4 MR. JOHNSON: Nothing further.
5 JUDGE NOBLE: Redirect?
6 MS. BOYLES: No, Your Honor.
7 JUDGE NOBLE: Council questions?
8 Mr. Snodgrass?
9 MR. SNODGRASS: You had mentioned in your
10 testimony in terms of the -- moving away from the tribal
11 context, but in terms of costs to local public agencies
12 beyond the cleanup and the litigation. You know, it's
13 obviously going to be very case-specific, but do you
14 have any kind of examples or is there any rules of thumb
15 of -- I would assume there would be litigation. I have
16 no idea how much that would be. It would be case
17 specific. What can you tell us about that?
18 THE WITNESS: That's a really excellent
19 question. The advice that I used to give when I used to
20 make presentations on this was write everything down.
21 And most communities don't. They're not prepared to
22 write everything down. And let me give you an
23 example -- several examples.
24 In Cordova, which is a community that I
25 spent quite some time in, the police officers -- while

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1 the cleanup was going on, the police officers would tell
2 us, we interviewed them, that they had spent most of
3 their time dealing with fights among the cleanup workers
4 or between the cleanup workers and the people who lived
5 in the community where that happened.
6 You say, okay, how much time did you spend
7 on that? You know, do you have any records? No, we
8 don't have any records. Well, why don't you have any
9 records on how much time you spent? Well, we know that
10 the city has a budget for the police. And if I file
11 overtime, there's no money to pay me, so why would I
12 fill out the form? I'm not going to fill out the form.
13 We have a -- there was sort of a community
14 hall and a school that became the place where people
15 met; it became a place for the meeting. Well, the
16 community didn't have records of how -- the times having
17 hundreds of people in this place, the wear and tear on
18 all of that. You know, I could talk to the building
19 manager. Well, the building manager had left to go work
20 on the spill, so that person had some insight but not
21 total insight. How do you quantify this? There are no
22 records. And so when they submitted a claim, no
23 records, no money, no compensation.
24 So, again -- and I understand, because every
25 time I present it, it isn't very satisfactory, but it is

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1 try to find some person who is the recorder in chief and
2 tell that person or that group, record everything you
3 possibly can record because, again, in my experience,
4 when you turn to the insurance company and submit a
5 claim, if you don't have that documentation, you're
6 simply out of luck.
7 MR. SNODGRASS: Switching gears, a question
8 on the ABT report and it seemed like the dollars, once
9 you moved beyond -- in your estimation beyond -- or
10 maybe it's the report, beyond the 200 million I think
11 that you had indicated was direct costs and moved to a
12 sort of overall valuation for Washingtonians and
13 Oregonians potentially getting into the billions, take
14 us through that a little bit. What were the next
15 biggest -- after you get -- after you look at those --
16 and I think you used the example of perhaps fishery job
17 losses would be part of the direct. What were the big
18 chunks of the indirect that got that number to where
19 you -- what you had mentioned?
20 THE WITNESS: Okay. Let me illustrate if I
21 can this notion of passive use versus direct use, if I
22 may. I suspect that a lot of you attended the
23 University of Washington. When you directly used that,
24 you paid money; you paid tuition and fees. Well, I
25 suspect again that most of you continued to place a

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1 value, you see that the University of Washington is an
2 important part of Washington, what Washington is. And
3 so you are willing to spend money to sustain that
4 university, even though you don't use it. You are
5 willing to have it be there, you are willing to have it
6 so that your neighbor's children can go there, you hope
7 that it will be there for your children and your
8 grandchildren. That's the notion of passive use. So
9 it's not something that is unique to natural resources
10 at all. It's a very common concept.
11 Within the Columbia River basin, we're
12 already paying an awful lot of money for salmon. We're
13 doing that through our utility bills. So Bonneville
14 Power Administration collects -- I don't know how much
15 money it is, it's a lot, to me it's a lot -- money to
16 help restore and restore habitat with the expectation
17 that they can prevent salmon populations from going
18 down. That's becoming more difficult with the forecast
19 of climate change saying there's going to be pressure on
20 them. So we already have in place where people are
21 paying on their utility bills for -- for salmon.
22 Now, the research that deals with passive
23 use, because you don't have any cash being exchanged,
24 you can't go out and find market information the way
25 that you can with how much did you pay for your fish at

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1 the fish market or how much did you pay to go fishing as
2 a recreational fisher. And so economists have developed
3 very sophisticated survey techniques to go out and ask
4 people, in this particular case relevant to this, and
5 say, we have a plan -- imagine that there is a plan to
6 increase fish populations by 180,000. How much would
7 you be willing to pay on your utility bill month by
8 month over the next 20 years to bring that about? It's
9 a lot more sophisticated than that, but that's basically
10 what happens. And people respond and they tell us.
11 Now, some people say nothing, some people say an awful
12 lot, most people call -- come in in the middle.
13 And so when you add all of that up, on
14 average, for all Washingtonians over the next 20 years,
15 which is what we did, and you then convert that stream
16 over 20 years to a single number that's equivalent, it's
17 a process called discounting, then that comes up to the
18 numbers that I described.
19 MR. SNODGRASS: Thank you.
20 JUDGE NOBLE: Mr. Shafer?
21 MR. SHAFER: Mr. Niemi, thank you for your
22 testimony today. One question.
23 You spoke earlier in your testimony, if I
24 heard you right, that associated quantity of fish on the
25 order of 180,000 fish to about a $5 billion value, but I

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1 think you quickly followed that, that said that -- you
2 said that that did not include tribal values. So that
3 struck me. Cannot tribal values be quantified in that
4 regard relative to fish in the Columbia River? And if
5 it can, do you know approximately what that value would
6 be?
7 THE WITNESS: No, that relates to the
8 discussion that we just had here with Mr. Johnson, is
9 that there are some parts of the tribal values,
10 indigenous values, subsistence values, that we can't --
11 we, economists, can't come up with dollar values. We
12 can cover some things. You know, tribes fish
13 commercially and sell the fish. We can come up with
14 that. We can do that. We can -- you know, if you're
15 fish -- excuse me, if your boat is oiled, we can come up
16 with the value of your boat, your equipment, those sorts
17 of things.
18 But when it comes down to the ceremonial
19 values of these fish, I don't know an economist that's
20 going to go there and say, this is the value of that
21 ceremony, that cultural value. And one of the reasons
22 is, you know, the discussion of this is, as soon as you
23 start to do this, to say the value -- the cultural value
24 of this fish is -- of these fish is a billion dollars,
25 at that point you -- you're setting the stage for

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1 somebody to say, well, here is $1.1 billion, we're going
2 to destroy your culture and you're better off, and
3 that's simply not the case. From an ethical
4 perspective, that's not acceptable.
5 MR. SHAFER: Thank you.
6 JUDGE NOBLE: Mr. Lynch? Are you done,
7 Mr. Shafer?
8 MR. SHAFER: Yes.
9 JUDGE NOBLE: Mr. Lynch?
10 MR. LYNCH: Morning.
11 THE WITNESS: Morning.
12 MR. LYNCH: I'm just wondering about, is
13 there's any difference between -- again, focusing on the
14 cultural values and you had mentioned like a particular
15 event, an incident that can affect a particular tribal
16 community, but what about the situation of continued
17 degradation of the particular value they have, and I'm
18 thinking the difference between an oil spill, for
19 example, versus train traffic that increases through
20 their lands, along areas that they frequent; at some
21 point you have a number of trains getting to a point
22 presumably where they say this -- my experience in this
23 place here is changed. So is there any different ways
24 of -- do economists view those differently at all or is
25 it just -- it's a cultural value and it's viewed in the

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1 same way?
2 THE WITNESS: In the end result, I think
3 economists view them the same. If you have -- whatever
4 the source, it could be -- for example, you know, given
5 the history that we have, it could be the degradation of
6 the resource through a spill, an incident. It could be
7 a gradual degradation of that resource. It could be
8 barriers to access. We've had some of those over time.
9 And one interpretation that I have of what you just
10 said, is that rail traffic may in effect be a barrier
11 to -- if not physical access, to some sort of spiritual
12 access to these resources. If at the end of the day,
13 you have a disruption of this relationship between the
14 people in this culture and that resource and its
15 multiple dimensions, then, yes, you have this harm, this
16 injury, some of which you may be able to compensate for
17 and some of which you may not be able to. Did I respond
18 to your --
19 MR. LYNCH: Thank you.
20 THE WITNESS: Thank you.
21 JUDGE NOBLE: Questions to my left?
22 Mr. Siemann?
23 MR. SIEMANN: Good morning.
24 THE WITNESS: Good morning.
25 MR. SIEMANN: In previous testimony, I think

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1 by Greg Challenger -- did you review his testimony?
2 THE WITNESS: I have not.
3 MR. SIEMANN: Okay. If I recall correctly,
4 he discussed how oil would -- so what I'm interested in
5 as a question here is around the temporal aspects of a
6 spill and the effects on fish and how that might affect
7 the analysis that you're providing here. And his
8 testimony suggested that a spill would be -- most of the
9 oil would go downstream and out into the sea, a little
10 bit would be recovered. The effects on fish would be --
11 would occur in sort of an initial plume that would not
12 affect the overall population of the fish, and that if
13 you had then a -- so you'd lose some set of population
14 of the fish. And that if -- you know, following a spill
15 you'd probably have a closure of fisheries in which you
16 might actually have a population rebound that exceeded
17 the loss and that the overall loss of fish might last
18 three years in terms of the population and then you'd
19 have this rebound.
20 And so if that's true, and I'm not saying it
21 is or not, but what I'm asking is, if you think about it
22 in that context of a one- to three-year effect, does
23 that change how we should think about these impacts --
24 these secondary impacts that you've described?
25 THE WITNESS: That also is a very good

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1 question. Let me extend that to the hypothetical
2 extreme. If you have a spill as a switch goes on and
3 then you immediately switch that off, well, you blink
4 and it's gone. And so it might be reasonable to say,
5 well, you didn't have any impact, you know, because
6 people didn't even notice it.
7 If it's a spill that persists for a very
8 long time with the -- with the harmful material in the
9 environment, people can see it, they can touch it, they
10 can smell it and it's there for decades, we know that
11 that continues to have a very persistent effect.
12 If, in fact, in three years it is totally
13 gone and people believe it is totally gone, then they
14 are more likely to not incur some of these lasting
15 effects, but there likely will be some of them.
16 Now, I very carefully said "if people
17 perceive." If they perceive several different things.
18 If there's a fishing ban, the ban is -- let's presume
19 it's because the fish is poisonous; it's not good for
20 your health. And then after a certain period of time
21 the appropriate officials say, it's now okay; it
22 satisfies standards.
23 What we know occurs is that many people say,
24 I don't believe that because I can go out and I can find
25 a place where it's worse than that. So when you relax

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1 standards, basically what you're saying is, we did some
2 samples out there and what we found is that either all
3 of these samples are okay or some percentage of the
4 samples are okay.
5 There's some uncertainty in that and some
6 people can go out and find some places where it's not
7 okay, or they believe that it's not okay. They continue
8 to be harmed because of that perception of risk. If
9 they feed that fish to their children, they perceive
10 that they are poisoning their children.
11 Now, they may also continue to perceive that
12 the water was killed, you know, the water died, but it
13 was somehow resurrected after three years. They may
14 still perceive that the water died for three years, and
15 that has some spiritual, real, intangible but important
16 effect on them that persists.
17 You may also have seen that, you know,
18 during that three-year period, and this is a very --
19 this is very important to people in these societies, is
20 that during that three-year period, you may have had a
21 disruption of these activities that sustain the culture,
22 so that if you do not have the adults teaching the --
23 you know, a cohort of young people how to fish, where to
24 fish, how to survive, what to do -- what is the proper
25 thing to do with fish when you catch it or what is the

1 proper thing to do with a fish of these characteristics
2 when you catch it, then that cohort may be lost. You
3 may not be able to easily restore those characteristics,
4 those beliefs, those patterns, those cultural components
5 to that cohort.
6 MR. SIEMANN: I'm wondering if you know of
7 any examples where the temporal aspect was in this sort
8 of range of one to three years in terms of effects,
9 rather than the Exxon Valdez which has certainly been
10 more persistent?
11 THE WITNESS: Well, in every one of these
12 cases, there is some period of time where a governmental
13 agency will say that it's over, you know, the ban is
14 lifted. In the Yap it was 18 months. In Exxon Valdez,
15 I don't recall, but it's on the order of one to two
16 years. On the Cantara Loop spill in the Sacramento
17 River in Northern California, it was shorter than that.
18 In my experience and in my study, in every
19 instance, there are these legacy effects. You know,
20 people are shocked. People are traumatized. They don't
21 get over that. The community is shocked. It doesn't
22 get over that very easily.
23 MR. SIEMANN: Thank you.
24 JUDGE NOBLE: Further questions, to my left?
25 I have a question, Mr. Niemi. I think I'm

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1 hearing you saying that cultural values cannot be
2 monetized, but I would ask you if you believe that money
3 can reduce the effect -- effects on cultural values at
4 all?
5 THE WITNESS: First of all, some cultural
6 values. I was pretty clear to say that there are --
7 there's some aspects, if you have a soiling of the boat,
8 then you can probably compensate that, but some can't.
9 And then I'll say -- I'm sort of the
10 economist. So it depends. What we see, for example, is
11 this example that I had with Exxon shipped in a
12 container full of steaks from Texas. Well, you could
13 continue to ship in food -- or you could continue to
14 provide people with money so that they can buy steaks
15 from Texas, but if that's what people do with the money,
16 then the money in effect compounds the erosion of their
17 cultural values.
18 So in some instances I can conceive where,
19 yes, money -- a community could use those funds wisely
20 and you could have some improvement of the outcome. I
21 can also identify some very real situations where, if
22 handled badly, you can compound the bad parts of the
23 outcome.
24 JUDGE NOBLE: Thank you.
25 Questions based upon council questions?

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RECROSS-EXAMINATION

BY MR. JOHNSON:

Q. Mr. Niemi, have you ever been involved in any capacity in a natural resource damages assessment that involves valuation of intrinsic, passive or nonuse values, the kinds you've been discussing today?

A. Excuse me, that involved what?

Q. Intrinsic or passive or nonuse values, the kinds of things you've been discussing today.

A. Yes, I've -- what I discussed -- again, on the salmon in the Columbia River, I've certainly estimated the values -- the passive-use values of that.

Q. No, I understand. But my specific question was have you been involved in any capacity in a natural resources damages assessment. And I'm using that as a term of art, that is, under any applicable statute such as the Oil Pollution Act or CERCLA or something that includes --

A. If recollection serves me correctly, no, I've not actually conducted an NRDA.

MR. JOHNSON: Okay. Thank you.

JUDGE NOBLE: Ms. Boyles?

MS. BOYLES: Nothing further.

JUDGE NOBLE: Mr. Niemi, thank you very much for your testimony. You are excused as a witness.

1 THE WITNESS: Thank you.
2 JUDGE NOBLE: It is 11:53. I think before
3 we call -- is the next witness going to be very short?
4 MS. BOYLES: The next witness should be
5 shorter.
6 JUDGE NOBLE: You think we can get finished
7 with the next witness in, say, ten minutes?
8 MS. BOYLES: I hesitate to say. I'm not
9 sure that's up to me. I can be finished about that
10 quickly, but --
11 JUDGE NOBLE: Let's give it a try.
12 MS. BOYLES: I would like to call Mr. Jared
13 Smith.
14 JUDGE NOBLE: Mr. Smith, would you raise
15 your right hand, please.
16 (Witness sworn.)
17 JUDGE NOBLE: Thank you. Please be seated.
18 You may proceed, Ms. Boyles.
19 MS. BOYLES: Thank you.
20 JARED SMITH,
21 having been first duly sworn,
22 testified as follows:
23 DIRECT EXAMINATION
24 BY MS. BOYLES:
25 **Q. Mr. Smith, could you please state your name and**

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1 spell your name for the record.
2 A. Jared Smith, J-a-r-e-d S-m-i-t-h.
3 **Q. Mr. Smith, how are you employed?**
4 A. I'm employed as a longshoreman at the Port of
5 Vancouver USA.
6 **Q. And how long have you been employed as a**
7 **longshoreman?**
8 A. Since 2000.
9 **Q. Do you have a position in the International**
10 **Longshore and Warehouse Union?**
11 A. I'm the current president of the International
12 Longshore and Warehouse Union Local 4.
13 **Q. And how long has Local 4 been working at the**
14 **Port of Vancouver?**
15 A. Since the 1930s.
16 **Q. And how many workers are in the Local No. 4?**
17 A. We have approximately 200 full-time, maybe a
18 little more, and about a hundred casuals, which are
19 part-times and at-will employees.
20 **Q. Are you currently working right now? Are you**
21 **taking time off work today?**
22 A. I am not. I've been off for a few months. I
23 had shoulder surgery, so no.
24 **Q. Could you describe before your surgery, what are**
25 **the sort of activities that you do on a regular day?**

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1 A. Just prior to surgery, I operate cranes -- or
2 was operating cranes. Prior to the beginning of this
3 year, I worked on maintenance of the conveyor systems,
4 welding, mechanic work for about six years and prior to
5 that just ship work.
6 **Q. Why did your union intervene in this**
7 **adjudication?**
8 A. Initially, we looked at the volume that was
9 going to be potentially shipped through there, the
10 potential of an oil spill, either at a ship loading
11 operation or a vessel run aground. A vessel of oil is
12 much different if it was to run aground than say corn or
13 wheat or something like that.
14 We also knew one of the companies involved,
15 Tesoro, had had a pretty severe incident in Anacortes,
16 which killed seven people. So we looked at where that
17 site was going to be placed in proximity to our work
18 sites at the port, which we would be working right next
19 to it. We discussed this at a meeting, decided to take
20 a vote and oppose the project. Didn't think it was a
21 good fit for us, for the port and knowing that, you
22 know, we have a pretty good understanding of day-to-day
23 operations of the port, it seemed pertinent to get
24 involved in this and take part in this process.
25 **Q. And, in fact, the ILW intervened in this**

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1 adjudication; is that correct?
2 A. We did.
3 **Q. You have not participated a lot to date; is that**
4 **true?**
5 A. That is true. We do not have the funds to hire
6 an attorney for this, yes. Attorneys are expensive.
7 **Q. Indeed. Now, you sort of talked about these**
8 **reasons about adjudication, being opposed, but could you**
9 **more fully describe what were you thinking when the**
10 **union decided to vote to oppose?**
11 A. Yeah, we --
12 MS. MARTIN: Your Honor, Connie Sue Martin
13 on behalf of the Port of Vancouver USA. I just want to
14 clarify that this witness -- this is sort of a request
15 for a clarification, as well as an objection, and I will
16 slow down. My apologies. This witness is a fact
17 witness, thus any question about what the union was
18 thinking should be specific to what he was thinking as
19 he cannot rely on hearsay for something he's read or
20 something somebody else has told him in his testimonial
21 capacity.
22 MS. BOYLES: Your Honor, he is the president
23 of the union and was present at the meetings when they
24 decided to vote and understands the reasons why the
25 union has opposed this terminal. If you'd like me to

1 rephrase the question, I can certainly do that.
2 JUDGE NOBLE: Well, I don't have the statute
3 right in front of me. The APA does allow hearsay if it
4 could be relied upon by the witness in the course of --
5 ordinary course of business. And Mr. Smith is a special
6 case because he is an intervenor in this matter, and so
7 I think, even though you're right, it is hearsay what
8 the other workers' motivations were, I think that
9 Mr. Smith can, as steward of the union, testify about
10 the reasons for intervening in this. That's a long way
11 of saying that the testimony will be allowed.
12 MS. BOYLES: Thank you.
13 BY MS. BOYLES:
14 **Q. Let me restate that, Jared. Can you describe**
15 **the reasons that you understand and that have been**
16 **discussed at these meetings about why the union voted to**
17 **oppose?**
18 A. Yeah. I'll repeat. We saw the amount of volume
19 that was discussed. We have a very good understanding
20 of what is done at the port in the amount of -- there's
21 a high potential for accidents in the maritime industry
22 in the type of work we do. Eventually there will be a
23 spill, we feel. In case of a spill, we assume that the
24 river would be shut down and ships would not be coming
25 up and down, and if that's the case, we will not be

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1 working. Ships run aground in the Columbia River.
2 Again, it's not the same as a -- spilling grain,
3 wouldn't have the same effect.
4 Proximity of the terminal is inside of a loop
5 track that the port has -- has designed and put in
6 place. There's current wind energy storage in this loop
7 track. It wouldn't be just an oil terminal. We would
8 be also inside of this loop track.
9 JUDGE NOBLE: Mr. Smith, you're speaking
10 really fast and the court reporter needs to write down
11 everything you say. Could you slow down a bit?
12 THE WITNESS: Yeah.
13 JUDGE NOBLE: Thank you.
14 A. We would be inside of this loop track working in
15 proximity to the tracks which would contain oil cars.
16 We would be right next to the facility. There is -- our
17 entry and exit into the -- into this facility or this
18 loop track is over railroad tracks that has a high
19 potential for being blocked. Our membership doesn't
20 want to work around oil cars, doesn't want to work
21 around an oil terminal. After what we've seen at
22 Lac-Mégantic, after what we've seen ten plus -- I think
23 we've seen ten-plus derailments and explosions around
24 the country, most notably Mosier a few weeks back or a
25 month back. The mainline through the port goes through

1 the middle of a malting plant and a grain elevator. Our
2 members do not want to work in a grain elevator that has
3 four-plus unit trains going by it a day full of Bakken
4 oil. They feel that is not safe. Those are our main
5 concerns.
6 BY MS. BOYLES:
7 **Q. Great. Thank you.**
8 MS. BOYLES: Ms. Mastro, if I could ask you
9 to put up that page 214 from the Exhibit 1, the
10 application.
11 BY MS. BOYLES:
12 **Q. Mr. Smith, if you could just look over here.**
13 **You just said the windmill parts would be inside the**
14 **loop. Could you just point out where exactly you're**
15 **talking about?**
16 A. Get up and --
17 **Q. There's a pointer right there, I think.**
18 A. Currently, wind energy products are stored right
19 in this area. As far as scale, it's kind of hard to
20 tell exactly here, but we have wind energy blades here
21 and we have towers somewhere over in here.
22 **Q. And is it your understanding that if this**
23 **terminal is built and was operating, you would still be**
24 **working inside the loop?**
25 A. I assume we would still be working inside the

1 loop. I don't know where else the port would be storing
2 wind energy projects.
3 **Q. To your knowledge, has your union ever opposed a**
4 **project at the port before?**
5 A. I don't believe -- not since I've been there,
6 and as far as, you know, an EFSEC process, I don't think
7 we've even had that option.
8 MS. BOYLES: That's all I've got. Thank
9 you.
10 JUDGE NOBLE: Cross-examination of
11 Mr. Smith?
12 MS. MARTIN: Yes, Your Honor. Thank you.
13 CROSS-EXAMINATION
14 BY MS. MARTIN:
15 **Q. Good afternoon, Mr. Smith. My name is Connie**
16 **Sue Martin, and I'm one of the attorneys representing**
17 **the Port of Vancouver USA. And I have just a couple of**
18 **questions for you.**
19 **Your workers are presently working at the port**
20 **with facilities where there are unit trains coming in**
21 **every day; is that correct?**
22 A. That's correct.
23 **Q. And none of the proposed unit trains associated**
24 **with this facility would interrupt or interfere with or**
25 **displace a current port tenant use; isn't that correct?**

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1 A. Can you ask that again?
2 **Q. Sure. That was inartful. Are you familiar with**
3 **the testimony of Mr. Alastair Smith, that this proposed**
4 **project wouldn't displace or interfere with any current**
5 **port tenant or use of a port facility?**
6 A. I'm unaware of -- yeah, I don't believe it would
7 displace. I'm unaware if it would.
8 **Q. So it's not the train traffic that bothers you**
9 **and your colleagues, it's the -- that it's an oil train,**
10 **that's what bothers you?**
11 A. Exploding oil trains would be the concern, yes.
12 **Q. Okay. Are you familiar with the testimony of**
13 **Mr. David Sawicki on behalf of the port in this EFSEC**
14 **proceeding?**
15 A. I am not.
16 **Q. Okay. So you didn't hear Mr. Sawicki testify**
17 **that the project would be safe and suitable at the port**
18 **with regard to the existing current port tenants and**
19 **uses?**
20 A. I did not hear that, and I disagree with that.
21 **Q. Are you aware of the testimony of Larry Guthrie,**
22 **who is a rail expert, who testified in this proceeding**
23 **that given the improvements the port has made to its**
24 **already well-designed rail system, that the likelihood**
25 **of a derailment at the port is extremely low?**

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1 A. I have not heard that testimony.
2 MS. MARTIN: I have no further questions.
3 Thank you.
4 JUDGE NOBLE: Redirect?
5 MR. JOHNSON: I have no questions, Your
6 Honor. You're just compensating for Mr. Bartz.
7 JUDGE NOBLE: Mr. Bartz?
8 MR. BARTZ: Thank you, Your Honor. None.
9 REDIRECT EXAMINATION
10 BY MS. BOYLES:
11 **Q. Mr. Smith, are you currently -- are the union**
12 **workers currently working at the NuStar terminal at**
13 **Berth 5?**
14 A. Longshore workers?
15 **Q. Longshore workers.**
16 A. We tie up and let go ships at Berth 5. That's
17 all we do.
18 MS. BOYLES: Thank you. Nothing else.
19 JUDGE NOBLE: Council questions?
20 There are no more questions for you,
21 Mr. Smith. Thank you very much for your testimony.
22 THE WITNESS: Thank you.
23 JUDGE NOBLE: You are excused as a witness.
24 Well, we finished the morning almost on
25 time. So we will be in recess until 1:10. Excuse me,

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1 we may have to restart at 1:00 because we have the phone
2 call from Witness Harvey, I think.
3 MS. BOYLES: Yes, Ms. Harvey is set to be
4 called at 1:00.
5 JUDGE NOBLE: All right. Then we will come
6 back and resume at 1:00 sharp.
7 (Recess taken from 12:08 p.m. to 1:00 p.m.)
8 JUDGE NOBLE: We are back on the record at
9 1:00. And as I understand it, Ms. Susan Harvey is on
10 the line and ready for council questions. We have
11 actually just one question conveyed via e-mail from
12 Mr. Stohr, who is ill today.
13 So could you call your next witness.
14 MS. BOYLES: Certainly, Your Honor. We call
15 Ms. Susan Harvey via the telephone.
16 (Witness sworn.)
17 JUDGE NOBLE: Can you hear me all right,
18 Ms. Harvey? Ms. Harvey, can you hear me? This is Judge
19 Noble.
20 THE WITNESS: I'm getting a lot of echoing.
21 I may need you to repeat the question closer to the mic.
22 JUDGE NOBLE: The question was can you hear
23 me? Can you hear and understand me, Ms. Harvey?
24 THE WITNESS: Yes.
25 JUDGE NOBLE: Ms. Harvey, this is Judge

1 Noble, and one of the council members had a question for
2 you and unfortunately he is not here today due to
3 illness, so there's just this one question and perhaps a
4 follow-up to that. But the council member's named Joe
5 Stohr and he works for Washington -- State of Washington
6 Fish & Wildlife Department. And his question to you is,
7 what are your observations regarding mixing some very
8 crowded recreational fisheries on the lower Columbia
9 River with additional tankers?
10 Ms. Harvey --
11 THE WITNESS: Again, let me replay that
12 question. His question was about recreational fishery
13 potential conflicts with the -- I'm sorry. He was
14 inquiring about recreational fishery conflicts with the
15 lower sections of the river; is that question correct?
16 JUDGE NOBLE: Almost. The conflicts between
17 recreational fisheries, which he describes as already
18 very crowded, conflicts with additional tankers on the
19 lower Columbia River.
20 THE WITNESS: Okay. Well, my experience
21 with tanker traffic and fisheries, whether they be
22 recreational or commercial fisheries, as you know, I'm a
23 commercial fisherman here in Alaska, the tanker traffic
24 that comes in and out of the Alaska Valdez Marine
25 Terminal is managed by a US Coast Guard vessel traffic

1 system and they help manage the conflicts. A vessel
2 traffic system is an excellent tool for you to consider
3 for the Columbia River. The Coast Guard does an
4 excellent job in managing those conflicts, announcing on
5 the radio when traffic is coming in and out, so both
6 recreational and commercial vessels are aware that
7 tankers are transiting, and it's a great safety
8 precautionary system. And in addition, the Coast Guard
9 would provide that type of notice.
10 Now, that does not exist for the Columbia
11 River, I understand, and so that -- that would be worthy
12 of further examination for additional safety precautions
13 in your area.
14 JUDGE NOBLE: Do you have a further opinion
15 about that?
16 THE WITNESS: I'm sorry, could you play that
17 again?
18 JUDGE NOBLE: You testified as to the
19 situation, and I was asking whether you had an opinion
20 about the situation you described on the Columbia River.
21 THE WITNESS: Well, I do have an opinion
22 about -- as I had included in my written testimony, that
23 there are some very narrow sections of the river where I
24 think that it would be -- there would be close
25 encounters with those very large tankers, especially the

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1 large tankers proposed to come in which would be
2 900 feet by 158 feet wide, and those are very large
3 vessels to be encountering when you've only got a couple
4 thousand feet of river width, especially if you're a
5 small recreational vessel, maybe something on the order
6 of 15 to 30 foot, it would be quite intimidating to pass
7 a tanker of that size in those narrow sections,
8 certainly. I think that's something to consider.
9 JUDGE NOBLE: Thank you, Ms. Harvey. Let me
10 ask the other council members if they have any
11 questions.
12 Councilmember Snodgrass has a question for
13 you.
14 MR. SNODGRASS: Good afternoon. I'll try
15 and be brief and clear. In looking at the -- at your
16 past prefiled testimony and Mr. O'Mara's and I've only
17 just now been able to look at the transcript from the
18 day Mr. O'Mara testified, there doesn't seem to be
19 anything in the record or I'm forgetting or am unaware
20 of about the -- in the event that there is a collision
21 or a grounding that causes a release of oil, about the
22 likely amounts involved. Can you shed any light on
23 that?
24 THE WITNESS: I'm sorry, I hope I'm not
25 being difficult here, but I'm getting a terrible echoing

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1 and I'm having difficulty hearing the question. If we
2 can try that one again, I would appreciate it.
3 MR. SNODGRASS: In the event that there is a
4 grounding or a collision in the river or at sea, and we
5 have -- I believe Mr. O'Mara provided probabilities for
6 those, can you shed any light on -- in a very rough way,
7 on what the likely or potential size ranges of those
8 would be, the amount of oil discharged?
9 THE WITNESS: Oh, okay, the amount of
10 discharge in the range of -- the spill size. Okay. So
11 the DMV study has looked at that and they've indicated
12 the potential range could go from about a fourth of a
13 tanker up to -- ranging, you know, to a smaller to
14 one-twentieth of a tanker. Now, it's going to depend
15 what happens with the tanker.
16 In a grounding incident, it's going to
17 depend on how many of the tanks themselves are impacted
18 and how many are breached and it would also depend on
19 how quick the response is to the tanker and how quickly
20 any of the remaining oil that's on the tanker could be
21 layered off to another vessel. So there's a couple of
22 factors there.
23 Certainly in the case that this catastrophic
24 accident and if the entire vessel is lost, which has
25 happened in other incidences and, you know, there's a

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1 thinking that you could lose the entire cargo,
2 certainly, I think, the key point for the worst-case
3 discharge is that in any of the scenarios, even the ones
4 the DMV study Mr. O'Mara, who testified on behalf of the
5 applicant, those volumes, even -- the partial volumes
6 that the tanker spill are all in excess of the
7 million-gallon catastrophic standard that Washington
8 State has. So it would be a significant spill in any
9 case, even if only a part of the tanker spills in a
10 collision or a grounding.
11 MR. SNODGRASS: Thank you.
12 JUDGE NOBLE: Are there any other council
13 questions?
14 Ms. Harvey, another council member,
15 Mr. Rossman, now has a question.
16 MR. ROSSMAN: Yes. In Mr. O'Mara's report
17 and testimony, I believe there's a reference to that
18 only a small minority of vessel incidents would involve
19 a spill of oil. However, that testimony and report in
20 terms of the consequences or impacts is limited to just
21 addressing those that involve a release of oil.
22 My question is what other types of impacts
23 would be reasonably expected to arise out of a vessel
24 incident other than a spill of oil?
25 THE WITNESS: Okay. I hope I heard that

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1 question correctly. You're wondering what other type of
2 impacts would occur in addition to the spill of the oil?
3 MR. ROSSMAN: Either in addition to, or in
4 the case of a vessel incident where there was no spill,
5 what type of impacts would result?
6 THE WITNESS: I'm sorry, I can't understand
7 the question. Maybe Ms. Boyles could -- if you're
8 closer to the phone, you could replay it to me.
9 JUDGE NOBLE: We could rephrase the
10 question.
11 MR. ROSSMAN: What other types of impacts
12 would result from a vessel incident such as a grounding
13 or collision other than oil spills?
14 THE WITNESS: What other type of impacts
15 would occur from -- other than the oil spill itself? I
16 hope I'm understanding your question correctly, but I
17 will give it a go here.
18 The experience that I have in responding to
19 actual oil spills is of course you've got all of the
20 impact of the oil spill itself, so you're going to have
21 coating of shorelines potentially, you've got oil in the
22 water columns, oil as you saw in my testimony that I
23 believe will eventually sink, especially the heavier
24 oils, like the diluted bitumen that would likely sink.
25 Now, some of the testimony had indicated

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1 that it may not sink in a few days, but the applicant
2 itself said about half of it would be unrecovered. And
3 so eventually that would -- the rest of that oil would
4 end up in the water column. It will travel downstream
5 and it will eventually -- some of it will sink, some of
6 it will submerge and some of it will wash up on the
7 shoreline.
8 In addition to the impacts of the oil spill
9 itself, of course you're going to have environmental
10 impacts and biological impacts to -- if there's any fish
11 in the area, if there is, for example, salmon spawning
12 or salmon returning into the river, you'll have impacts
13 to the fish if that happens to overlap in terms of
14 season. Of course, other birds and wildlife impacts.
15 But my experience on actual -- both of the
16 regulator and responder, is that there is greater
17 impacts that go far beyond just cleaning up the oil
18 spill. There are social impacts in terms of economic
19 loss, loss of -- in terms of quality of life of a
20 pristine environment. There's economic loss to those
21 who use the river in terms of resource and recreational
22 use.
23 The pristine value of a water body can be
24 impacted in terms of that people are doing recreational
25 businesses, such as maybe a wind surfing business or if

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1 they are selling fish caught from the river, it can have
2 economic and wide reaching impacts for a number of years
3 thereafter.
4 Also my experience has been on fisheries
5 that are affected if the spill happens at the same time
6 as, for example, fish spawning, then those salmon
7 typically would return four to five years later, so not
8 only would you have the impact of the incident at the
9 same time of the spawning, but it would plague the
10 fishery for the return years that would be about four or
11 five years later.
12 JUDGE NOBLE: Other council questions?
13 Are there questions based upon those
14 questions from council from either side?
15 Mr. Johnson, do you have questions?
16 MR. JOHNSON: Not from the applicant, Your
17 Honor.
18 JUDGE NOBLE: All right.
19 MR. BARTZ: I have no questions, Your Honor.
20 Thank you.
21 JUDGE NOBLE: Ms. Harvey, thank you very
22 much for your testimony. You're excused as a witness.
23 THE WITNESS: Okay. Thank you very much. I
24 hope I was able to answer your questions all right.
25 JUDGE NOBLE: You did. Thank you very much

1 for taking your time out of your day to do this.
2 THE WITNESS: Thank you for qualifying your
3 last sentence, since the questions were intermittent.
4 So thank you for patience with me.
5 MS. BOYLES: Thank you, Susan.
6 JUDGE NOBLE: Thank you.
7 Ms. Boyles, do you have another witness?
8 MS. BOYLES: I do. I would like to do one
9 thing before, just a -- an exhibit thing. I'm just
10 going to stand and hold this. We have two exhibits that
11 I wanted to just move to admit. One of them is the
12 updated resume of Ms. Harvey which we have filed, and
13 that is Exhibit 5517. We would just substitute that
14 exhibit for the current resume of hers so the council
15 has her most updated resume.
16 JUDGE NOBLE: That is currently -- currently
17 numbered 5517?
18 MS. BOYLES: Yes.
19 JUDGE NOBLE: Is there an objection to that?
20 MR. JOHNSON: No objection.
21 JUDGE NOBLE: 5517 will be substituted as
22 the updated resume of Ms. Harvey.
23 MS. BOYLES: And then the second exhibit is
24 Exhibit 5629. This is the DEQ memorandum of the Mosier
25 well status that the council had requested I file after

1 the testimony of Mr. VandenHuevel.
2 JUDGE NOBLE: Is there an objection to the
3 admission of 5629?
4 MR. JOHNSON: No objection.
5 JUDGE NOBLE: Exhibit 5629 will be admitted.
6 Ms. Brimmer, do you have another witness?
7 MS. BRIMMER: Yes, Your Honor. Opponents
8 call Dr. Ranajit Sahu.
9 JUDGE NOBLE: Mr. Sahu, would you raise your
10 right hand, please.
11 (Witness sworn.)
12 JUDGE NOBLE: Before we get started, I have
13 a question. Did we have this witness listed twice?
14 MS. BRIMMER: We had Mr. Sahu I think
15 originally scheduled for tomorrow morning, but because
16 we are going at the speed of light it seems, we have him
17 available this afternoon, so that might be why you've
18 seen him twice.
19 JUDGE NOBLE: All right. Thank you.
20 RANAJIT SAHU,
21 having been first duly sworn,
22 testified as follows:
23 DIRECT EXAMINATION
24 BY MS. BRIMMER:
25 **Q. Dr. Sahu, please, and slowly because I know you,**

1 **state your name and spell it.**
2 A. My first name is spelled R-a-n-a-j-i-t, the last
3 name is spelled S-a-h-u.
4 **Q. Thank you.**
5 A. You can make it simple by calling me Ron here.
6 That will work fine.
7 **Q. But I can't help myself; I'm going to call you**
8 **Dr. Sahu. Dr. Sahu, can you please tell us your**
9 **occupation.**
10 A. I am presently air quality and environmental and
11 energy consultant.
12 **Q. And where is your business located?**
13 A. It is located in Alhambra, California.
14 **Q. What's your educational background? And, again,**
15 **the council does have your CV, so if you could at least**
16 **summarize.**
17 A. I have a bachelor's in mechanical engineering
18 from Indian Institute of Technology. Many campuses,
19 from one of the campuses. I have a master's in
20 mechanical engineering as well from the California
21 Institute of Technology. I have a Ph.D. in mechanical
22 and chemical engineering from the California Institute
23 of Technology.
24 **Q. Could you also please summarize your employment**
25 **and expertise background, in particular give us an**

1 **example of clients that you have served, those in the**
2 **past and currently.**
3 A. Very briefly, since roughly 1988, I have been
4 doing a combination of research and consulting. First
5 12 years working for several firms that are listed on my
6 resume, and since roughly year 2000, working for myself.
7 In my present practice I have clients that are
8 both industrial and private sector clients. I have
9 several government clients, including the Department of
10 Justice and EPA. And I work with several what you would
11 call NGOs, or nongovernmental organizations and
12 environmental groups. So it's roughly spread amongst
13 these three different groups of client types.
14 **Q. Dr. Sahu, what is your experience specific to**
15 **air permitting under state laws and federal laws,**
16 **especially as might be applicable to this case?**
17 A. Well, I've been doing permitting work, air
18 quality permitting work since roughly 1990 when I joined
19 Parsons, and I eventually headed up their air quality
20 practice located in Southern California. South Coast
21 AQMD, as it's known, a local agency, is one of the more
22 sort of premier permitting agencies in the country given
23 the extent of air pollution in the Los Angeles area.
24 I have since done air permitting work nationwide
25 serving a variety of clients both small sources, large

1 sources or what we would call major sources that we
2 shall discuss, and across a range of industries, which
3 includes refineries themselves, as clients, storage
4 tanks, movement of product into and out of tanks, into
5 and out of vessels. So it -- the elements of what we
6 see as activities for the proposed terminal and how they
7 should be handled under air permits, I have dealt with
8 that throughout my career.
9 **Q. And have you done that kind of work in the**
10 **Pacific Northwest as well as California?**
11 A. I have. I have done work in Oregon. I have
12 actually done refinery work for the Washington
13 refineries going back 15 years or longer, rather. So
14 the answer is yes.
15 **Q. In this case you prepared prefiled written**
16 **direct testimony. And is that prefiled testimony true**
17 **and correct today as when it was filed?**
18 A. Yes, it is.
19 **Q. And that represents your opinions at the time**
20 **you signed the testimony?**
21 A. Yes.
22 **Q. And do you adopt that testimony under oath here**
23 **today?**
24 A. I do.
25 **Q. I would also like to reference the exhibits**

1 **referenced in and attached to your testimony. Were they**
2 **relied upon in preparing your testimony?**
3 A. Yes, they were.
4 MS. BRIMMER: Your Honor, there is an
5 outstanding objection to one of the exhibits. I don't
6 know if you would like to -- but the rest I think have
7 been stipulated to. So I don't know if you'd like to
8 address that now.
9 JUDGE NOBLE: Let's just see if there's --
10 if the other side maintains an objection. I think it's
11 5525?
12 MS. BRIMMER: That's correct.
13 MR. JOHNSON: Yes, Your Honor, we do.
14 JUDGE NOBLE: All right. So we'll have to
15 lay a foundation for that and have the argument at that
16 time unless it's coming up right now.
17 MS. BRIMMER: It's not coming up right now
18 and actually I'm not sure we will specifically refer to
19 it, Your Honor. It underlies some of Dr. Sahu's
20 testimony concerning greenhouse gas emissions, so I
21 could wait until that part of the outline and at least
22 deal with it then.
23 JUDGE NOBLE: I'm pretty sure I'll have to
24 hear some testimony from him. Why don't you tell me,
25 Mr. Johnson, the nature of your objection.

1 MR. JOHNSON: Well, Your Honor, this is a
2 technical report that is part of the SEPA analysis, that
3 is, the DEIS for the Millennium Bulk Terminal project.
4 And as Ms. Brimmer indicated, it is being offered
5 presumably to address the GHG analysis which is part of
6 the DEIS for this project. And because the DEIS
7 relating to the Vancouver Energy terminal is not at
8 issue in this proceeding, we don't believe it is
9 appropriate to be admitting DEIS documents from other
10 projects for that purpose.
11 JUDGE NOBLE: All right. It doesn't follow
12 that documents from other DEIS, EIS projects would also
13 be irrelevant in this process. So is there another
14 reason that you wanted to add?
15 MR. JOHNSON: Well, it's because of the
16 issue of the GHG analysis, which is strictly and solely
17 part of the SEPA analysis in this case, if you will.
18 The only relevance of this document is to that issue,
19 which is not relevant to this proceeding.
20 JUDGE NOBLE: So that's the nature of your
21 objection, that greenhouse gases are not relevant to
22 this --
23 MR. JOHNSON: Not the greenhouse gases.
24 Sorry, getting the fly from -- I didn't mean to cut you
25 off, Your Honor.

1 JUDGE NOBLE: And again, SEPA, per se, is
2 not the problem; it is the problem that the SEPA process
3 in this application review, the SEPA document is the
4 council's own document and it can't evaluate it as a
5 piece of evidence since it's their own product. And so
6 I've allowed in a lot of documents that were attached to
7 it as the foundation for witnesses' testimony because
8 those are not the council's product and they were a
9 point of reference for the expert opinions. So with
10 that we can go further and get some additional
11 testimony, but I am inclined to admit this. But we
12 don't have testimony yet about this witness' reliance on
13 it as a foundation for his opinions. So I think we
14 should question the witness about that.
15 MS. BRIMMER: And, Your Honor, would you
16 prefer to do that now or when we get to the GHG portion?
17 JUDGE NOBLE: I would, so we cannot forget
18 about it and get it dealt with.
19 MS. BRIMMER: Sure.
20 BY MS. BRIMMER:
21 **Q. Mr. Sahu, could you turn to -- or turn to that**
22 **exhibit, 5525?**
23 A. I have.
24 **Q. All right. And have you seen this document**
25 **before?**

1 A. I have.
2 **Q. Did you review this document in the preparation**
3 **of your prefiled testimony?**
4 A. I did.
5 **Q. And what was the purpose of your review of this**
6 **document?**
7 A. The purpose was for me to understand how other
8 projects have handled the scope and extent of greenhouse
9 gas estimations when they have done their analyses. I
10 have seen by then the greenhouse gas analyses that have
11 been done for the proposed terminal, including some
12 estimates of greenhouse gas emissions for what I will
13 call later on the permitted portion of the project, that
14 is, the actual terminal sources, as well as some
15 greenhouse gas estimates for transportation-related
16 activities in support of the terminal. But to me, at
17 that point, it did not appear that they had done that in
18 a complete manner.
19 So I looked at this document purely as an
20 example to see how others may have done that, whether
21 they had similarly perhaps even truncated their
22 analyses, and I discovered that they had not. So I just
23 pointed that out in my prefiled testimony, that here was
24 at least one example, a recent example, where the
25 applicant in that case seems to have done a much more

1 complete scoping of the activities that contribute to
2 the greenhouse gas emissions.
3 **Q. And you saw Dr. Hansen's testimony here,**
4 **correct?**
5 A. I watched the videotape, yes, I did.
6 **Q. And you saw Dr. Hansen opine that this is a**
7 **minor source of greenhouse gas emissions, correct?**
8 A. Mr. Hansen did say that, and I think he was
9 referring to the permitted portion of the project,
10 namely, six sources that he had analyzed for purposes of
11 permitting and he had come to the conclusion that based
12 on that this was a minor source.
13 **Q. And does Exhibit 5525 underlie any opinion or**
14 **disagreement you might have about Mr. Hansen's testimony**
15 **in that regard?**
16 A. Yes. I mean, there are -- again, it goes to the
17 scope basically of the types of air emitting activities
18 you include or exclude in your overall air analysis when
19 submitting that application.
20 MS. BRIMMER: Your Honor, I would move to
21 admit Exhibit 5525.
22 JUDGE NOBLE: Exhibit 5525 will be admitted.
23 MS. BRIMMER: Thank you.
24 BY MS. BRIMMER:
25 **Q. Dr. Sahu, I would like to now turn to some of**

1 **the topics covered in your prefiled written testimony.**
2 **And, again, it -- this is before the council and so this**
3 **series of questions seeks summaries from you. So your**
4 **testimony provided an opinion on the question of air**
5 **pollutants and regulatory status of the proposed**
6 **facility; is that right?**
7 A. Yes, it did.
8 **Q. What is your opinion concerning the proposed**
9 **facility and its regulatory status?**
10 A. It is my opinion that just the permitted portion
11 of the facility would be a major source of air
12 emissions, as that term is defined under the appropriate
13 regulations.
14 **Q. Could you tell us what that definition of a**
15 **major source is?**
16 A. A major source from an air quality standpoint is
17 one whose potential to emit a particular pollutant
18 exceeds a threshold that is specified in the
19 regulations. So, for example, if you take the pollutant
20 class VOCs, which I'm sure this council has heard a lot
21 about, volatile organic compounds, the mass of volatile
22 organic compound potential emissions if it exceeds
23 hundred tons per year, you would deem that source to be
24 a major source and so on. There are -- for each
25 pollutant, there is a threshold above which if you

1 exceed the potential to emit, then you would be deemed
2 to be a major source for that pollutant.
3 **Q. What is the significance of being deemed a major**
4 **source for regulatory purposes?**
5 A. Well, under our scheme -- when I say "our
6 scheme," I mean both our federal, state, local scheme of
7 regulating air emissions from stationary sources -- they
8 are the -- the bigger sources that regulators have to
9 get their arms around in terms of permitting. They have
10 obligations obviously to install the best available
11 control technology or even lowest achievable emission
12 rates. They have to achieve depending on where they
13 are. They have to do various types of predictive
14 dispersion modeling to address their impacts on
15 surrounding areas and even distant areas, like our
16 national parks and so on. They have to address regional
17 haze and other non-air quality -- so air quality-related
18 values, like deposition into streams and sensitive
19 areas. So they have a number of obligations, but
20 they're in our scheme the biggest sources. That's why
21 they're called major sources.
22 **Q. And your opinion that the proposed Vancouver**
23 **Energy terminal is a major source of air pollutants**
24 **differs from Mr. Hansen's -- with the proponent,**
25 **correct?**

1 A. Yes, it does.
2 **Q. Mr. Hansen has opined that they are, in fact, a**
3 **minor source; is that right?**
4 A. Correct.
5 **Q. And as a minor source, is it right that they**
6 **don't have do a lot of the predictive modeling and**
7 **initial analyses and potential controls for pollutants**
8 **that a major source might do?**
9 A. Right. They're not obligated to do a number of
10 things that major sources are obligated to do.
11 **Q. What is the proper process under the Clean Air**
12 **Act and state law for calculating or figuring out**
13 **whether a proposed source is a major source?**
14 A. Right. That -- it's a specific way in which you
15 have to do the emission calculations, and that's what I
16 referred to as potential to emit. We look at a proposed
17 source or even an existing source and we determine in
18 effect what is its highest capability to produce
19 emissions, subject, of course, to its design, its
20 throughput, its other permitted and enforceable
21 restrictions. But once you account for its physical
22 capabilities or design capabilities and any legal
23 restrictions that the source might want to take which
24 are enforceable, then you calculate this potential to
25 emit, which is really the most the facility could

1 produce. That metric, this potential to emit metric, is
2 then used to determine whether it's a major or minor
3 source.
4 **Q. What are the basic sources of VOC emissions at**
5 **the proposed terminal?**
6 A. I think VOCs cover, of course, a range of air
7 pollutants, volatile organic compounds, and they are,
8 broadly speaking, organic compounds which can dissipate
9 and have the same reactions -- so they include many
10 different compounds. It's a class of compounds.
11 From -- by the very nature of the terminal, it
12 is going to be handling crude oil. Crude oil is a
13 volatile compound. Specifically the type of crude oil
14 at issue for which I believe the facility will be
15 handling a lot of, which is the Bakken or tar sands
16 crude. So you have a volatile -- the fundamental
17 material flowing through the terminal coming in, being
18 transloaded and then leaving is a volatile compound. So
19 you'll have VOC emissions from handling of that every
20 step of the way.
21 When it comes into the facility -- and now I'm
22 just focusing on what is happening at the terminal,
23 forgetting everything that might happen before it
24 reaches the terminal or even after the crude oil leaves
25 the terminal. But at the terminal, every step in which

1 you handle that, and by that I mean you're going to
2 unload it from the rail car into the tanks, you're going
3 to take it from the tanks to the marine vessel, you're
4 going to -- in doing so take it through piping and
5 valves and various components. You may even have a
6 spill or two that have to be handled and stored in other
7 tanks, waste tanks or slop tanks. So all of these crude
8 or crude-related liquids that are produced or handled
9 will have the capability to produce VOC emissions. So
10 there are many different sources.
11 The big ones are the tanks, which I'm sure we'll
12 talk about. And another big one is the VOC emissions
13 due to loading of the vessels, which has not been
14 handled, in my opinion. But those are big sources.
15 You have some VOCs from the boilers, which are
16 present to support terminal activities. You will have
17 VOC emissions from, of course, the transportation
18 vehicles and so on that are running around the terminal
19 supporting terminal operations. So it is hard to find
20 activities that are not VOC producing in this -- in this
21 proposed terminal.
22 **Q. What are the two basic ways your calculations**
23 **for a potential to emit differ from the project**
24 **proponent in Mr. Hansen's?**
25 A. Well, I'll preface that by saying I didn't

have -- and I wasn't privy to all the design information, so I didn't attempt -- I did not attempt a detailed calculation of the potential to emit, which frankly only a project proponent can do. They have access to and they're privy to the kind of detailed engineering data that you can rely on.

But having said that, it was -- the large sources I felt were not properly calculated. The storage tanks, the large storage tanks, and there are six of them, each is designed to hold a day's worth of throughput, actually four rail cars worth of crude. It's almost 360,000 barrels per tank.

Q. Dr. Sahu, I'm going to interrupt you. You said "four rail cars." Did you mean four trains of crude?

A. I meant four trains, four train loads of crude per day, which is I believe what the facility is expecting to do. So those VOC emissions from those tanks is an issue.

Another one is, as I mentioned, what happens to the VOC emissions that are not captured when the oil is loaded into the vessels and therefore not capable of going to the marine vapor control unit, which is there to combust that fraction which is caught -- which is captured. Those are the two biggest sources that I think have VOC emissions that are not being accounted

1 for properly.
2 **Q. Dr. Sahu, I would ask that you turn to page 32,**
3 **paragraph 70 of your prefiled testimony, where I think**
4 **you give the results of your calculations and I would**
5 **just like you to note that range.**
6 A. I'm there.
7 **Q. Paragraph 70, am I correct, that that gives the**
8 **results of your calculations of the potential to emit**
9 **for VOCs?**
10 A. Yes. That is my calculation for the potential
11 to emit for just the crude -- or VOC emissions
12 associated with the uncaptured fraction of the loading
13 into the vessel -- or vessels, and that's the range of
14 somewhere around 112 to about 254 tons per year of VOC
15 emissions. Again, this is the potential to emit for
16 that activity.
17 **Q. And that's just for the vessel loading, and then**
18 **tank emissions would be on top of that?**
19 A. Yes. Now, on tank emissions, the applicant, or
20 rather, the terminal and the air -- in the air
21 permitting activities, they have actually estimated some
22 tank emissions. I take issue with the accuracy of those
23 estimates, and so that's an example of where they have
24 done some calculations and I'm questioning the accuracy.
25 This source that we just spoke about, the marine

1 unloading -- marine loading ramp was simply not
2 accounted for in the application.
3 **Q. And what adjustments would you make, then, to**
4 **the calculations for tank emissions and how would that**
5 **differ from the applicant?**
6 A. Right. My best engineering estimate is it is a
7 multiple of what they have estimated, somewhere around
8 maybe three to seven times higher, based on what we know
9 about tank emissions and what we have learned about tank
10 emissions in the last many years with more accurate
11 instruments and more accurate measurement methodologies.
12 **Q. And what is it that we know and have learned in**
13 **recent years about tank emissions?**
14 A. To put it very simply and deliver in context,
15 the way we do tank emissions calculations or have done
16 in this country has not really changed for the last
17 about 40 years or so and it is based on our
18 understanding of tank emissions going back to the early
19 '70s. In fact, as a historical point, there's one small
20 tank in Chicago that was the basis for all of our
21 knowledge of tank emissions until literally about
22 ten years ago.
23 Now, what changed is, in a tank you --
24 unfortunately unlike many sources, there isn't a place
25 where all the VOC emissions come out in one place so you

1 can go out and measure that place. We call those
2 fugitive emissions. Emissions can come out from many
3 different types of fittings and exit points in a tank.
4 So it's not easy to put that all together. You could
5 theoretically put it all in a large bubble and measure
6 things, but that's not practical either for large tanks.
7 So now -- and ten years ago -- or roughly
8 ten years ago, we have technology that allows us to
9 measure fluxes of VOC from sources. That means you have
10 long path laser or LIDAR type of measurements that allow
11 us to determine what is leaving the vicinity of the
12 source. And those types of measurements, when they have
13 been applied to tanks, show us that we have been
14 underestimating our tank emissions doing it the
15 traditional way.
16 Now, why does it matter here in some ways? I
17 mean, it's an accuracy issue, it's an important issue
18 and we want to know, of course, impacts and they have --
19 more emissions means more impacts. But here there's a
20 regulatory issue. We are trying to get a classification
21 of whether something is major or minor. And there it is
22 important to get a reasonable estimate. In fact, if you
23 think about it, it is more important when you are
24 classifying something as minor to get that more accurate
25 because this facility was already a major source. We

1 don't classify anything higher than major. So whether
2 it is 101 tons or whether it's a thousand tons, it would
3 still be subject to the same sort of regulations. But
4 whether it is 50 tons or 100 tons, you've got to get
5 that right from a regulatory perspective. And so that's
6 the issue here, is if there are accurate measurements
7 available, what are they telling us about tank emissions
8 and they're telling us that tank emissions are
9 underestimated.
10 **Q. How significantly are they underestimated?**
11 A. Yeah, I think somewhere between --
12 conservatively between three to seven times. So I'm
13 saying about five times, and this is a factor of five
14 I'm talking about.
15 **Q. So when you said -- you're saying five times,**
16 **you're saying you applied a multiplier of five to the**
17 **number estimated by the applicant to use in your**
18 **calculation of tank emissions?**
19 A. Right. I didn't do the calculation per se. It
20 is fairly involved. It requires more data. But if you
21 apply what we've learned from these type of techniques I
22 was mentioning to estimating the emissions, you would
23 get a number. And those are the kind of multiples that
24 people have seen when they've done side-by-side
25 estimates. When they have done the traditional

calculation method and then gone and compared it with these measurement techniques, we see those type of multiples and that's basically what one might expect here. There's no reason not to expect a multiple here.

Q. Dr. Sahu, I would like you to look in the book that's in front of you, turn to Exhibit 5524, please.

A. I'm there.

Q. And is that a document that you relied on for this portion of your testimony?

A. Yes. This is one of the documents that talks about a particular technique called DIAL, which stands for differential absorption LIDAR. I've done it for a different agency; it's done in Texas almost ten years ago.

Q. But is Exhibit 5524 an example of what you were talking about with these more recent studies showing that we have been underestimating tank emissions?

A. Yes.

Q. And you cite other studies in your testimony?

A. Yes.

Q. I'd now like to turn to the portion of your testimony, Dr. Sahu, concerning greenhouse gas emissions. Thereto you have set forth opinions regarding greenhouse gas emissions. Could you please summarize your opinion concerning potential emissions

1 **from the facility?**
2 A. Now, my understanding is the facility, at least
3 again for the permitting sources, has estimated
4 greenhouse gas emissions -- let me do this by convention
5 as carbon dioxide equivalent emissions of somewhere
6 around 95,000 US tons or -- which translates to about
7 86,000 metric tons. They're interchangeable. That's
8 just from the permitted -- what they have considered the
9 permitted sources.
10 There are estimates in the documents that
11 account for some degree of transport-related emissions.
12 Now, when you add those, we're somewhere in the roughly
13 quarter million metric ton level just by the applicant's
14 estimates. Now, it is important to remember that those
15 transport-related emissions are not complete.
16 **Q. Dr. Sahu, could I interrupt. When you say**
17 **"transport-related emissions," can you tell us what**
18 **you're encompassing when you talk about**
19 **transported-related emissions for that figure you just**
20 **gave.**
21 A. Right. The quarter million tons, give or take,
22 metric tons, includes some rail -- one-way rail
23 emissions from roughly Spokane to Vancouver and ship
24 emissions or vessel emissions leaving the terminal up to
25 some point. I don't quite remember how far they take

1 them out, maybe to the mouth of the Columbia River or
2 some distance. That's what I mean. That's included.
3 So the roughly 86,000 tons grows to about a quarter of a
4 million tons, give or take, when you add those
5 emissions.
6 And for some inexplicable reason, unless I
7 didn't understand them right, they only include
8 greenhouse gas emissions for trains -- for inbound
9 trains, but not for trains that leave. Obviously
10 locomotives still emit greenhouse gas emissions even if
11 the tank cars are themselves empty. So -- but that's
12 already in the documentation.
13 Now, when you think about greenhouse gas
14 emissions a little broadly as sort of the but-for in
15 calculations of what would be the greenhouse gas
16 emissions if we had the terminal and didn't have the
17 terminal, of course the trains are arriving from let's
18 say, North Dakota, so you have to take a broader range
19 of inbound emissions. The ships might take the crude
20 oil to at least the West Coast refineries. There's
21 certainly discussion in the documentation of perhaps
22 taking crude to even Hawaii and Alaska. You could go
23 even farther, export maybe, that's talked about. That,
24 of course, adds more greenhouse gas emissions.
25 You can -- you know, I heard testimony that --

1 we've been talking about greenhouse gas emissions.
2 These numbers are so large, it's hard to put them in
3 perspective and I think there's some attempt by -- good
4 attempt by Mr. Hansen, and he was asked -- and I think
5 he said this 86,000 metric tons seems like a big number,
6 but it's only .1 percent of the state of Washington's
7 greenhouse gas emissions.
8 When you add these other things, that percent,
9 of course, grows. You're up to almost .4 percent or so
10 when you add these estimates from near transport. If
11 you go all the way to Bakken and add them, you're now
12 near 1 to 2 percent of Washington State emissions.
13 Things get really interesting if you say, well, this
14 crude has to be found somewhere. What is the greenhouse
15 gas emissions associated with the refinery? Now you
16 have that calculation, you're up to 7 or 8 percent of
17 the state of Washington's emissions.
18 And then if you take it to the logical
19 conclusion, that the refined product, either gasoline or
20 diesel, is going to be combusted some place, now you're
21 up to a whopping 60 percent, 54 percent of the state of
22 Washington annual emissions. So you -- the numbers
23 start to grow in terms of the implications depending on
24 how far you sort of understand and estimate the
25 greenhouse gas emissions -- the activities that lead to

1 greenhouse gas emissions.
2 **Q. So, Dr. Sahu, I'm going to pull you back down.**
3 **Let's just talk about the 4 percent figure, which**
4 **encompasses what the applicant talked about, the**
5 **stationary actual facility and some of the transport**
6 **emissions.**
7 A. That's .4. I mean, it went from about .1 to
8 .4 percent, correct.
9 **Q. And that's just for one facility. That's just**
10 **this one facility has that share of all of the**
11 **greenhouse gas emissions in the state of Washington?**
12 A. Right. Correct. It would have, correct.
13 **Q. And if you include the full transport and the**
14 **refining, which is, of course, the point of the**
15 **transloading, you're up to 7 to 8 percent of all of the**
16 **emissions for the state of Washington?**
17 A. Just the refining alone, you're about 7 to
18 8 percent of -- in the state of Washington the last
19 number I saw was -- and this is reported to the federal
20 government, was about 73 million metric tons per year,
21 give or take per year, 73 million was 2013, I'm
22 guessing. It's around that. So I use that as a base.
23 So it's about 5 to 6 million metric tons in refining and
24 that's about 7 or 8 percent of the state of Washington
25 annual emissions of greenhouse gases.

1 **Q. Mr. Hansen, I believe, testified that the**
2 **greenhouse gases from the terminal only do not tip the**
3 **scale for major source status. Do you recall that?**
4 A. Right. The major source status for greenhouse
5 gas emissions is 100,000 tons, US tons. And I think
6 they have -- by doing a few adjustments and so on,
7 they've kept it to about 95,000 US tons, is their
8 estimate from what I recall.
9 **Q. So by looking at them the way they did, they**
10 **stayed underneath the major source status?**
11 A. Right. On greenhouse gas emissions, but not for
12 VOCs like we talked about.
13 **Q. Correct.**
14 A. The major source -- you can have major for some
15 pollutants and not for others. That's the way it works.
16 It's a pollutant-specific analysis.
17 **Q. Do you agree that even if that's correct, even**
18 **if the terminal is under major source status with**
19 **greenhouse gases, that this council should disregard**
20 **greenhouse gas emissions as part of its consideration?**
21 A. Well, far be it for me to tell the council what
22 it should or should not do. But if you're in the
23 business of looking at energy and environmental impacts
24 from a proposed facility, which I think is the effort
25 here, then you should look at greenhouse gas emissions

1 and you should look at it from a slightly broader
2 perspective than just focusing on the subset, the very
3 small subset I might add, of activities that are subject
4 to permitting under our current regulatory scheme.
5 **Q. Dr. Sahu, I'd now like to turn you to addressing**
6 **some of the testimony from other witnesses, Mr. Hansen,**
7 **Mr. Bayer and I think you said you've seen some of**
8 **Mr. Corpron's testimony; is that correct?**
9 A. Yes. I was hunting for different folks'
10 testimony and I saw several other folks' testimony as
11 well. But I was obviously, given my subject matter,
12 looking for the ones by Mr. Hansen and Mr. Bayer.
13 **Q. Mr. Hansen talks almost exclusively about**
14 **permitted or regulated pollutants from a stationary**
15 **source. From an overall project air pollutant**
16 **perspective, do you consider that complete?**
17 A. No. It's definitely not complete. Our
18 regulations are what they are and Ecology, or in this
19 case, WAP is going to regulate some stationary sources
20 or the EFSEC will issue a permit, I believe, for
21 stationary sources. And by the way, stationary sources
22 does include emissions from ships when they're at berth
23 and activity is going on between land and shore and ship
24 when it's at berth. But the project emissions are
25 broader. Quite obviously they're broader. The crude

1 oil doesn't arrive at the terminal by itself. It is
2 transported there. Even within the terminal, there are
3 activities that are not covered by our stationary source
4 permitting regulations, all the transportation-related
5 support activities are not, but they exist to support
6 the terminal. They are -- their emissions are real.
7 Whether it's, you know -- you know, a diesel particulate
8 matter particle that is emitted from the facility that
9 might impact somebody living nearby, it doesn't really
10 care where it came from, whether it came from an
11 regulated or unregulated activity, whether it came from
12 a diesel truck, came from a locomotive engine, came from
13 the ship or came from a boiler or other -- the emergency
14 diesel engine. It really doesn't care. Those emissions
15 are all mixed in together. We just choose to -- for a
16 variety of other reasons that have nothing to do with
17 impacts, we choose to focus on a subset of sources to
18 put them under our permitting umbrella. That's what
19 happens. So by definition we have many more activities
20 here that are not permitted, that are emission-causing
21 and that's the key point.
22 **Q. You're aware that there's an amended air permit**
23 **application in this case?**
24 A. Yes. I think it came out in May or so, I forget
25 the exact date, of this year.

1 **Q. Have you seen the amended permit application?**
2 A. I have looked at it. I haven't had a chance to
3 do a thorough examination, but I have looked at it
4 briefly.
5 **Q. Do you know if it's a complete application?**
6 A. I can't tell. Well, it's not a complete
7 application the way I would see it because there are
8 emissions missing from certain sources so I wouldn't
9 call it a complete application in that sense.
10 Now, there's a specific completeness
11 determination that has to be done by regulatory
12 authorities. I don't know where that stands, but on its
13 face it is incomplete as a technical matter.
14 **Q. And in that regard, you're referring to, for**
15 **example, the marine vessel loading emissions. Is that**
16 **something you would consider an incomplete aspect of the**
17 **permit application?**
18 A. Yes, I would.
19 **Q. Have you had adequate time to review the permit**
20 **application and supporting documents?**
21 A. I have not, to be frank.
22 **Q. Have you seen a proposed permit at this**
23 **juncture?**
24 A. I don't believe so. I don't think I have seen a
25 proposed permit.

1 **Q. Is there anything that you've seen so far in**
2 **your review of the amended permit application that**
3 **changes your written testimony or your testimony here**
4 **today?**
5 A. No. And that's really the reason I was looking
6 at the amended permit, to see if it would, for example,
7 if they had brought in the marine sources or unloading
8 ramp or done something else. I did not see anything
9 there that would cause me to change what I had provided
10 my opinions on before this version came out.
11 **Q. Before we turn to the next piece of testimony, I**
12 **think it's important for us to be on the same page. The**
13 **project applicant in their amended permit application,**
14 **and again in Mr. Hansen's testimony, assert that they're**
15 **using BACT, B-A-C-T, or best available control**
16 **technology, and I think the assertion is that saves them**
17 **from being a major source.**
18 **First of all, I guess I would ask, do you agree**
19 **with that assessment that -- and there's a couple of**
20 **things there. First, just by applying BACT, can you get**
21 **out of your major source status on the front end, which**
22 **I think is what's happening?**
23 A. That would be very unusual, let me put it this
24 way. And I've looked at and done permits for 20 years
25 and 25 years. And BACT is something that you apply

1 typically in our scheme of things to major sources,
2 certainly, and in certain states and jurisdictions to
3 minor sources. It is a very specific way of how you
4 determine BACT, kind of a way you go about doing it.
5 And in this case the applicant has provided a BACT
6 analysis. I saw that in the application.
7 But when you look at the details, and that's
8 where I spend my time, I would disagree that BACT -- the
9 analysis that has been done is a BACT analysis, even
10 though it is stated to be a BACT analysis. And the
11 purpose of -- as I understand it from the applicant's
12 perspective, they wanted to stay a minor source. I can
13 see the advantages of that. They don't have to do a
14 bunch of things if they're a minor source. So they
15 decided to design some of the equipment a certain way,
16 they decided to do some more practices in a different
17 way to -- based on their calculations right now, to stay
18 a minor source.
19 But I wouldn't put the collection of those
20 design changes and -- or design aspects and technologies
21 and work practices as BACT. And I think Mr. Hansen at
22 some point -- I know he goes back and forth on this, did
23 admit I think, and rightly so, that BACT determinations
24 are done by the agency; they're done by the regulatory
25 agency. The applicant proposes, the agency disposes.

1 And you have a great defined set of roles here. So I --
2 given all that context, and I know it can get confusing,
3 the short answer is some controls have been proposed,
4 some design aspects have been proposed for some sources;
5 they do not meet BACT in the way I would do a BACT
6 analysis, but that determination of BACT has not been
7 completed, as far as I have seen, by any agency at this
8 point.
9 **Q. And just to be -- to be clear on what is a very**
10 **complex process, my understanding, and you correct me if**
11 **this is wrong, first you calculate whether you're a**
12 **major source; do you tip the scale at 100 tons per year.**
13 **If the answer to that is yes, then you do all kinds of**
14 **things, including a BACT analysis, as well as the**
15 **modeling you talked about and a lot of those**
16 **determinations, and we've got it a little backwards,**
17 **that there's an allegation that there's BACT and so now**
18 **they're not a major source. Would you agree with that?**
19 A. It is a little backward. I mean, many people
20 have wanted to stay away from being a major source
21 because they wanted to avoid putting on BACT. If you go
22 and talk to industrial sources here, I mean, one of the
23 incentives is to stay minor and not be a major source is
24 you would not have to install BACT, which is somewhat
25 onerous. And that's the reason you try to stay a minor

1 source. And, you know, of course, to not have to do the
2 other modeling and some of the other things I mentioned.
3 What is confusing here, Counsel, is that the
4 word "BACT" can appear in regulations even applicable to
5 nonmajor sources in state regulations, and I think that
6 might be the case here. And so I think it does appear
7 backwards and certainly -- therefore, more important
8 than simply whether something is called BACT or
9 something is a BACT analysis on paper, is you have to
10 look at the content of the BACT analysis and what is
11 included in it and what is not and that's where I find
12 some issues. You know, it certainly is true that if
13 you're a minor source and you want to voluntarily adopt
14 BACT, that's your prerogative. You can do that. If you
15 want to do that, fine. There's no bar in our system to
16 doing that. But I don't think that's been done here.
17 In other words, the rubber meets the road in the
18 following way: For these activities, could you have
19 done better controls? The answer is yes. That's the
20 way to look at it.
21 **Q. Let's turn to some of the discussion and**
22 **testimony concerning vapor pressure of crude oil. Have**
23 **you reviewed the testimony of Mr. Hansen and others with**
24 **Savage who talked about limits to total vapor pressure**
25 **and what will be accepted at the facility?**

A. I think maybe it's me willing to discuss vapor pressure at 2:30 in the afternoon. It's just something I look forward to. We will -- we will wake all of you up by the time we're done.

Q. Let's indulge you, then.

A. I did go to CalTech, but it's not like the Big Bang Theory, I can assure you. But your question, I'm sorry, was vapor pressure. Yes, there was total vapor pressure. I did -- I did review the testimony as best as I could on the video, yes.

Q. And is it --

JUDGE NOBLE: Dr. Sahu, you're talking a little bit fast for the court reporter. Slow down. Thank you.

THE WITNESS: So the first of several sorries.

BY MS. BRIMMER:

Q. And is it your understanding that the facility has decided to -- or has -- is going to try to limit total vapor pressure in an attempt to affect their tank design?

A. Yes. I think Mr. Hansen's testimony was clear on that. What I understood him to say is because there is a federal regulation called New Source Performance Standard, it goes back to 1984 as a matter of fact, they

chose to use -- for these six large tanks, they chose to use a design for internal floating roof tanks. They have a cone tank from the outside, but inside is a pontoon floating roof that rests on the liquid. And so they wanted to go with that design. And they could only go with that design if the vapor pressure -- the total vapor pressure of the product being stored was limited to 11 pounds per square inch and so they said that's what we're going to do; we're going to handle stuff with only 11 PSI and we can then use these type of tank designs for the big storage tanks.

Q. And is it your understanding -- let me back up. What would they have to do to the tank, if you know, if they were going to store crude oil with higher total vapor pressure than 11 pounds per square inch?

A. They would have to go with a different design. They may have to go with -- you know, there are some designs that simply won't work with crude oil. So there are those, just from an engineering perspective, they're out. But here one of the options could have been that they would have to not only store things in this type of a design but then also collect the vapors and send it to a vapor control system, much like the marine vapor control system, but a different -- similar apparatus. That's one possibility they might have had to do that, a

1 different design.
2 **Q. Would that design be more costly than the**
3 **floating roof design they've chosen?**
4 A. Yeah, it would be above and beyond the floating
5 roof. So it would involve all the costs associated with
6 the current design and then add on some cost of some
7 additional controls.
8 **Q. We've heard two terms during testimony about**
9 **vapor pressure, total vapor pressure that we've been**
10 **talking about here and Reid vapor pressure. This is**
11 **probably where it gets exciting for you, Dr. Sahu.**
12 A. No, no.
13 **Q. Can you describe the difference between those**
14 **two, please?**
15 **(Loud noise outside room.)**
16 A. And that concludes my testimony.
17 The total vapor pressure is sort of a
18 theoretical analysis. And I'll say this the following
19 way. If you have a pure liquid, that means you just
20 have a tank of benzene or you just have a tank of
21 acetone, just a pure compound in the chemistry sense,
22 the total vapor pressure is relatively easy to measure
23 and it's -- you can, in fact, look it up in any number
24 of chemistry texts. It varies as a function of
25 temperature. It always becomes higher when the

1 temperature increases. It's relatively easy.
2 The problem comes in when we deal with a
3 mixture, and crude oil is by definition a mixture. So
4 in crude oil we have all kinds of carbon compounds from
5 very light butane, propane even, and pentanes, and then
6 going all the way to very heavy carbons; it's all mixed
7 in together.
8 When you want to measure vapor pressure -- total
9 vapor pressure for something like that, it's a very,
10 very tough job. You have to be very careful how you
11 sample that. You have to be very careful how you
12 transport it to the lab. There are some ASTM inputs
13 that will help you do that and they have their issues
14 and problems, even in the lab. So most people don't
15 like to measure total vapor pressure. So years ago
16 people figured out that we could do something slightly
17 different. We would standardize on something called the
18 Reid vapor pressure because there we get more leeway on
19 how we do that analysis in the lab. We're allowed to
20 take a certain amount of the liquid and mixture in this
21 case. We get to use a certain vapor liquid ratio,
22 standardized ratio, and I won't even get into the
23 details on that unless there are questions later.
24 And the lab then -- every lab in the world that
25 does a Reid vapor pressure does the same technique and

1 the same ASTM technique. They do it at hundred degrees
2 Fahrenheit and they keep a vapor/liquid ratio of four to
3 one; that means they put it in a container with four
4 parts vapor and one part liquid, keep it at a hundred
5 degrees, measure the head space vapor and call that the
6 Reid vapor pressure. And that is what is done and
7 therefore you can compare Reid vapor pressure done for
8 one substance to another.
9 And then how do you then calculate the total?
10 Well, years ago, the American Petroleum Institute came
11 up with some charts, we call them nomographs, of how to
12 kind of translate one to the other and you can still see
13 them floating around, and that's how you kind of get
14 back the total vapor pressure, mostly, when you
15 calculate -- or when you get a lab analysis for the Reid
16 vapor pressure. That's the distinction here.
17 **Q. So when the applicant witnesses or documents**
18 **sometimes refer to total vapor pressure, sometimes to**
19 **Reid, those are two very different things?**
20 A. They are different things. And usually the
21 total is slightly lower than the Reid, but you have to
22 go to these complex charts and those charts were really
23 developed for very, very limited circumstances, frankly.
24 We are now dealing with these Bakken crudes and others
25 for which the charts -- Bakken crudes and others for

1 which the charts may not even apply. But setting that
2 aside, yeah, you can convert using these charts. But
3 they are different tanks.
4 **Q. And you have to be precise about which one**
5 **you're referring to?**
6 A. Yes.
7 **Q. It sounds from your testimony with respect to**
8 **how sampling and analysis is done, that this is not**
9 **instantaneous; is that right?**
10 A. Right. You don't -- yes, that is important.
11 There is not an instrument that you can simply stick
12 into a liquid, let's say, like you would get a
13 temperature, for example, but that would give you vapor
14 pressure instead. You would have to collect a sample
15 the right way.
16 And what I mean, "the right way," is taking
17 great care not to lose the vapor part. That's often the
18 problem, is you can -- you can lose the vapor part if --
19 as you're collecting the sample, and then, of course,
20 the lab doesn't know that you didn't collect the vapor
21 and you're going to bias your results quite a bit.
22 So you have to collect it the right way; it has
23 to go to the lab and then they have to do their analysis
24 and then the report returns back to you. You can't
25 stick a probe in and just get a result.

Q. So a train car comes in and they want to sample it for vapor pressure, it's not like a dipstick kind of thing; you just put something in and pull it out?

A. You couldn't do that.

Q. Do you know whether the terminal will have an approved lab for analyzing vapor pressure?

A. Not that I've seen from the list of sources and activities. I mean, I see boilers, I see emergency engines, I see the second and the third tracks, I see the tanks, I see support tanks, some office buildings. I did not see a lab, an on-site lab.

Q. Have you seen anything in the permit application documents you reviewed that give any details about train sampling?

A. No. And that's a very important -- and something that you can't gloss over. If you're going to take a limit, as they have suggested, that 11 true vapor pressure is going to be the limit of things they can accept -- and it's my opinion based on prefiled testimony and the evidence I provided, that Bakken crude oil could have vapor pressures greater than 11. You have to allow for that -- then how that testing will be done is not spelled out. You're getting somewhere -- depending on the number of rail cars, you're getting between 400 and 480 rail cars coming to you every day.

1 Four trains, between 100 and 120 cars in each train. So
2 you've got quite a few rail cars coming at you every
3 day.
4 Unless you can show that all of them are the
5 same, you have to take some representative number of
6 samples. And, of course, the sampling is not
7 instantaneous. It has to be done. It has to be then
8 sent to a lab. In the meantime, what's happening with
9 the train? Are you just parking it? Are you unloading
10 it? It raises a whole bunch of logistical questions.
11 I did see -- because I wanted to look at this
12 carefully, I did see that the design of the terminal
13 includes two lines. I don't think they're complete
14 loops. I think line 4109 and 4110, are a 200-foot line
15 and a 700-foot line where they could park individual
16 rail cars, they said, if there's a problem.
17 I did some simple math and that is about maybe
18 15, 17 rail cars between the 900 feet you could park,
19 setting aside, you know, the ingress and egress of how
20 you bring things in and out. And that's about 2,
21 3 percent of the number of rail cars arriving every day.
22 Then if you're parking tanks and allowing for lab
23 analysis, it just -- I couldn't figure that out. The
24 logistics of how it would work was not clear to me.
25 **Q. So are you familiar with the testimony that if a**

test was done at the facility and it did not, for want of a better word, pass the total vapor pressure test, that that would somehow be pulled out and sent somewhere else? Do you recall that testimony?

A. I did. And that's what prompted my going back to look at how that would be accomplished. I think the intent is there, that's what I heard. I didn't understand the details. But then I saw the provision for these, track 4109 and 4110, I believe, but that's a relatively short stretch of track to park cars and they'll be parked for some time because this analysis is not going to come back, you know, right away. And in the meantime, the next day, another 400 rail cars have arrived and on and on it goes. You've got Lucy in the chocolate factory there.

Q. And is it your understanding from the testimony that not each tank car will be tested for vapor pressure?

A. Right. I did not hear from the testimony that every tank car will be tested. That raises a whole set of different questions of which ones do you test and what is your representative and what documentation do you have that when they're loaded, they're the same or not the same?

So if you are going to simply do what is called

1 random sampling or a sampling of a subset of things,
2 then you have to have some assurance that what you have
3 sampled is representative of what you have not sampled
4 and that gets to a question back to where these trains
5 get loaded and did they all get loaded from one tank in
6 the -- where they started or did they not, were there --
7 was the rail reconstituted before coming to the terminal
8 somewhere at an intermediate point? It just raises a
9 whole chain of custody issues. But I didn't see any
10 detail on that.
11 **Q. Did you see -- pardon me. Did you see the**
12 **testimony that there will be testing at point of origin?**
13 **Is that testing for vapor pressure done the same way**
14 **that you've described would happen at the terminal?**
15 A. Well, people do do Reid vapor pressure testing,
16 but, again, the point of origin, is it to -- when
17 they're loading the train or is it at some remote tank?
18 Point of origin is also another complex facility,
19 essentially another terminal, into which you're loading
20 and creating trains. So you still need to look at how
21 these trains are going to be put together; are these
22 trains going to always be put together with all the
23 hundred to 120 cars coming from the same, let's say,
24 storage tank?
25 If that's the case, then maybe you could do one

1 sample for their storage tank at the -- wherever it
2 started from and say, look, I got one sample and it's --
3 everything in this train came from that one tank, maybe
4 that works. That certainly would be one way to minimize
5 your sampling at the upstream and not every car.
6 But we have no detail on how these trains have
7 been re-created, how they're going to be loaded, which
8 and where; all those details matter if you're going to
9 simply leave it to upstream.
10 **Q. And even in the scenario you just described**
11 **where the point of origin is a single source, would you**
12 **still have to test for vapor pressure at the terminal if**
13 **you were to continue to meet the tank requirements?**
14 A. Yes. I would think that your permit would have
15 a condition, because you've limited your tank design to
16 11 true vapor pressure, that you would have to test it,
17 yes.
18 **Q. Is that because vapor pressure can change in**
19 **transit?**
20 A. Vapor pressure can certainly change in transit
21 because the rail is subject to -- remember, it's a
22 mixture, and we think of vapor pressure as a property of
23 a liquid, but that's only true for pure liquids. For a
24 mixture, things are much more complicated. And the
25 temperature profile they're subject to can affect the

1 vapor pressure. If you're, for example, loading on a
2 relatively cool day in the Bakken in North Dakota and
3 then it's coming across the country like we've had
4 weather this last two or three days, I mean, it's 103
5 degrees in Chicago and extremely hot, then, yes, what
6 you -- what you're going to evolve, even in transit,
7 might create a different circumstance. The head space
8 is going to be different than when you -- you arrive.
9 So I can't see an easy way of taking -- or a dependable
10 way of taking simply measurements taken elsewhere, days
11 earlier typically, and saying we're good to go at the
12 terminal. That would have to be vetted, and that
13 reassurance is not in the documentation.
14 **Q. Your testimony addresses the various -- the**
15 **variety of vapor pressures of Bakken crude and you have**
16 **some exhibits to your testimony, and I don't need you to**
17 **go over those again, but I just want to be clear, Bakken**
18 **crude ranges much higher than the vapor pressures that**
19 **we are talking about as limits here, correct?**
20 A. Yeah. Bakken crude has been measured and tested
21 at RVPs greater than 15 PSI. Now, that makes it -- that
22 makes true vapor pressure somewhere in the 13 range,
23 let's say. So, yes, it's much higher than 11, and
24 that's -- and it's not just a sporadic sample or two. I
25 mean, 20 or 30 percent of Bakken crudes have been tested

1 at RVP greater than 13, let's say.
2 **Q. In your opinion, if the Tesoro Savage terminal**
3 **was going to limit vapor pressure and avoid stricter**
4 **tank requirements, what would be required in their**
5 **permit to ensure that that occurred?**
6 A. Well, at a minimum, you would need a sampling
7 protocol for how the incoming train or the rail cars and
8 the trains are sampled, or how the tank is sampled. You
9 decide where you want the risk. I mean, if you want to
10 pre-empt greater than 11 making it into your tank, you'd
11 probably sample the rail cars. Because I think that's
12 their intent. They want to put rail cars aside that
13 don't meet the spec before the product gets into the
14 storage tank. So you'd need a sampling protocol and
15 that gets into these details we've been talking about.
16 It will recognize the turnaround time for doing this
17 type of -- the mechanics of the testing and who does it
18 and the qualified people who collect the sample properly
19 and how it's transported to the lab and so on and so
20 forth. So I think at a minimum you would have that.
21 And then, of course, you need a section on "what
22 if." Okay. If you fail, what happens to those rail
23 cars and how they are handled, in a couple different
24 ways and not just, you know, that they're eventually
25 sent out. How is it reassured that they don't get into

1 the tanks, number one, but, B, as they're being stored,
2 I mean, they're stored properly so they're not sources
3 of emissions, just even in their storage before they're
4 sent from the facility. So you have to kind of look at
5 all that and create enforceable conditions in the permit
6 through a fair amount of recordkeeping that can be
7 verified later.
8 **Q. I would like to now turn to some of the issues**
9 **with tanks, one of the other emission sources.**
10 A. Yes.
11 **Q. There was some testimony about the TANKS,**
12 **written all in capital letters, T-A-N-K-S, program and I**
13 **think Mr. Hansen described it as just a software issue.**
14 **Do you agree?**
15 A. Yeah, he was pretty much blaming Windows for
16 that, as I saw basically. It's a little more
17 complicated than that.
18 **Q. What is the problem with the TANKS program,**
19 **particularly with respect to its use here?**
20 A. Well, there, the TANKS program -- he was right
21 in this sense. The TANKS program is a computer program
22 that EPA created that included the equations that are in
23 this other EPA document called AP-42, which has been
24 referred to as the bible of pollution. So the --
25 somebody just programmed it, you know. He took the

1 equations -- so they took the equations and just
2 programmed it. And over the years there have been some
3 errors discovered in just the program implementation of
4 those equations. And so EPA at some point stopped
5 supporting the program and said, there are errors, we
6 know of errors, and therefore they're not taking any
7 chances; they're simply saying, it's user beware at this
8 point. Use it at your own risk.
9 **Q. How does EPA say that?**
10 A. Well, they put a little warning on their TANKS
11 web page and said that we know of errors, we're not
12 supporting it anymore, we're not updating it anymore, go
13 ahead and use at your own risk, if you want to use it at
14 all.
15 **Q. Do you know how long ago EPA did that?**
16 A. Well, about two and a half, three years. I
17 mean, it's been a while.
18 **Q. Now, you testified to the DIAL, D-I-A-L, studies**
19 **and the problems that have been discovered in the last**
20 **ten years of underestimating tank emissions. I just**
21 **want to be clear, is that related at all to the vapor**
22 **pressure issue?**
23 A. It is less to the vapor pressure issue than it
24 is to a methodology. You know, right now, our whole
25 knowledge base of how to estimate tank emissions comes

1 from these AP-42 equations which are developed back from
2 some studies done in -- going back to the '50s almost.
3 And so fundamentally those equations are underpredicting
4 emissions from tanks. So it's not just a vapor pressure
5 issue; it is just our calculation methodology itself is
6 not capturing what the source is emitting.
7 **Q. So for TANKS, are there potentially two layers**
8 **of problems here; one is using the program that EPA no**
9 **longer supports, but the other is that the underlying**
10 **calculations have been demonstrated to be**
11 **underestimating tank emissions; is that accurate?**
12 A. Right. The science currently, I think without
13 any doubt, shows that the current methodology
14 underestimates. So that's a problem. Under the second
15 part is, even if you stuck with the current methodology,
16 the vapor pressures and things, there are important
17 parameters to make sure your estimates are even
18 consistent with what it is you're estimating emissions
19 from.
20 **Q. Now I'd like to turn to the marine terminal**
21 **loading part of the emissions picture, please.**
22 A. Yes.
23 **Q. And, again, you reviewed Mr. Bayer's testimony?**
24 A. I did.
25 **Q. And you saw Mr. Hansen's testimony, where he**

1 **said in his calculations, he was told to assume there**
2 **were no emissions from marine loading; is that right?**
3 A. Right. He was asked, and I think he said he did
4 not include that source because his client told him that
5 was not necessary to include, that there would not be
6 any emissions. So I think he didn't have an explanation
7 beyond that from what I gathered from his testimony.
8 **Q. Is it your understanding that Mr. Bayer suggests**
9 **that there will be certain vessel loading procedures**
10 **that will be used at the terminal?**
11 A. Right. Mr. Bayer -- Captain Bayer had some
12 testimony on that.
13 **Q. Have you --**
14 A. I looked at it very carefully, so it's from
15 8 minutes to 16 minutes past the first hour on the day
16 his testimony appears. I went over that several times.
17 **Q. Have you seen any enforceable permit terms that**
18 **require particular loading procedures at this point?**
19 A. No. We don't have anything there right now.
20 **Q. So to review, your testimony is that VOC**
21 **emissions can escape to the atmosphere during vessel**
22 **loading and that those have to be considered in the**
23 **potential to emit calculation?**
24 A. Yes. And there's a big difference between where
25 I am and where Captain Bayer is and where Tesoro is.

1 **Q. Can you describe how those emissions escape**
2 **during the loading process? I'm not sure we've had a**
3 **good description of that yet.**
4 A. Well, conceptually, it's fairly easy to
5 understand. As I understand it, when an empty vessel
6 comes to the terminal, it is going to have inert
7 products in the different tanks that are going to take
8 in the crude. And those inert products are simply the
9 exhaust of some engine that was run either at the place
10 where it came from or there is an on-board engine that
11 can be run, diesel engine, to create mainly carbon
12 dioxide and other things in order to fill the tanks.
13 And then you start -- as Captain Bayer said, you
14 turn on the pumps -- after you do all the hookups, you
15 turn on the pumps, you start slow, you start slow in
16 your loading rate, and as the liquid comes into the
17 tanks, obviously it is going to displace, just
18 volumetrically displace whatever is there in the tank,
19 which is initially the inert stuff.
20 And then this is where he didn't elaborate on
21 that, but actually it is there in Mr. Hansen's -- it's
22 in the air permit. But as you get to, you know, 50, 60,
23 70, 80 percent, you start filling in; more and more of
24 the vapor space inside becomes pretty much your crude
25 vapor. You know, your inerts are all gone, it saturates

1 basically, and it's all the vapor -- VOCs from the crude
2 itself. It's kind of a curve in the application that
3 kind of lays that out. By the time you're at the 80,
4 90 percent, it's all vapors from crude; the inert has
5 all gone.
6 Whether or not that crude vapor stays in the
7 hold, in that tank, will depend purely on the pressure
8 of the differential pressure between the tank and the
9 outside. I mean, all fluids, liquids and gases, move
10 around only as a function of the differential pressure
11 they're subject to. That's the only way to move things
12 around that are fluids. High pressure, low pressure,
13 fluid just flows from high to low. So whether that
14 vapor stays inside a given hold will depend on the
15 differential pressure.
16 Now, we heard Captain Bayer say, I think
17 accurately, that for safety reasons -- for safety
18 reasons, you don't want oxygen getting into this vapor
19 space because that can create potentially flammable
20 conditions. If there's an ignition source, you could
21 have a fire and we certainly don't want that. So you
22 keep that under slightly positive pressure because
23 that's how you exclude oxygen.
24 And where would the oxygen come from? It would
25 come from the outside of the tank. The very fact that

1 the safety regulations, Coast Guard safety regulations,
2 require a positive pressure is to preclude oxygen,
3 ambient oxygen, from coming into that vapor space. And
4 that's a good thing. I want to be very clear. We don't
5 want anything to happen from a safety standpoint,
6 obviously.
7 But a direct consequence of meeting that safety
8 requirement is you will have to keep it under slightly
9 positive pressure. And in doing so you have the
10 possibility of doing the opposite. Some of the vapors
11 will escape to the outside, just as the oxygen was
12 capable of coming in, some of the vapors will go
13 outside.
14 Now, there was some counsel question from the
15 opposing side that sort of misrepresented what I had
16 said in my report, so hopefully we'll get into that.
17 The regulations are recognized that if you want to use
18 100 percent capture, if, and there's a big if, if you
19 want to claim 100 percent capture, one way to do that is
20 to show that you have a certain amount of negative
21 pressure in that hold. Because if you have negative
22 pressure, nothing's going to come out. That's not my
23 suggestion. It's not me saying be unsafe. But it's
24 simply recognition by regulators, EPA, that if you want
25 to claim 100 percent, sure, maintain a certain negative

1 pressure in there.
2 On the other hand, you heard Captain Bayer say,
3 and I agree with him, that might create unsafe
4 conditions. So you have to maintain positive pressure
5 which means I cannot guarantee 100 percent capture. In
6 fact, he used the word "vapor tight." I think if you go
7 back and --
8 **Q. I'm going to hold you for a minute there because**
9 **I want to make sure that we do stay on the same page of**
10 **what we're talking about. So Captain Bayer talked about**
11 **hooking up to all these pictures of hoses and everything**
12 **and hooking those up and sucking the vapors out and**
13 **sending them to the combustion unit. Did you see all**
14 **that testimony?**
15 A. Yes.
16 **Q. And is this -- this is the point that you were**
17 **talking about, where we're sucking those vapors out;**
18 **that's what you're talking about with this testimony?**
19 A. We are. But I have to be very careful. Overall
20 you're sucking, meaning there's a vacuum pull,
21 otherwise, nothing would go to the MVCU. But there are
22 valves along the way. He mentioned I think three valves
23 along the way. They're still designed to operate in
24 concert that in the tank itself you don't create a
25 negative pressure so that outside oxygen can get in and

1 create a flammable condition. That would be against the
2 Coast Guard safety requirements. So you can still suck
3 vapors out while still maintaining a slight positive in
4 your tanks to not allow the oxygen to come into the
5 tanks, to not allow the flammable conditions to develop.
6 And that's what I'm talking about. It is bulk tanks.
7 **Q. So let's use a visual.**
8 MS. BRIMMER: Ms. Mastro, could we bring up
9 page 3 of Dr. Sahu's written testimony, and there's a
10 table at the top of the page.
11 BY MS. BRIMMER:
12 **Q. While we're waiting for that, Dr. Sahu, I'm**
13 **going to ask you, you referenced -- you said, I think,**
14 **that this is not your idea, and you referenced EPA --**
15 **there's EPA guidance on this.**
16 A. Right. EPA has a table, and other states north
17 of Texas does the same thing, where they sort of lay out
18 how much capture you can claim, depending on different
19 conditions of loading.
20 **Q. Now, we have on the screen, Table 9-5, and it's**
21 **at the top of page 30 of your testimony. There is a**
22 **pointer there if you want to use it. And it's probably**
23 **best to point behind you.**
24 A. This one?
25 **Q. Well, this one over here is the one the council**

1 **can see best. So is this the guidance that you've been**
2 **referencing?**
3 A. Yeah, it's the excerpt from that guidance.
4 **Q. And there are capture efficiencies on the far**
5 **right, some are the 100 percent, which is what the**
6 **applicant has assumed, correct?**
7 A. Right. That's the important part. The
8 applicant has assumed 100 percent, which is why
9 Mr. Hansen said he did not have to include this source
10 because if all of it is captured, you know, there's
11 nothing to include. So he -- so they have included
12 100 percent.
13 And what you can see here, is you can only
14 include 100 percent if you have these last two boxes.
15 You either have to have a pressurized tank, which is a
16 totally different beast. None of these tanks are
17 pressurized. That's a pressure vessel. You know, you
18 can actually subject it to high pressure. Or you have
19 to vacuum load, maintaining this one and a half inches
20 of negative water column.
21 **Q. Did you understand Mr. Bayer to say that they**
22 **maintained the negative one and a half inches of water**
23 **column?**
24 A. No. He was -- on the contrary. He said they
25 actually maintain slight positive pressure because they

1 don't want to maintain negative pressure because of this
2 oxygen integration problem, safety problem.
3 **Q. So then given this chart, what is your opinion**
4 **about the correct capture efficiency number to use in**
5 **potential to emit calculations?**
6 A. Well, I gave them credit and said it's probably
7 not as low as 65 or 85 percent, because those are for
8 tanks that you don't have leak checks. I believe these
9 vessels have leak checks. They at least have annual
10 leak checks. That is customary in my experience and I
11 think that's consistent with Captain Bayer's as well.
12 He mentioned checking periodically. And so it is
13 somewhere in the 95 to 97 and a half percent, if you
14 will, in that range. And that depends on actual
15 conditions, yeah.
16 **Q. And is that the range you used in your**
17 **calculations?**
18 A. Yes.
19 **Q. And that's how you got the range, I think -- I**
20 **think it was the next page of your testimony that we**
21 **were on previously, that gave the range of figures?**
22 A. Right. It's a relatively simple calculation and
23 that's laid out in my testimony, and I get something
24 around 112 to 154 tons. Now, I will say this, just
25 because I made -- I describe it completely, but I used a

1 vapor control that is higher than 11 because I think --
2 reflecting what Bakken is.
3 Now, there is a calculation in the application
4 itself that uses a vapor pressure of 11, uses a
5 molecular weight of 44, which I think is too low, but
6 even with those calculations, with the applicant's
7 calculations, you get something like north of 4,000 -- I
8 forget the number, 4-thousand-a-few-hundred tons of
9 uncontrolled emissions. If you don't capture even let's
10 say 2 to 5 percent of that, you get several hundred tons
11 already. So, you know, if you take 5 percent of
12 4,000 tons, that's 200 tons.
13 And so even if you don't change the vapor
14 pressure, like I have done in my analysis, even if you
15 don't change the molecular weight, which I have done,
16 you would still come up with a large uncaptured mass of
17 emissions due to this -- what seem like a small fraction
18 escaping, because so much mass of VOC vapors are
19 displaced over a year because you're pushing 360,000
20 barrels a day, that over a year adds up to something
21 about over 4,000 tons by their calculations, and only a
22 small percentage, 2 percent, 3 percent, 4 percent,
23 5 percent of that escaping, is going to be a significant
24 number.
25 **Q. So from vessel loading alone, they exceed the**

1 **potential to emit threshold for permitting?**
2 A. Right. One way to look at it is if you -- let's
3 say for the purpose of argument you accept all the other
4 calculations. You accept even the TANKS calculations
5 that I have said are underestimating it. Their numbers
6 show somewhere around 35 -- I forget, 35, 36 tons of VOC
7 emissions as it is.
8 If you have even a couple of percent of vessel
9 loading emissions, you have more than the 65 tons
10 remaining to push you over a hundred tons. So the fact
11 that they're a major source, whether it is due to an
12 underestimation of tank emissions, whether it is due to
13 a relatively small contribution of vessel loading
14 emissions, it's without question.
15 **Q. What about Mr. Bayer's testimony regarding use**
16 **of a sniffer? Does that address this issue and in your**
17 **mind allow Mr. Hansen to omit vessel loading emissions**
18 **in his calculations?**
19 A. No. I absolutely disagree with that. A sniffer
20 is a handheld tool to detect compounds. Let me tell you
21 a couple of things about sniffers. Most of these
22 sniffers -- and the good ones -- like all handheld
23 tools, they have a detection limit. And, in fact, EPA
24 accepts -- EPA accepts a use of a sniffer for these
25 vapor tightness, things we'll talk about in a minute,

1 realizing that if you get 10,000 parts per million,
2 which is 1 percent or below, you don't have to detect
3 that. In other words, the sniffer's detection limit is
4 10,000 PPM. So just because you used a sniffer -- and
5 for the purpose of argument, let's assume the sniffer is
6 used everywhere on a 900-foot long vessel or a 400-foot
7 long vessel with tens of tanks in the right wind and
8 conditions, standing with the guy is where, you know,
9 the leak is and so on, even if you could accomplish that
10 under typical conditions, which is very hard, you would
11 not even -- it would not even be -- give you an audible
12 if it's set to below 10,000 PPM. And 10,000 PPM is
13 1 percent of just even the ambient it is detecting.
14 So you can very easily get a false positive with
15 a sniffer. That means you truly believe that you're not
16 getting anything, but it is simply either in the wrong
17 place or not in the right wind orientation or you're
18 simply below the detection limit. And it's not
19 dispositive to whether or not you've got fugitive
20 emissions coming out of there.
21 **Q. And does this use of an after-the-fact sniffer,**
22 **in other words, once the terminal is in operation,**
23 **really mean anything with respect to front end potential**
24 **to emit calculations and the constant potential**
25 **emissions from a loading operation?**

A. Right. This goes back -- gets back to the early discussion we had. You have to do a PTE calculation. You have to do it before you know what type of permit you're going to get. Major source permit, minor source permit. You have to do all those things up front in your calculations.

JUDGE NOBLE: Ms. Brimmer --

MS. BRIMMER: Yes.

JUDGE NOBLE: -- I don't know how many more questions you have or how much time is involved, but we really are past the normal time for taking a break.

MS. BRIMMER: I don't have a lot of questions, but why don't we take a break. I don't want to stretch it and have it go too long.

JUDGE NOBLE: Thank you. We're off the record and in recess until 2:55.

(Recess taken from 2:43 p.m. to 3:01 p.m.)

JUDGE NOBLE: We're back on the record.

BY MS. BRIMMER:

Q. Dr. Sahu, with respect to your discussion of various pressure states with respect to vessel loading, have you seen anywhere in the permitting documents that you've seen so far, any recordkeeping or enforceable requirements for pressure requirements at the vessel loading end?

A. I have not.

Q. I would like to turn to Captain Bayer's reference to vapor-tight vessels. Do you recall that testimony?

A. Yes.

Q. And he is -- maintains that because they use vapor-tight vessels, it's another reason to assume that no vapors escape.

A. Right. It seemed to me from his testimony that he was saying that another reason we don't expect any emissions from vessel loading is because the vessels are going to be vapor tight.

Q. "Vapor tight" is a term of art, correct?

A. Very much so. Vapor tight is defined in the regulations, and it's a term of art.

Q. Does vapor tight mean that 100 percent of pollutant emissions from vessel loading are captured?

A. It does not.

Q. What does it mean?

A. It's -- a vapor-tight vessel refers to a vessel where it can withstand a certain specific amount of pressure loss when it's tested. What I mean by that is you bring a vessel in -- or barge in for certification once a year, once every six months and -- to do a vapor tightness test.

1 What they typically do is they will pressurize
2 the tank that is supposed to be tested -- they may do it
3 with air, they may do it with something else -- and then
4 they get to go away for some amount of time, half hour,
5 45 minutes, an hour, and then they come back and see how
6 the pressure has held up. And they're allowed -- the
7 pressure usually drops. It will drop in every tank.
8 And the test basically says, as long as you don't lose
9 more than a given amount of pressure, then we're going
10 to call it vapor tight and be done with it.
11 So you're allowed to drop pressure, that means
12 they are allowed to leak; it's just not enough that you
13 would exceed whatever is specified in the regulations.
14 And that's how you do vapor-tightness testing. So you
15 do this for every tank and you see that in every tank we
16 lost pressure but not enough to fail, so to speak, and
17 therefore you're certified; we'll come back the next
18 time.
19 **Q. How frequently is that certification done?**
20 A. Well, you can do it as frequently as the owner
21 wants to, but it's customarily that I've seen it done,
22 once a year.
23 **Q. And turning to the page of your testimony that**
24 **is up on the screen, there's references to leak check.**
25 **Is that what's referenced there?**

A. Yes. I mean, this chart doesn't cover all marine vessels and tanks, but leak check is that checking for vapor tightness. That's the analog in this chart.

Q. And so if I'm reading that correctly, EPA guidance provides that leak checks do not result in 100 percent capture efficiencies; is that right?

A. Right. Again, the regulations for vapor tightness are clear. You can be called vapor tight as long as you lose some pressure but not a lot of pressure. You lose some product, but not a lot of product.

Q. And, again, in the permitting documents or any proposed permit or permit application, have you seen anything with respect to vapor tightness requirements?

A. I have not. I don't recall any discussion and I -- maybe just sitting here, I might be misremembering, but I think the permitting documents simply assume that all of the vapors will be captured, then they will be treated in the marine vapor control units.

Q. So the result, again, is that you have calculated the potential to emit VOCs in excess of 100 tons per year. That I know sounds like a big number, 100 tons, that it may take a lot to reach that. Can you put that in context for the operations at this

1 **terminal?**
2 A. Yeah. And I think that's a useful metric
3 because we're not all intuitively equipped to deal with
4 these numbers, you know, greenhouse gas emissions of a
5 hundred thousand tons or a major source threshold of a
6 hundred tons. They all seem like big numbers to us.
7 Now, one way that I look at it when I look at
8 facilities like this is to look at what I call an
9 overall throughput. What is this terminal going to
10 handle in a year? We can calculate that. We know that
11 at its maximum it can do what the applicant has said,
12 360,000 barrels a day and 365 days, a ship a day,
13 basically, is their intent. And when you take that --
14 those barrels and just simple multiplication, 360,000
15 times 365 and 42 barrels -- 42 gallons per barrel,
16 rather, and then take intensity of gas -- of crude oil
17 of .9 specific gravity, you come up with a total mass
18 that is going to be flowing through this terminal in a
19 year, maximum as designed, is somewhere north of
20 20 billion tons. And you can check that math. It's not
21 difficult to do.
22 This is volatile product. Let's say about
23 10 percent of that is volatile, which is a very
24 conservative assumption. Not all of it is volatile,
25 obviously. Bakken crude is highly volatile, but I'm

1 going to assume 10 percent is volatile. So even the
2 volatile fraction of what is flowing through here,
3 flowing through in a year, is about 2 billion tons of
4 mass of VOCs.
5 A hundred tons when you compare that to the
6 2 billion tons of mass that will go through here, is a
7 minuscule amount, is a minuscule fraction. It's .00 --
8 or .05 percent, very, very small number. You have to be
9 extremely accurate if you're going to make a claim that
10 I have such good controls in all these different places
11 I'm handling this material, it is being transferred from
12 rail to tanks, back to ship, going through pipelines,
13 some of them are heated, some of them unheated,
14 forgetting the leaks and the spills and all that, you
15 have to have extreme audacity, I might add, to claim
16 that you can, as an engineering matter, control things
17 to .005 percent of your mass throughput.
18 So I think it is important under the hundred
19 tons threshold, that's an absolute number in our
20 regulations. That applies to any facility of any type
21 doing anything in the country. Here we have a size of
22 the facility that is going to handle so much product
23 that the hundred-ton threshold is not a very big
24 fraction of what it is going to be doing. You know,
25 even hermetically sealed vessels can leak at more than

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.005 percent sometimes, and you certainly don't have anything comparable to that here. It's another perspective on what a hundred tons means to what is being proposed at Tesoro Savage.

MS. BRIMMER: I have nothing further, Your Honor.

JUDGE NOBLE: Cross-examination of Dr. Sahu?

CROSS-EXAMINATION

BY MR. JOHNSON:

Q. Thank you, Dr. Sahu. I'm Dale Johnson. I'm one of the attorneys for the applicant.

A. Good to meet you, Counsel.

Q. Good to meet you too. Let me just start, I guess where we left off in some ways, at least with an exhibit. Drawing your attention to this Table 9-5, which is displayed here, this is a document that you took from the source at the Texas -- the -- from the State of Texas; is that right?

A. Actually, this is taken from EPA document, Counsel, but they in turn reference Texas.

Q. I see. Because isn't it true that this document, this table is a table that's used to discuss load and characteristics for loading tankers, and tankers in this context refers to trucks being loaded at refineries?

1 A. It does, and that's what I mentioned earlier.
2 It does. And there's some discussion of marine in that
3 section in the EPA guidance, but this table -- that's
4 why I mentioned to counsel, this leak check is in the
5 context of tank trucks.
6 **Q. I see. So this leak check, as it is referenced**
7 **in this table, it does not relate to leak checks on**
8 **marine vessels?**
9 A. Correct. The one difference would be it's
10 designed for actually smaller vessels, you know,
11 actual -- kind of things you see on the road, and marine
12 tanks are even bigger with larger propensity to
13 potentially --
14 **Q. I just want to be clear that this applies to --**
15 **this applies to trucks, not vessels; is that correct?**
16 A. That is correct. But it is indicative of even
17 worse situations than vessels, but that's --
18 **Q. I just want to be clear.**
19 A. Sure.
20 JUDGE NOBLE: Mr. Johnson, be sure and let
21 him answer your question.
22 MR. JOHNSON: Yes, Your Honor.
23 BY MR. JOHNSON:
24 **Q. A lot of discussion about permitting here, and I**
25 **just want to ask what your understanding is about the**

1 current status of the facility air permit.
2 A. Well, my understanding is an application has
3 been submitted, but as I indicated to counsel, I don't
4 think I've seen a draft permit issued for -- you know,
5 comment or anything like that. My understanding is it's
6 being reviewed by EFSEC.
7 **Q. Okay. And as you noted, the permitting agency**
8 **will make a completeness determination of that permit,**
9 **correct?**
10 A. Yeah, they usually do. And I was not sure if
11 such a determination had been made or not.
12 **Q. Okay. And the permitting agency -- well, in**
13 **this case, the Department of Ecology would normally**
14 **conduct a review of the BACT analysis, would it not?**
15 A. Right. Whoever is the agency or authority that
16 issues the permit.
17 **Q. Okay. And isn't it true that the permitting**
18 **agency also reviews determinations about whether a**
19 **source is a major source or a minor source?**
20 A. Well, of course, they look at what the applicant
21 is suggesting and that's what they're supposed to do, is
22 reassess it and vet it and come to their own
23 conclusions.
24 **Q. Okay. And you've drawn a conclusion about**
25 **whether this marine facility is a major or minor source,**

1 you have an opinion -- you've expressed your opinion
2 about that, correct?
3 A. I have.
4 **Q. Okay. And the agency will also conduct a review**
5 **of -- review the conclusions of the applicant in its air**
6 **permit application, correct?**
7 A. I would think so, yes.
8 **Q. Okay. When you were reviewing sources in**
9 **preparing your testimony and you talked about permitted**
10 **sources and then some other things, what were the**
11 **primary sources of information related to emissions at**
12 **the permitted source?**
13 A. I relied on the air permit application because
14 it identified the sources or activities that were --
15 that were in the air permit application.
16 **Q. Okay. And then when you were talking about**
17 **things beyond permitted sources, for instance, in**
18 **locomotive emissions or emissions from somewhere other**
19 **than at the site, what were the primary sources of that**
20 **information?**
21 A. Well, it was an understanding of how a terminal
22 works. That was the fundamental -- I mean, in other
23 words, I read the description, frankly, even in the air
24 permit application that said this was a terminal -- you
25 know, crude would come in by rail. You know, I've dealt

1 with terminals that crude might come in by pipeline, for
2 example. Here it's coming in by the rail. And
3 obviously, that has locomotive emissions.
4 I read in the air permit application that the
5 outgoing -- that the outbound sort of destination is
6 vessels, so obviously vessels have their propulsion
7 systems, their engines. And then just the knowledge of
8 how a terminal works in terms of there are always
9 support facilities and mobile sources at the terminal.
10 It is primarily that. It's the basic idea of how a
11 terminal works.
12 **Q. Okay. And with regard to your analysis of the**
13 **GHG -- GHD analysis, beyond the terminal itself, where**
14 **is that generally dealt with?**
15 A. That is -- I did review other documents to be
16 fair, and I did review the environmental impact
17 statement -- the draft environmental impact statement,
18 and there was some discussion there as well.
19 **Q. In your experience is that analysis normally set**
20 **forth in the context of that environmental impact**
21 **analysis?**
22 A. Yes.
23 **Q. Okay. And is that because there are -- there**
24 **are very specific regulations that apply to permitting**
25 **a -- an air permit for a facility such as this that**

1 don't include things such as the GHD analysis beyond
2 that facility?
3 A. I would agree that -- I think I mentioned that,
4 even in response earlier to counsel's questions, that
5 our permitting system deals with a subset of activities
6 that would normally occur. Some things are within the
7 purview of permit, but that doesn't mean that things
8 that are not permitted are not also capable of emitting
9 air contaminants.
10 **Q. Understood. And my question was, in your**
11 **experience, are those things that would be outside the**
12 **permitting realm normally dealt with in the context of**
13 **the environmental review?**
14 A. That is true. And the one caveat that we talked
15 about, marine loading, that is a dispute, you know, that
16 I think should be included in the permitting.
17 **Q. Okay. All right. Fine. Isn't it true that**
18 **BACT is required for minor sources under -- for**
19 **Washington regulations?**
20 A. I saw that, yes. There is a provision for BACT
21 for minor sources.
22 **Q. Okay. And are you aware that even though the**
23 **applicant has concluded that this is a minor source,**
24 **that it went ahead and did a BACT analysis and also**
25 **site-wide criteria modeling because the Washington**

1 regulations require that even for minor sources?
2 A. I did -- and I just acknowledged that I had seen
3 the BACT analysis done by the applicant. I just
4 disagree with some of the content of it. And I have
5 looked at the modeling. The applicant did do some -- I
6 wouldn't go quite so far as to say, Counsel, that they
7 did modeling for criteria pollutants, because there is
8 no modeling for ozone or secondary PM 2.5, and those are
9 criteria pollutants as well, but for some criteria
10 pollutants, they did some modeling.
11 **Q. Okay. And isn't it true that Washington has**
12 **more stringent regulations for minor sources than would**
13 **otherwise be required by federal regulations with regard**
14 **to modeling?**
15 A. Yes, in some respect, it does.
16 **Q. Okay. In your written testimony, you made some**
17 **comments about air -- emission sources and activities,**
18 **and you stated that the application emits -- well, I**
19 **think you said the DEIS application emits construction**
20 **emissions outside the terminal. Do you recall that?**
21 A. Yes.
22 **Q. Okay. And nothing in the Clean Air Act,**
23 **Washington Clean Air Act or local regulations requires**
24 **consideration of those emissions for obtaining an air**
25 **permit, correct?**

1 A. For an air permit, that is correct.
2 **Q. Okay. And you also testified that the DEIS**
3 **application omit post-operational emissions outside the**
4 **terminal area. And isn't it true that nothing in the**
5 **Clean Air Act, the Washington Clean Air Act or their**
6 **implementing regulations requires that analysis to**
7 **obtain an air permit?**
8 A. That is correct. And if I can add, I didn't see
9 the air permit as submitted including any -- either
10 construction or post-operational emissions at the
11 terminal either.
12 **Q. Okay. All right. And, again, you have -- you**
13 **said you haven't seen the final -- the revised air**
14 **permit, correct?**
15 A. No, I have not seen several versions of the air
16 permit application.
17 **Q. And that's the same permit that's subject to the**
18 **permitting agency review to ensure completeness,**
19 **correct?**
20 A. Correct.
21 **Q. Okay. You also testified that the DEIS and the**
22 **application omit emissions outside the terminal beyond**
23 **the boundaries of the state, that is the state of**
24 **Washington. I think you commented on that earlier --**
25 A. Yes.

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1 **Q. -- in your testimony. And same question,**
2 **there's no Clean Air Act requirement or Washington Clean**
3 **Air Act requirement or any other requirement in the**
4 **implementing regulations required to obtain an air**
5 **permit for this facility related to that, is there?**
6 A. Not to get a permit.
7 **Q. Okay. You also testified in your written**
8 **testimony that the DEIS accepted emissions estimates**
9 **developed by the applicant in its air permit application**
10 **and then supplemented these calculations by adding the**
11 **emissions due to trains and vessels within Washington.**
12 **Do you remember that?**
13 A. Yes.
14 **Q. Okay. And isn't it true that that was done in**
15 **the DEIS as part of the SEPA analysis and not as part of**
16 **the permit application?**
17 A. Right. So you have -- just to be clear, you
18 have the overall project, trains coming from point A in
19 North Dakota, let's say, leaving to California. A
20 subset of that is stuff happening within the state of
21 Washington. That was -- the greenhouse gas emissions,
22 for example, were done in the draft -- I mean EIS. And
23 then there are a further subset of all of this which is
24 at the terminal, is what is the subject of the air
25 permit application. So you've got -- the air permit

1 application is a small fraction of the project --
2 **Q. Okay.**
3 A. -- emissions.
4 **Q. All right. You also, I think, discussed with**
5 **Ms. Brimmer some -- I think what you characterized it as**
6 **some of the major deficiencies that you assert exist as**
7 **part of -- as part of the air permitting analysis**
8 **generally and you talked I think a bit about tank**
9 **testing, you talked a bit about the marine fugitive**
10 **vapor issue.**
11 **In your written testimony, you also listed some**
12 **other things that presumably you consider to be somewhat**
13 **less major, including railcar loading and unloading,**
14 **emissions associated with those, additional storage**
15 **tanks which do not contain crude, tank cleaning, spills,**
16 **et cetera. Did you do any independent analysis of**
17 **emissions from those asserted emission sources?**
18 A. I didn't. Because this is -- if you recall
19 earlier, I mentioned to all of you that I didn't have
20 enough detail for some of those -- some of the kinds of
21 detail that I would need to be able to do those
22 calculations. Only the applicant is in the best
23 position to do those calculations. But those were
24 sources -- and, remember, we're doing potential to emit
25 here. So they are potential sources that I didn't see

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1 included in the air permit application itself. But I
2 didn't have the underlying inputs that I would need to
3 attempt that calculation independently.
4 **Q. Okay. But you did attempt a calculation**
5 **independently for what you asserted were the major**
6 **problems associated with the TANKS programs; is that**
7 **right?**
8 A. If you feel -- if you see, I don't believe in a
9 calculation so much, as an estimate on that one. The
10 calculation I have done is for the marine vapor loading.
11 **Q. Okay. All right. Do you know how -- well, I**
12 **think you have confirmed your understanding of how total**
13 **vapor pressure for crude to be handled at this facility**
14 **was derived, that is, the maximum vapor pressure.**
15 A. Are we talking about the 11?
16 **Q. Correct.**
17 A. Yes. Yes, my understanding is it was driven by
18 the tank design, the storage tank design.
19 **Q. Okay. And that flows from the NSPS Standard**
20 **related to the tanks, correct?**
21 A. Right. The NSPS Standard only applies to tanks,
22 I think, below 11 PSI or 11.4 PSI.
23 **Q. Okay. And are those standards enforceable?**
24 A. The standards -- their regulations are made
25 enforceable through permits.

1 **Q. And the permit remains to be issued for this**
2 **facility, correct?**
3 A. Right.
4 **Q. Okay. And the permit will address -- the air**
5 **permit will address whatever monitoring, recordkeeping,**
6 **reporting requirements are necessary to ensure**
7 **compliance with that NSPS Standard; isn't that right?**
8 A. I don't know. I haven't seen the draft permit.
9 **Q. Okay. Well, would you expect it to?**
10 A. I have seen a lot of permits, and there is --
11 there is a lot -- it's a very fact-specific set of
12 monitoring, recordkeeping aspects that go into permits.
13 So I would expect it to be there, but how effective
14 those provisions will be and how -- that will depend on
15 the kind of specifics we talked about, and we're talking
16 about, you know, four or 500 rail cars arriving every
17 day and so on and how that monitoring will work. Again,
18 we're talking about monitoring vapor pressure, a
19 difficult thing to monitor without testing. How all
20 that will work remains to be seen and made enforceable
21 remains to be seen.
22 **Q. Sorry, a lot of notes.**
23 **On that -- on that note, if -- I think you've**
24 **testified both today and in your written testimony, that**
25 **total vapor pressure is generally lower than Reid vapor**

pressure.

A. That's true.

Q. Okay. So if that's the case and Reid vapor pressure was less than 11 at the source, when tested at the source, let's say North Dakota in this case, wouldn't it follow that it would likely be less than 11 -- total vapor pressure of 11 when it arrives at the terminal?

A. No, it doesn't. It doesn't follow.

Q. It doesn't?

A. No.

Q. Okay. Why is that?

A. Okay. You asked me this, so you've got to bear with me on this one. I told you Reid vapor pressure is tested with a vapor liquid ratio of four to one. If you look at how Reid vapor pressure is tested, you have that. So to mimic a Reid vapor pressure situation in actual conditions, you would need a tank or a tank car or whatever you're testing, where 80 percent of it is empty and 20 percent of it has liquid. That is one of these critical drawbacks of Reid vapor pressure in terms of how it works in the real world.

So if you imagine just even a tank -- a rail car coming to the facility council, that rail car will have some ullage, some vapor space at the top. It's not very

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1 much. It's usually 1 or 2 percent empty, because you're
2 transporting liquid, you want to fill it up.
3 For a Reid vapor pressure measurement to be
4 consistent with what's done in the lab, that rail car
5 would have to be 80 percent empty. And here's the
6 kicker. As you reduce the vapor fraction in an enclosed
7 space, more liquid, less vapor, the vapor pressure goes
8 up. It keeps rising. And that's understandable because
9 whatever vapor is coming out is not compressed into a
10 smaller and smaller volume.
11 And so there are any number of charts in
12 standard publications that have shown this time and time
13 again that when we start playing with ullage, reducing
14 the vapor space, you start getting higher vapor
15 pressure, which is why sometimes relief valves that are
16 set at low pressures can pop because as you're getting
17 more ullage -- less ullage, then you can just pop them
18 because vapor pressure has increased.
19 So if you simply give me a Reid vapor pressure
20 and then you say that is good for a rail car arriving at
21 the facility, I can't agree with that because the ullage
22 is quite different. You're not testing a tank car with
23 80 percent ullage. You're testing it -- or other --
24 80 percent empty, 20 percent ullage. You're testing
25 something quite different. So that's why you would have

1 to do a Reid vapor pressure and a true vapor pressure --
2 I mean, remember, your permit condition is at true vapor
3 pressure. And you know, go back and check this, a true
4 vapor pressure is with a vapor liquid ratio approaching
5 zero. That means the true vapor pressure is done when
6 there is no vapor space. Sometimes it's called a bubble
7 point. So you have to be very careful and that's why I
8 said, you'll see what the permit says, how are you going
9 to do that check -- that test against your 11 DVP. It
10 simply cannot be, I tested something back in the Bakken
11 and I got a lab report that says 10.5 Reid vapor
12 pressure. That was done with a totally different ullage
13 compared to what you have vapor conditions, so there is
14 no correspondence.
15 **Q. Speaking of -- thank you for that explanation.**
16 **Speaking of the loading -- testing at the loading**
17 **facility, I thought you said something about not knowing**
18 **how these trains are built or the tanks are built for**
19 **something, i.e., the source of the oil to be tested. Do**
20 **you recall mentioning that?**
21 A. I do.
22 **Q. Okay. And have you heard any of the applicant's**
23 **evidence in this case about how those tanks will be --**
24 **those trains -- unit trains will be built?**
25 A. Very briefly, I think from Mr. Corpron, he's the

only one -- Corpron, he's the only one who I heard, but not beyond that.

Q. Okay. And are you aware that those unit trains are normally built from a single tank at the origin?

A. They can be -- but here's the difference in having -- there is no restriction or requirement that that be so, and moreover my understanding of the description of the project allows for Bakken crude, it allows for crude with other vapor pressures. It talks about mid-continent crude that can come from a variety of places. So it is written very generally as to what this facility can do over its 20-year life.

If you look at the air permit, you can go back to the air permit and it has vapor pressures across the range of things, even down to tar sands. So I don't know that there is enough detail that is consistent with what is the intent of how this facility will be run over 20 years with a flexible range of crudes from a flexible set of sources. Given that, I don't know how much weight to place on this idea that you would always have every train constituted by filling all the cars in that train from a single tank. I've never seen that as a requirement or a restriction.

Q. Okay. And you did say that you worked on the industry side. I thought you said you worked with some

1 of the refineries here in the state; is that right?
2 A. Yes. Over the years, this is years ago when I
3 was at Parsons, I worked on Anacortes and other
4 refineries, sure.
5 **Q. But you haven't had to tackle one of these**
6 **problems and find a solution?**
7 A. Yes, of course you do. I mean, the reality is
8 trains get reconstituted by picking up material at
9 several points. You and I just -- I mean, you asked and
10 I responded affirmatively that there's no permitting
11 requirement for these type of things that are happening
12 outside of the state. So where is the instrument --
13 where is the enforceable instrument, recognizing there
14 is no permit, that is going to provide assurance to this
15 concept that every train that's going to arrive, and
16 there are 365 times four trains every year coming, where
17 each one is just filled from a specific tank some place
18 in the US?
19 **Q. And that's where we get into the discussion of**
20 **testing at the destination, correct?**
21 A. Correct.
22 **Q. Okay. And enforcement that could be brought by**
23 **a regulatory agency, correct?**
24 A. Yeah. I mean, that -- the permit itself has to
25 be very clear, given this flexibility.

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1 **Q. Okay.**
2 A. And all I was pointing out is there are a lot of
3 technical issues. I mean, if this was a simple
4 parameter like temperature, life would be simple, I can
5 tell you that. You can measure it quickly; you can do a
6 quick check high or low. Vapor pressure is just a
7 different piece.
8 **Q. Okay. So these kinds of issues are dealt with**
9 **regularly, notwithstanding the fact that they're**
10 **complex, in permits, correct?**
11 A. Not well. I mean, I would be remiss if I said
12 they're routine. They're not. They have been glossed
13 over and oversimplified in other places as well.
14 **Q. But they're capable of being dealt with in a**
15 **permit?**
16 A. They are capable.
17 **Q. Okay. Let's move on to marine vessel loading**
18 **and some of your testimony about that.**
19 **I guess I want to be -- make sure we're on the**
20 **same page here. Well, no, tell me this, because**
21 **where -- where are these fugitive emissions coming from,**
22 **from the marine vessel? Where are they coming from?**
23 **What point of the vessel are they coming from? Where's**
24 **the leak?**
25 A. The leak would be -- that's the whole nature of

1 fugitive emissions is they come from even pinhole gaps,
2 seals, gaskets, you know, where the hoses go into and
3 out of particular compartments, so there could be any
4 number. We call them fugitive emissions precisely
5 because we don't have a good accounting for all the
6 different myriad ways and pathways from which they can
7 escape from a place. That is the nature. Even for a
8 single valve, there are eight to ten different ways in
9 which things can leak, just a simple valve.
10 **Q. Okay.**
11 A. Much less a complicated thing like a ship's tank
12 into which you're putting in hoses, you're removing
13 vapor from a different hose. You have lots of
14 connections, lots of places. Think of it in reverse.
15 Why is it a safety concern if the thing was so tight
16 that oxygen could get in? If logically if oxygen can
17 get into that creating a safety concern, same place as
18 the oxygen molecules can get in, even smaller
19 molecules -- smaller molecules can get out. So
20 fugitives are capable of escaping with many different
21 pathways.
22 **Q. Let's back up to that because I noted that you**
23 **said that the reason for the Coast Guard regulations is**
24 **to prevent oxygen from entering the tanks. Mr. Bayer --**
25 **Captain Bayer testified that one of the other primary**

1 reasons is to ensure that there's no bulkhead failure;
2 is that right?
3 A. Right. I mean, there are safety reasons why you
4 don't want to have negative pressure.
5 **Q. Okay. And do you agree that the system is**
6 **designed for the MVCU to capture vapors that are taken**
7 **from the vessel and then burned and destroyed?**
8 A. It is designed to capture, but we're talking
9 about the degree of capture. I mean, I think -- I think
10 it is designed to capture a huge fraction of it. I've
11 considered it can be up to 95 percent of it. And so
12 up -- so up to 95 percent capture, I have no issue. I
13 mean, it is designed to capture -- it will capture the
14 bulk of it. It just so happens that even a small
15 uncaptured fraction amounts to many, many tons of
16 emissions here. That's the issue.
17 **Q. Okay. And how many times have you been on a**
18 **vessel and used a leak detector, one of these sniffers**
19 **that Captain Bayer talked about?**
20 A. Rule 1173 was one of the first rules, Counsel,
21 in the South Coast that required sniffers, that required
22 fugitive emissions. This goes back to the '90s. And at
23 that time I was at Parsons. I had clients. The Shell
24 Refinery was a client. Shell had terminals there.
25 Chevron was a client. They have -- they don't have

terminals there at Long Beach, but they have certainly on board ships. I think probably a couple times when we had to do Rule 1173 testing in those early days, absolutely.

Q. When was that?

A. Ninety-four, '95, so about that time.

Q. Are you aware that the applicant uses devices that detect down to a single part per million?

A. For VOCs?

Q. Yes.

A. You would have to show me the specs of that.

Q. So the answer is no, you're not aware of that?

A. I'm not aware of single part per million VOCs. What I can tell you with certainty is a leak vapor tightness test in the regulations allows for up to 10,000 parts per million, and you can still be deemed vapor tight and leak free.

Q. Okay. But what I'm asking is -- you're not aware that the applicant uses detection devices that can detect far below that limit?

A. No, and I have bigger problems than that. A leak -- a sniffer -- you know, for example -- I'll give you an example. Right now in the application I think they talk about using a leak detection and repair program for the components; the valves and flanges and

1 fittings that are in the piping. There you take the
2 sniffer and you have to go within a centimeter of the
3 valve. You have to go within a centimeter of the pump
4 seal. You have to go within a centimeter and you have
5 to stay downwind of it.
6 In the vessel that is four, five, six, up to
7 900 feet long with tanks that are large, where are you
8 going to put the sniffer? It doesn't matter if you
9 stand on the deck and simply point a sniffer and say, I
10 have no detection; that's not a meaningful test. It
11 just doesn't -- it just doesn't get to the proximity you
12 need for those sniffers to work properly. Those
13 sniffers have to be within very close proximity to the
14 potential source. You know, this is like a classic
15 problem of a drunk coming home and not finding his keys
16 and going out to the front lamp post and saying, I'm
17 looking for keys there because that's where the light
18 is. He's not going to find the keys there. Same
19 problem. The sniffer has to be close to the source.
20 And there are many potential sources. You can't stand
21 on the deck and simply say, I've got a sniffer and I
22 don't get a detection. That's the problem.
23 JUDGE NOBLE: Dr. Sahu, you're talking too
24 fast again.
25 THE WITNESS: I'm sorry. I should look at

1 this. I will put it up here. You're not the first. My
2 wife tells me -- well, I won't give her ideas.
3 JUDGE NOBLE: Don't say anything about your
4 wife, Dr. Sahu. There's a court reporter here.
5 THE WITNESS: And video now. I'm done for.
6 Thank you.
7 BY MR. JOHNSON:
8 **Q. We've been at this a while, and I mean not just**
9 **today.**
10 A. This is fresh for me. It's great.
11 **Q. Back to your prior answer, and now folks might**
12 **have forgotten what it was, but something about standing**
13 **on the deck of a ship and waving a sniffer around isn't**
14 **an effective test. Is that your understanding of what**
15 **Captain Bayer testified the procedure is?**
16 A. My understanding is Captain Bayer did not talk
17 about a procedure. He was very vague. He alluded to a
18 sniffer, but I certainly didn't get an idea of a
19 procedure from his testimony.
20 **Q. All right. Storage tank emissions. You said**
21 **Mr. Hansen blamed the TANKS program on Microsoft, or**
22 **words to that effect. Do you recall that testimony?**
23 A. Well, I was -- I was only looking at half these
24 issues. I actually thought what he said was this was
25 more like they didn't keep up with later versions of

1 Windows, or something to that effect.
2 **Q. Okay. And you cited to the EPA warning about**
3 **the use of the TANKS program in your prefiled testimony,**
4 **correct?**
5 A. I did.
6 **Q. Okay. And doesn't that warning talk**
7 **specifically about the software compatibility issues?**
8 A. It does.
9 **Q. Okay. Let's move on to AP-42. Are you aware,**
10 **based on the evidence that's been presented in this**
11 **case, that the applicant conducted a spreadsheet**
12 **exercise using the AP-42 methodology to verify their**
13 **TANKS results?**
14 A. I did not see the spreadsheet, to be very honest
15 with you. I heard for the first time that that's what
16 had been done from the testimony of Mr. Hansen. I
17 don't -- I could be wrong, but I don't think the
18 application includes any spreadsheet showing any of the
19 calculations. So that's what I heard, that that had
20 been done by Ramboll.
21 **Q. When you prepare an air permit application for a**
22 **storage tank, do you use AP-42 to estimate emissions?**
23 A. I use AP-42 and then tell people that you can be
24 five times off.
25 **Q. So why do use it?**

1 A. Or seven times off. Well, because people want
2 to see it before you do it, but that doesn't mean that's
3 the end of the inquiry or what the answer is. That is a
4 step along the way.
5 **Q. EPA still allows the use of AP-42, correct?**
6 A. Well, you'd have to go take it up with the EPA.
7 **Q. Well, do you know the answer?**
8 A. No. There are different opinions within the EPA
9 of different parts of the agency, people who are dealing
10 with these DIAL studies have a different opinion than
11 other folks. So it is not an agency position on AP --
12 on TANKS other than to note that they're not supporting
13 it right now. And they are -- what EPA does, as new
14 emission estimate methodologies come about, they take
15 them and digest them and at some point decide to update
16 their calculation methodologies. That's how they --
17 that's how the agency works. It's not an instantaneous
18 shift from point A to point B.
19 **Q. I just want to be clear, when you say they're**
20 **not supporting AP-42, it doesn't mean that there's been**
21 **a judgment by EPA that AP-42 should not or cannot be**
22 **used --**
23 A. I misspoke if I said -- I misspoke if I said
24 they're not supporting AP-42. What I meant is they're
25 not supporting the TANKS program, and they're cautioning

1 people to use AP-42 -- and I should say this, I think,
2 because it has been referred to as the bible, and I want
3 to make sure that I provide a context.
4 AP-42 is a collection of emission factors, a
5 collection of methodologies. EPA has had that in some
6 form or another since 1970. It's the only bible around
7 that has on the second page, user beware. So it's a
8 strange bible. I don't call it a bible. It's a
9 compilation of stuff to be used by people, and every one
10 of those, Counsel, actually has a rating from A through
11 F. There are A-rated emission factors that are more
12 reliable, there's a lot more data for it. There are
13 also F-related emission factors, which are highly
14 unreliable. So what it does is it just puts everything
15 together and the user is supposed to make good judgments
16 and carefully evaluate what is given there and how it
17 applies to their situation. That's the full context of
18 AP-42. It would be a misimpression left on the council
19 here if you can simply take everything that is in AP-42
20 and uncritically just start using it.
21 **Q. And do you use the DIAL methodology when you're**
22 **preparing air permits?**
23 A. Well, that's what I meant by the factor. There
24 is no DIAL set of equations right now, because DIAL is a
25 field measurement and so it is not that you can have a

1 set of equations that you can use. So what DIAL is
2 telling us is in effect, if you measure actual tank
3 emissions and you did the calculation using the TANKS
4 equations, AP-42 equations, you have a huge mismatch.
5 The real world is telling you something, depending on
6 the tank, three times, five times, seven times, up to
7 50 times higher in some cases. So there isn't a set of
8 DIAL equations you can use.
9 **Q. Okay. Let's move to greenhouse gases. You have**
10 **leveled some criticism of the applicant's greenhouse gas**
11 **analysis, and I understand that to be primarily directed**
12 **at its analysis beyond what we've been calling the**
13 **permitted sources; is that right?**
14 A. Right. I mean, it's not -- it's criticism in
15 terms of what I consider scope. It is -- I have
16 provided context of if you include just the permitted
17 sources, you're got a tenth of a percent of Washington
18 State. If you include permitted sources and a little
19 bit of local transport, you have four tenths of a
20 percent. If you include refining, you're up to 7,
21 8 percent. If you include use of the gasoline and
22 diesel, you're up to 55 percent. So it's a question of
23 scope.
24 **Q. Okay. So beginning with transport, have you**
25 **reviewed the testimony of Ms. Dava Kaitala from**

1 Burlington Northern Santa Fe Railroad?
2 A. I have not.
3 **Q. So you're not aware of her discussion of the**
4 **fact that rail traffic is static -- is not static and**
5 **that it's dynamic and it's always changing?**
6 A. Well, I don't need her testimony to understand
7 that. That's my understanding of rail traffic. But all
8 that I was leveling criticism was, is crude has to come
9 to Washington State from somewhere and then make it to
10 the terminal. And at least, even in the draft EIS, it
11 stops at the state boundaries.
12 **Q. Okay. Well, I guess what I'm getting at is how**
13 **we determine that any locomotive at any given point of**
14 **time is attributable specific -- that's emitting diesel**
15 **emissions, for instance, is attributable to this**
16 **project?**
17 A. I think I understand your question better now.
18 From a greenhouse gas standpoint, it's a slightly
19 different implication than something like diesel
20 particulate.
21 **Q. I'm sorry, I misspoke. On the topic of GHGs**
22 **here, so you can disregard my reference to diesel**
23 **emission -- or diesel particulate matter.**
24 A. Even without that, if you're saying that you
25 could not predict the train route, the specific train

route that might come here, if that's the implication, it's a dynamic network, your trains can come one way, a second way, a third way, it still doesn't preclude you from estimating emissions due to the route. You can have route mapping. You can have the most preferred route. The railroads have optimization programs for what a typical route would be from this facility from wherever the departing terminal is.

It's not as though they're simply -- on a given day on a whim, simply say, go on, you know, find your way to Vancouver. They have very detailed -- they optimize after all their own economics, they optimize their fuel, they optimize to maximize their profit and so they have good programs that actually let you calculate routes, and that doesn't mean that that's not dynamic, it wouldn't change, but there is sufficient detail that you could estimate emissions.

Q. Doesn't it assume that the rail traffic, at least the locomotive GHG emissions, are additive; that is, that they're not -- because this facility is being constructed and oil is being transported to it, that means there are more locomotives on the rails; isn't that what you have to conclude to attribute specific GHG emissions to this facility?

A. I don't know. That belongs in an economic

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1 analysis. All I can tell you is that if -- if you have
2 a facility like this, trains have to come to this
3 facility. By the same token, why did you start at the
4 boundary of Washington. You could make the same
5 argument right up to the fenceline here. The additive
6 argument, it's still arbitrary to cut off spatially the
7 bounds of your analysis to the state boundaries. The
8 same argument you're making about the dynamics of the
9 rail network and all of that still doesn't explain why
10 that is the cutoff.
11 Conversely, if you want to make the argument
12 that, no, this is just a zero sum game, you know, we
13 have a facility here, that means somebody else is not
14 getting the train, then the onus is on you, the
15 applicant, to show that, in fact, this is going to be a
16 zero sum exercise. I think Bakken crude production is
17 increasing. All indications are that that's the state
18 we've been in. And therefore it's a reasonable
19 assumption to make, I think, that your GHG emissions
20 don't suddenly go -- are zero elsewhere and start at the
21 Washington State boundary. That's the criticism. I
22 think that criticism stands.
23 **Q. Okay. And -- I'll strike that. Let's move on**
24 **to your -- you mentioned refining of the product.**
25 A. Yes.

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Q. Are you assuming this product wouldn't be refined if it wasn't for this facility?

A. The same argument. Same argument that I don't -- then let's make that a permit condition. Let's put that on Tesoro Savage to demonstrate somehow taking the national picture or the international picture, that there is a loss somewhere if this product would not be refined because it's being refined here.

Q. Same response, I suppose for your suggestion that we should be considering consumption -- or combustion of -- ultimately of the crude products?

A. Yeah, absolutely. It's a question of who has the burden to show. If you're going to claim that you're not going to do an emissions analysis by assuming a zero sum, effectively, argument, then I think it's your burden to show that there's no growth from the Bakken market, that, in fact, what is coming here is a loss that's going to some place else and therefore -- how are you going to enforce that?

Q. I'd like to know where the source of shifting the burden to the applicant is? What regulation are you referring to?

A. It's not a regulation. We're trying to do an impact analysis to inform a decision, I thought, on if you site the place here, it's going to handle this

1 amount of material; what happens to it?
2 Now you're saying, well, if it didn't come to
3 Vancouver, it might go some place else, therefore, why
4 am I being tagged -- if I understand your argument, why
5 am I being tagged with emissions that are happening
6 outside of Washington State?
7 Well, I ask you in all sincerity, how do you
8 enforce that condition? Isn't it more prudent from an
9 environmental assessment standpoint to assume that that
10 is not the case?
11 I mean, we make health conservative assumptions
12 when we do environmental analyses. We make health
13 protective assumptions when we do environmental
14 analyses. There is a good reason for that because of
15 asymmetry. There are adverse health impacts, so we look
16 at worst cases.
17 You're now trying to basically turn it on its
18 head and say, let's be optimistic about this. Let's
19 assume that the crude that came here means some other
20 place is getting better, or could be getting better. I
21 don't see how you do that analysis. That is not how
22 environmental impact analyses are done, in my opinion.
23 **Q. All right. And perhaps that will be taken up as**
24 **part of the environmental impact analysis of this**
25 **project.**

1 MR. JOHNSON: I'm going to hand it off to
2 Mr. Bartz.
3 MR. BARTZ: Thank you.
4 CROSS-EXAMINATION
5 BY MR. BARTZ:
6 **Q. Good afternoon, Dr. Sahu. My name is Dave Bartz**
7 **and I'm a lawyer for the Port of Vancouver USA.**
8 A. Good afternoon.
9 **Q. You're familiar with the Columbia Pacific**
10 **Bio-Refining facility in Oregon?**
11 A. Yes.
12 **Q. You were involved in a lawsuit there where you**
13 **gave some testimony and a report about evaluating the**
14 **air emissions at that facility; is that correct?**
15 A. Yes.
16 **Q. And I'm sure there were lots of issues, but at**
17 **least two of the issues were similar to what we're**
18 **talking about this afternoon here, it was marine vessel**
19 **loading and emissions from tanks; is that correct?**
20 A. Yes.
21 **Q. And the context of that lawsuit was you were**
22 **there to present testimony that the agency's choice of**
23 **an emission rate, you had suggested an alternate**
24 **emission rate which was higher for those activities and**
25 **others, correct?**

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1 A. With some nuance. So I need to elaborate since
2 you raised that issue. On the marine vessel -- marine
3 vessel loading -- I'm glad you brought that up actually.
4 The applicant in that case, the dispute was whether it
5 should be 95 percent capture or 97.8 capture -- or,
6 pardon me, 98.3 percent capture. It was not -- the
7 applicant was not claiming it was 100 percent. The
8 applicant's own analysis shows -- and I think it's in
9 my -- I looked at that in my own prefiled testimony, to
10 show that right down here, not too far, there is another
11 applicant who did not assume 100 percent.
12 And so -- so the dispute with the judge was,
13 given the facts in that particular case, it was my
14 opinion, which did not carry at the end of the day with
15 the judge, that it should be 95 percent, on a technical
16 basis. But he -- there was no dispute that it should
17 not be 100 percent. We did not spend as much time on
18 the tank emissions in terms of -- I did raise the same
19 issue about DIAL and tank emissions, but the focus came
20 down to the marine loading issue.
21 **Q. And to be -- and thank you for that. My**
22 **question was just you offered an alternative emissions**
23 **rate which was higher than the application approved by**
24 **the department and that your position was rejected by**
25 **the court, correct?**

1 A. It was. But again, the position by the
2 applicant was not the same as the position of the
3 applicant here.
4 **Q. Understood.**
5 A. That's misleading to imply that it is.
6 JUDGE NOBLE: Excuse me, both of you need to
7 speak slower. Thank you.
8 I just want to make the point that the
9 record is going to not be complete unless the court
10 reporter is able to get all of your words down. And
11 so -- I'm not trying to be too disruptive to your train
12 of thought or anything, Dr. Sahu, but it's very
13 important.
14 THE WITNESS: No, you've been most patient.
15 Thank you so much.
16 BY MR. BARTZ:
17 **Q. Dr. Sahu, you just suggested there was something**
18 **misleading. I asked you if you presented a position to**
19 **the court and the agency for an alternative emissions**
20 **rate which was higher than what the agency used, and you**
21 **agreed that's what you had, right?**
22 A. Yes. But what I meant by that, I wanted to
23 clarify the fullness of what happened there, because I
24 thought that question leaves out the context, and the
25 context is that the applicant in that case, unlike the

1 applicant here or the issue here, did not assume
2 100 percent. It was a matter of which level of lack of
3 capture is appropriate, and you're correct and I
4 admitted that. The court sided with the agency.
5 **Q. Are you familiar with another case -- and that**
6 **was -- again, that was Bakken crude that was coming to**
7 **that facility, correct?**
8 A. Yes.
9 **Q. Okay. Now, moving on to another case called**
10 **Sierra Club versus Mosier and the State of Kansas. Do**
11 **you remember appearing in front of that?**
12 A. Yeah. Could you tell me the specifics?
13 **Q. You were -- you were talking about an emission**
14 **rate, it was -- it's listed as (ccc) in your resumé.**
15 A. Oh, let me look that up if I can.
16 **Q. Please.**
17 A. Oh, yes. Okay.
18 **Q. And in that case, you offered an emission rate**
19 **that was different than what the agency had approved,**
20 **correct?**
21 A. That's the coal-fired power plant that was
22 proposed. So I offered an SCR emission rate that was
23 different than the SCR rate proposed by the applicant,
24 correct.
25 **Q. It was higher than what the applicant proposed,**

1 correct?
2 A. No, I think the emission rate was actually
3 lower. In other words, the issue was the emission
4 control would be more stringent. If I'm remembering
5 correctly, and it may be that I'm not. So I mean unless
6 we get to specifics, we could both be right or wrong.
7 MS. BRIMMER: Your Honor, I'm feeling like I
8 need to interpose an objection on relevance. I'm a
9 little unclear on what testimony and other litigation
10 years ago about a coal plant has to do with Dr. Sahu's
11 testimony about an oil transloading terminal here.
12 JUDGE NOBLE: Well, I think it's a fair
13 inquiry to examine this witness about anything that he
14 may or may not have said that contradicted what he's
15 saying today. So to a certain extent I think it's
16 allowable. I wouldn't want to see it go too far because
17 it is apparently another kind of facility. But I'm sure
18 Mr. Bartz isn't planning on going too far.
19 MR. BARTZ: Your Honor, this witness has
20 said -- he's given EFSEC advice for a couple of hours
21 here this afternoon about what the law requires. And I
22 am examining him on cases that he's appeared in and
23 provided testimony that are attached to his resume. So
24 I just want to make it clear what I'm doing because I
25 think it's useful for EFSEC to hear how this witness has

1 advised other regulatory bodies about what he thinks the
2 law is, as he has done here today.
3 JUDGE NOBLE: Well, I have to disagree with
4 you. And I -- maybe I should ask Dr. Sahu, but it
5 appears to me he's providing EFSEC with his view of what
6 science requires, as opposed to just what the law
7 requires, and maybe I'm wrong about that. He seems to
8 have on a number of occasions disagreed with what the
9 law requires and regulations. So I am allowing you to
10 continue because you're examining his opinions to see, I
11 think, whether his opinions contradict what he's saying
12 today. That's the track I thought you were taking.
13 BY MR. BARTZ:
14 **Q. Let's see what we can do here, Dr. Sahu. Would**
15 **you mind looking at your resumé.**
16 **JUDGE NOBLE: Excuse me, Mr. Bartz, could I**
17 **just ask Dr. Sahu if I'm correct.**
18 THE WITNESS: You're absolutely correct. I
19 was not -- I do not claim to be a lawyer. I was not
20 giving any legal advice to EFSEC. We were talking about
21 technical issues and regulations. So let's -- we can
22 clarify that.
23 BY MR. BARTZ:
24 **Q. Dr. Sahu, under your counsel's questions at the**
25 **very beginning of your testimony a few hours ago, you**

1 described just --
2 JUDGE NOBLE: Just a minute, Mr. Bartz. I
3 was reminded that I didn't actually rule on the
4 objection.
5 So it's overruled until such time as I think
6 that Mr. Bartz has gone too far, and if that's the case,
7 you need to raise it again. Thank you.
8 BY MR. BARTZ:
9 **Q. Dr. Sahu, you, at the beginning of your**
10 **testimony, talked about the proper process for**
11 **determining a potential to emit, correct?**
12 A. Yes.
13 **Q. You spent a fair amount of time talking about**
14 **that's critical to figuring out whether there's a major**
15 **or a minor source, correct?**
16 A. Yes.
17 **Q. And you gave your opinion, applying that**
18 **potential to emit concept, this is a major source,**
19 **correct?**
20 A. Correct. For VOCs, let's be clear.
21 **Q. Okay. For VOCs. But the concept of potential**
22 **emit is not different from one pollutant to another, is**
23 **it?**
24 A. No. The specifics will matter because, how you
25 calculate emissions depends on the source and the

1 pollutant.
2 **Q. Things like AP-42 would give you different**
3 **numbers that would affect your potential to emit based**
4 **on what you're emitting, correct?**
5 A. You can have different emission factors. AP-42
6 is the source of factors.
7 **Q. But we can agree that the basic concept of**
8 **potential to emit is not pollutant specific, it's the**
9 **concept of potential to emit, correct?**
10 A. Just to be clear, I'm not trying to be
11 difficult, but I want to be sure before I answer. I
12 mean, potential to emit means you look at production or
13 whatever is the nature of the activity at a very high
14 rate, maximum rate, and then you apply an associate
15 emission factor or an emission factor to that activity
16 that is also at a reasonably high rate. So it's
17 designed to be an upper bound, if you will, of the
18 emissions of that pollutant that can be emitted from
19 that activity or source.
20 **Q. Thank you. So what I heard you say was you**
21 **agree with me, that it's the same basic approach of**
22 **analyzing a facility's potential to emit, whether it's**
23 **emitting coal or burning coal or whether it's a refinery**
24 **or a trans load facility for crude, correct?**
25 A. Oh, sure. Yes.

BARTZ / SAHU

1 **Q. Thank you. Would you look at your resume at**
2 **either (dd) or at (nnnn), four Ns, please.**
3 A. Either one?
4 **Q. Either one. I believe it's in both places.**
5 A. Okay. I am at -- (nnnnn) is the last one?
6 **Q. Yes.**
7 A. Okay. I am there.
8 **Q. That's the Medicine Bow Fuel and Power facility.**
9 A. Oh, no, I have a different one here. There are
10 four Ns, you said?
11 **Q. I believe so, yes.**
12 A. I was at five Ns. I'm sorry. I am there now.
13 Thank you.
14 **Q. And in that case, you gave testimony about the**
15 **potential to emit for a coal facility, correct?**
16 A. This was a coal to liquids facility, somewhat
17 different facility, yes. You'll have to remind me about
18 the specifics again. I don't recall all the testimony.
19 **Q. Okay. But that's one of the cases that's in**
20 **your resumé, right?**
21 A. Sure.
22 **Q. Okay. In that resumé, you reflect about 118**
23 **times you've provided expert witness testimony or**
24 **provided a report. Is that approximately a right**
25 **number?**

A. I did not count them, but I'll trust your math.

Q. Okay. And if I saw that approximately 78 of those times was for the Sierra Club or Earthjustice, that would also be accurate?

A. Again, I will trust your math.

MR. BARTZ: Okay. No further questions. Thank you.

JUDGE NOBLE: Any other cross-examination? Redirect?

MS. BRIMMER: Thank you, Your Honor.

REDIRECT EXAMINATION

BY MS. BRIMMER:

Q. I would like to start with where Mr. Johnson started, and that is the chart that is projected, and he asked you about that being in the context of trucks. Do you recall that?

A. Yes.

Q. And you explained to a degree that trucks are smaller than marine vessels in most instances.

A. Yes, they are.

Q. Are there other reasons that EPA considers this guidance for marine vessels, or does it have other guidance that you have ignored that is for marine vessels?

A. No, the EPA doesn't have any other guidance.

1 This is the guidance that is most relevant. And it is
2 conservative when you apply it to marine vessels.
3 That's what I was trying to explain.
4 **Q. I think Mr. Johnson also asked you about**
5 **Washington having more stringent minor source**
6 **requirements. Do you recall that?**
7 A. I do.
8 **Q. But those minor source requirements are not as**
9 **strict as those for a major source, correct?**
10 A. That's correct. The minor source requirements
11 always are less stringent than major source
12 requirements.
13 **Q. In other words, Washington's minor source**
14 **requirements are not a substitute for what a major**
15 **source may have to do?**
16 A. That is correct.
17 **Q. Is it your understanding that the review here**
18 **before EFSEC is limited to assessing only regulated air**
19 **pollution from the terminal, or is that just subject**
20 **to --**
21 MR. JOHNSON: Objection, calls for a legal
22 conclusion.
23 MS. BRIMMER: I'm calling for his
24 understanding. We understand he's not a lawyer.
25 JUDGE NOBLE: Well, I do think it calls for

a legal conclusion, so I'll sustain the objection.

BY MS. BRIMMER:

Q. In response to some questions from Mr. Johnson, you -- I think he pointed out that in your written testimony there's some additional potential sources of emissions that you didn't do calculations for. Do you recall that?

A. Yes.

Q. And that's because you didn't have available design information or data to do those calculations?

A. That's correct.

Q. So would those additional sources potentially increase the VOC emissions at this facility?

A. Yes, they could. And just to be sure, I mean, for the record, I presume what Mr. Johnson was saying was what is in paragraph 40 of my prefiled testimony. I'm presuming that's what we're talking about.

Q. Thank you for the clarification.

There was also some testimony during cross-examination about requirements for the vapor pressure testing and enforceability. From what you have seen with the terminal design and operation, is it actually set up, in your opinion, for effective control at 11 PSI for a total vapor pressure even if there are permit requirements for testing?

A. No. From what I understand and, again, I'm basing it on all the description that I have read in the documents in the record, and given the throughput, the quantities of rail cars, unless you make some great deal of assumptions of the type you're talking about that everything is coming from a particular tank and so on or from elsewhere, at the terminal it would be very difficult to sidetrack potential cars that have higher than 11 for a sufficient amount of time to be able to get all the testing done, because the testing is not a quick turnaround. And so I -- the logistics of that are not clear to me. And I don't think it would be easy, given the amount of traffic that it's going to handle -- or is designed to handle.

Q. Last question. You and Mr. Johnson had an exchange about AP-42 and EPA's acceptance of it. I would like to direct your attention to the DIAL studies, the studies that show the tank emissions have been underestimated. Do you recall that?

A. Sure.

Q. Do you have any information or understanding about EPA's consideration of those DIAL studies and how, if at all, they're being incorporated into the AP-42 volumes?

A. Well, I know that EPA is aware of them because

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1 they are a party to -- I mean, they were oftentimes
2 involved with that research. There were certainly parts
3 of committees that oversaw the research and so on. So
4 that's what I was trying to explain to Mr. Johnson.
5 It's the normal process of EPA's updating of emissions
6 methodology that -- for not just this source, for
7 sources in general, that they look at studies. There's
8 a similar one going on for flares, by the way, that's
9 not at issue here. So there are people in EPA's -- in
10 North Carolina sort of offices, the OAQPS, the office of
11 air quality there, who track these things and start to
12 develop what they think will be eventual updates to
13 emission calculation methodologies, or guidance, much
14 like we're talking about the table here that came out of
15 that as a guidance. So that process is ongoing, but I
16 have no idea as to timing. That's unpredictable.
17 MS. BRIMMER: Thank you. I have nothing
18 further.
19 JUDGE NOBLE: Council questions? Mr. Lynch?
20 MR. LYNCH: Good afternoon, Dr. Sahu.
21 THE WITNESS: Good afternoon.
22 MR. LYNCH: I have a question regarding
23 vessel loading and in particular on page 27,
24 paragraph 62 of your prefiled testimony.
25 THE WITNESS: Yes, sir.

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1 MR. LYNCH: You make reference to Texas
2 using a -- recognizes 100 percent capture collection
3 efficiency only when a blower system is installed which
4 produces a vacuum in the barge shipped during all
5 loading operations. Is -- do other states use -- I'm
6 just wondering how common the use of this blower system
7 is. Is this something that would be compatible with
8 what the applicant is offering to use as part of their
9 loading and unloading operation?
10 THE WITNESS: The applicant actually, if I
11 understand their process correctly, is planning to use a
12 blower system. A blower simply is something that moves
13 vapor or air from one place to the other. So the
14 applicant is using that. That is not, in my mind, so
15 much the issue as whether they're keeping negative
16 pressure at the tank that would ensure that no vapors
17 escaped as fugitives from the tank while it is being
18 loaded. And my understanding further is, it is for
19 reasons of safety and I think, as counsel pointed out,
20 to maintain the integrity if the bulkhead collapsed and
21 things like that, they want to keep a slightly positive
22 pressure. So they're using a system to capture and
23 collect vapors. The issue is they're not able to show
24 that it will capture 100 percent of the vapors. It will
25 capture something between 95 and 98 percent, if you

1 will, but not 100 percent.
2 MR. LYNCH: So they're using -- I'm sorry, I
3 have trouble keeping facts straight sometimes. You're
4 saying they're using a positive pressure?
5 THE WITNESS: My understanding is from
6 Captain Bayer's testimony that at the tank, when you're
7 putting liquid into the tank in the ship of the -- that
8 they have to keep it slightly positive, because if they
9 kept it slightly negative, atmospheric oxygen would come
10 into and create potentially explosive mixtures, which
11 you don't want certainly anywhere, certainly on a ship.
12 MR. LYNCH: Okay. Thank you.
13 JUDGE NOBLE: Mr. Shafer?
14 MR. SHAFER: Dr. Sahu, thank you very much
15 for your testimony today. One question.
16 You spoke about potential to emit. And
17 could you clarify for us a little bit further what you
18 mean by "potential"? And with that I'm looking at
19 this -- is that relative to perhaps the facility
20 malfunctioning in some sense, or is that still within
21 the realm of assuming that the facility is still
22 completely functioning properly, but there's still a
23 potential to emit? Could you help clarify that for us?
24 THE WITNESS: It's the latter to your
25 question. So the idea of potential to emit excludes

1 sort of accidents. In other words, in a normally
2 functioning facility as designed and as operated, the
3 potential to emit gives us the highest emissions it
4 could emit while it is functioning as intended. And God
5 forbid there's an explosion, there's a fire, there's a
6 big spill. Those are not considered -- those emissions
7 could be enormous, but those are not considered within
8 the potential to emit. So in that sense, you know, in
9 the trade, we don't think of it as the Armageddon
10 scenario, you know, where something really bad has gone
11 on.
12 MR. SHAFER: So this is still a facility, if
13 I understand you right, that of course is properly built
14 but is fully functioning, the seals are good, systems
15 are fine, but there's still an inherent potential to
16 emit and, in your judgment, a potential to the factor of
17 qualifying this as a major source of emissions?
18 THE WITNESS: Right. If you recall the
19 testimony I provided, you know, if you look at
20 20 billion tons of mass going through here and to be
21 conservative, even 2 billion tons of volatile mass going
22 through here, a hundred tons is a very small fraction of
23 that that you have to reach. Containing all that to not
24 even allow .005 percent to escape is a very difficult
25 claim to make. So it's the size of the facility and the

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1 throughput here that makes it a major source.
2 MR. SHAFER: Thank you very much.
3 THE WITNESS: Thank you.
4 JUDGE NOBLE: Mr. Stone?
5 MR. STONE: Good afternoon, Dr. Sahu. I
6 can't recall all the testimony regarding the design of
7 the storage tanks at the terminal, but it's my
8 recollection that they will have floating roofs and they
9 will not have vapor collection systems. So if the oil
10 stored in the tanks exceeds 11 PSI, does that mean the
11 excess vapors will just escape into the atmosphere?
12 THE WITNESS: Let me answer this. You're
13 correct that -- of your -- my understanding of the
14 design of the tank, namely that it's a cone roofed tank
15 with an internal floating roof sitting on the liquid.
16 Even if the vapor pressure is 10.9, let's say, versus
17 11.1, emissions are going to happen regardless and they
18 are going to be fugitive emissions. We have a dispute
19 in how those have been quantified. They have used a
20 TANKS program; I'm suggesting it will be many times
21 higher than that.
22 But you will have emissions -- potential to
23 emit emissions and actual emissions, even if the vapor
24 pressure is slightly on one side or the other side. You
25 will just have less of it. So in a sense this is a

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1 regulatory issue because the regulations, the New Source
2 Performance Standard regulations that counsel alluded
3 to, they simply have provided a cutoff at 11 PSI and
4 say, if you are going to store liquids or product with
5 vapor pressure of 11 PSI and below, you can use these
6 type of tanks; you just cannot use tanks like this if
7 you store product with vapor pressure greater than
8 11 PSI. But there will be emissions even if the vapor
9 pressure is below. There will just be more of it if the
10 vapor pressure is greater than 11. Have I answered your
11 question?
12 MR. STONE: Yes. Thank.
13 JUDGE NOBLE: Mr. Snodgrass?
14 MR. SNODGRASS: A question on the -- I guess
15 the implications of if it was considered -- for VOC if
16 it was considered a major facility. Can you -- can you
17 give us a ballpark sense of would that -- and I
18 understand there the applicant -- there is some level of
19 BACT that was provided, even with the classification of
20 a minor source, you disagree with the content. If a
21 level of BACT is provided that you believe is
22 realistically likely to be required in this case if it
23 was classified as a major source, what would be the --
24 in terms of reduced air emissions, what would be the
25 consequence of that for application of BACT, qualifier?

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1 THE WITNESS: Well, that depends on -- that
2 really depends on BACT and how it's determined. I'm not
3 trying to shy away from answering your question, but it
4 does go to the specifics. BACT does take into account
5 the economics of controls. It is -- the agency has to
6 determine where to determine a level of control or work
7 practices not cost effective. And those pressures are
8 policy decisions. Different jurisdictions use different
9 policy cutoffs.
10 So judging -- for example, you know, given
11 its location, given its proximity to a prior historical
12 ozone nonattainment issues in the Portland area and with
13 the ozone standards changing, when the agency weighs
14 that and says, you know, we're going to need -- this is
15 going to be a large VOC source, this area is ozone
16 limited by VOCs, that means more VOC might increase the
17 propensity for ozone, we don't want to go back into
18 nonattainment again and go back and do all kinds of
19 other things with EPA. We would like to set our policy
20 threshold somewhat more stringently, which they can do.
21 That will take you in one direction, versus if they
22 decide to take a more lenient approach to BACT.
23 So BACT does allow for some flexibility in
24 that determination, and that will, unfortunately,
25 determine how much your emissions are going to be

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1 reduced. This issue of the tank -- we were talking
2 about marine vessels. You know, the closer you can
3 get while being consistent with safety, in other words,
4 while keeping positive pressure, monitoring it more
5 carefully -- in other words, you can come closer to the
6 line of saying I still want to be safe but minimize my
7 emissions, I'm going to stay positive pressure but I'm
8 going to be not very positive so that I'm not going to
9 have too many emissions, you can try to increase that
10 capture fraction that's going to make an important
11 distinction. So these are -- you have to look at each
12 source and kind of go as close as you can and look at
13 the opportunities and make those judgments.
14 MR. SNODGRASS: So understanding that it's
15 sort of a contextual judgment that the regulatory agency
16 would be making, I just wonder if, you know, absent --
17 would they -- would a general intent be made to try and
18 bring down the emissions level to something close --
19 back to the minor-major cutoff point or --
20 THE WITNESS: I don't know if they can do
21 that. Now, the only way to do that would be to cut down
22 throughput quite a bit and that gets to the overall
23 economics of the facility. But if they want to keep the
24 360,000 barrels per day, which is their desire, that in
25 a sense -- you saw what a small fraction a hundred tons

is from that overall material throughput, it would be very difficult to become truly minor.

MR. SNODGRASS: Thank you.

JUDGE NOBLE: Any questions to my left? Mr. Moss?

MR. MOSS: Good afternoon.

THE WITNESS: Good afternoon, sir.

MR. MOSS: Thinking back to your testimony about the vapor-tight testing where you apparently have a measuring device of some sort and you put it on there and look at it and come back after some period of time and see how much pressure has been lost and within some range it's acceptable loss.

THE WITNESS: Correct.

MR. MOSS: And you mentioned something about coming back, what, ten minutes later, an hour later, something like that?

THE WITNESS: Typically for vessels and barges, it's more of the order of a half hour to an hour. You pressurize it and then you allow some time and then as it drops you just -- you calculate a critical parameter of how much is the allowable drop and as long as it doesn't exceed that drop, then you'd say it's tight.

MR. MOSS: What I'm wondering about is this.

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1 I have a relatively inexpensive compressor at home that
2 I use sometimes and I pressure that thing up to 150 PSI
3 and after 30 minutes, it may drop 5 PSI if I just leave
4 it alone.
5 THE WITNESS: Yes, sir.
6 MR. MOSS: After an hour it may not have any
7 pressure at all.
8 THE WITNESS: Yes.
9 MR. MOSS: So I'm wondering if this is
10 analogous, if there's something -- if a so-called
11 vapor-tight vessel that's losing some amount of pressure
12 over a period of transit from Vancouver to Southern
13 California could lose all of its pressure.
14 THE WITNESS: It is except what happens
15 is -- imagine in your compressor, if you have -- you
16 actually lose by -- because things escape by diffusion,
17 and diffusion is driven by the pressure difference
18 between the inside and the outside. As the pressure
19 inside is dropping, the driving force is also becoming
20 less. So in other words, in the beginning you're going
21 to lose a lot more faster, but as you start -- as the
22 inside pressure starts becoming less, you're going to
23 lose it a little less. So it kind of asymptotes in a
24 way.
25 MR. MOSS: So it's not going to reach a

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1 dangerous situation, then?
2 THE WITNESS: No, it should not. And I
3 think that there are safeguards where you don't want
4 oxygen penetration.
5 MR. MOSS: On the question of vapor-pressure
6 testing, you talked about how carefully that has to be
7 done for an actual vapor pressure --
8 THE WITNESS: For measurements, yes.
9 MR. MOSS: For measurements. And it has to
10 be done in a laboratory.
11 THE WITNESS: Yes. There are ASTM methods,
12 American Society for Testing and Materials methods that
13 are used and there are certified labs that basically
14 collect samples and you take very good care in
15 collecting the samples. That's what I was mentioning,
16 and then you send it to an ASTM-certified lab.
17 MR. MOSS: And if it's a certified lab, I
18 assume then that technicians who do this are also
19 certified?
20 THE WITNESS: Yes, usually lab
21 certifications work, you know, with the owner. The
22 people actually doing it, they all have to be
23 well-versed in the methods and the lab is certified.
24 Once in a while we do get labs that lose certification,
25 but the certification process requires everybody

1 involved is trained and is certified.
2 MR. MOSS: Okay. And how long does it take
3 to take a sample, take it to the lab, assuming the lab
4 is right there, and get the test done?
5 THE WITNESS: Well, if the lab is right --
6 that's why I was looking for an on-site lab. I mean, in
7 other words, is there a lab right on the premises. Of
8 course, then it will take very little time to transport
9 it and they could put it into the analysis. But if you
10 have to ship it out, I haven't checked how many there
11 are in the Portland-Vancouver area. There must be a
12 few. So I'm going to assume the time to transport is
13 probably not that high. You can get it to a lab in the
14 same day. And then it depends on the lab. I mean, if
15 you're sending them several hundred a day, you're
16 keeping a lab real busy. If you're even sending them
17 tens of these a day, you're keeping them very busy. So
18 that depends on the turnaround. But at the least, I
19 can't imagine a turnaround of less than, let's say, a
20 day --
21 MR. MOSS: Well, let's --
22 THE WITNESS: -- or two.
23 MR. MOSS: Let's say there is an on-site
24 lab, so transportation isn't a problem and there's no
25 competition because it's entirely devoted to this

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1 operation. How long does just the test take?
2 THE WITNESS: The physical test should not
3 take too long. If there's an on-site lab, it might take
4 on the order of, you know, 15, 20 minutes is my guess.
5 MR. MOSS: That's what I was trying to get
6 at.
7 If the vapor pressure gets higher than 11,
8 is the only risk associated with that that there will be
9 greater fugitive emissions, or is there also some sort
10 of a hazard risk associated with that, such as a fire,
11 explosion or something like that?
12 THE WITNESS: No, there should not be a
13 risk -- there should never be an increase in those other
14 risks, per se. But to the extent that there are more
15 emissions, what happens if you don't get to those risks
16 until you get till about 14.7, which is atmospheric
17 pressure, because -- or what is the atmospheric pressure
18 at Vancouver that day. Because once you get there, then
19 you can have flashing. That means the liquid is going
20 to flash into vapor. I mean, 11, 12, 13, 14, we're
21 pretty close to atmospheric pressure in PSI. So
22 flashing is a danger when you get too close to
23 atmospheric pressure.
24 MR. MOSS: Okay. Thank you for clarifying
25 those points for me.

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1 THE WITNESS: Thank you, sir.
2 JUDGE NOBLE: Any further questions, to my
3 left?
4 Mr. Siemann?
5 MR. SIEMANN: Good afternoon. And so I was
6 going to actually ask that same question Mr. Moss just
7 did about the consequences. Can you explain the
8 flashing aspect? I would like to just follow up a
9 little bit on that. Does that mean it -- the potential
10 for a fire and explosion?
11 THE WITNESS: Well, flashing technically
12 means the liquid reaches the impressed atmospheric
13 pressure. So it means the vapor pressure is equal to
14 the atmospheric pressure, so the liquid transforms into
15 vapor. That's the chemical engineering term for
16 flashing. Unlike the more fun term, you know, like
17 ballparks and running around with no clothes on. But
18 this one is a mundane definition. So it means the vapor
19 pressure has equalized the impressed atmospheric
20 pressure, it just reaches a vapor state quickly.
21 If there's no ignition sources, then you
22 don't have a fire risk. So you -- now, it is true that
23 once you get things vaporized, they can, of course, move
24 faster and go places quicker. There is a higher risk of
25 reaching an ignition source. I mean, one of the most

1 celebrated -- not celebrated. I shouldn't use that
2 word. One of the most instructive, you know, accidents,
3 and we all -- we learn from accidents, happened in
4 England about 30 years ago where something flashed for
5 45 seconds in a plant on a Saturday and nobody was
6 there, and it -- just a small leak in a large pipe and
7 in 45 seconds the vapor cloud reached the parking lot
8 when somebody started a car and that was the ignition
9 source and 23 people died and the whole facility was
10 leveled. So a consequence to vapor release that
11 flashing could occur is you simply -- it becomes
12 unpredictable where the nearest ignition source is that
13 can then drive a vapor cloud explosion, which is
14 unfortunate and undesirable.
15 MR. SIEMANN: So then that leads me to a
16 question, there is a -- an electric transformer -- I
17 forget exactly what the thing is there that has the
18 potential -- perhaps the potential for that ignition
19 source. Are you familiar with that?
20 THE WITNESS: Well, I think there's a
21 substation there.
22 MR. SIEMANN: Yeah, that's what I'm getting
23 at.
24 THE WITNESS: I think there's a substation
25 there nearby. My understanding from testimony is, and

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1 because of this facility, all of the electrical parts or
2 components and things will be designed to a fire code
3 that's going to be electrically protective; in other
4 words, they're electrically sealed. So they're designed
5 to not create ignition sources. In other words, that's
6 the whole point of the National Electrical Code for
7 these type of -- basically, you have a fire
8 classification of this area because it's handling a
9 volatile organic liquid, that the electrical design will
10 be such that they will be enclosed and that there will
11 not be ignition sources from them.
12 I think the bigger worry is actually
13 transportation vehicles, and it's very easy for people
14 to start cars in parking lots as opposed to the actual
15 substation or even a panel or even a switch. Those
16 things are unlikely to cause problems, in my opinion.
17 MR. SIEMANN: Shifting a little bit, in
18 thinking about the permitting aspect of this from our
19 perspective as a council, what conditions could we
20 impose on VOCs in either the testing or the design or
21 something that could deal with this concern that you've
22 raised?
23 THE WITNESS: Well, let me answer it this
24 way. I mean, if you look at the air permit application,
25 it relies on a number of assumptions, as any air permit

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1 does, in developing the calculations, in saying that the
2 potential to emit for this source is so much and that
3 source. So it is full of assumptions. They're not
4 always bad assumptions, they're good assumptions;
5 nonetheless, there're assumptions that need to be
6 verified and then held to them. So one place to start
7 is to look at the application and make sure that there
8 is a verification, if you will. A permit condition is
9 sometimes just no more than, okay, you said this is
10 going to be X, you know, how do we know that; how do we
11 know that you are staying at X or below X or above, as
12 the case may be, whichever is conservative.
13 The second category is methods, in other
14 words, operating procedures. If you are going to rely
15 on -- as we had questions on how much testing will you
16 do for vapor pressure to verify that you're staying
17 below 11, true vapor pressure. And if the applicant
18 said, well, I'm going to test a train every week from
19 where it starts and I'm going to assume that all the
20 other trains that left that week are the same, is that a
21 reasonable assumption? Should that be verified? Are
22 you going to test everything when it arrives? Those are
23 choices, they have different degrees of stringency,
24 obviously, and demand on the operator. But you have to
25 say, if there is cause for variability, if you cannot be

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1 sure that the assumption that all the trains are coming
2 from the same tank or a train is coming from the same
3 tank and you have no way to enforce that, then you have
4 to do more testing when it arrives because you relied on
5 that. So you could dictate that by having maybe more
6 procedures for testing.
7 A good word is representativeness, you know.
8 You want to minimize testing, but yet have a given test
9 be as representative of a bigger population as you want.
10 And unless you know where that ends, you have to test
11 more frequently. So one suggestion is maybe test more
12 frequently in the beginning and over time reduce the
13 frequency of testing. In other words, as you get more
14 comfortable, that, you know, we've tested a hundred of
15 these and 99 times they're well below 11, okay, then you
16 have more confidence in the data you have accumulated to
17 say, well, we'll test a little less.
18 It's quite different if you've tested a
19 hundred and 25 of them fail. That takes you in a
20 different direction. So some of it is writing
21 conditions flexibly to be fair to the applicant, to the
22 operator and to be fair to the environment and have some
23 forks in the road that either increase or reduce these
24 burdensome things like testing and so on based on the
25 accumulated data as opposed to a one-size fits all that

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1 may be too stringent or not stringent enough. So those
2 are suggestions for you to think about.
3 MR. SIEMANN: And given that, I think you
4 said, 20 to 30 percent of Bakken crude can be above 11,
5 does that risk rise to the level where we should perhaps
6 consider requesting a different design of the tanks, in
7 your opinion?
8 THE WITNESS: I can't answer that. I will
9 say this. That the -- the design to go from -- it's not
10 desirable because it has ramifications in operation.
11 But you would still be using the same storage tank. You
12 would now suck the vapors out and take it to a marine
13 vapor -- take it to a vapor control. So it's not like
14 you would be scrapping the whole tank. You would be
15 saying, okay, now we need a tank designed which not only
16 has the internal floating roof, but we want, in
17 addition, the vapors that emanate from that to be
18 collected and routed some place. So it could be a
19 condition that if you fail your 11 PSI condition, you
20 know, then the applicant, within a reasonable period of
21 time, has to go to that design. So you build that in.
22 So it's -- the advantage here is it happens to be that
23 for the tanks, you could add that. Now, I know space is
24 very constrained here in this site. I'm sorry; I said
25 something wrong. But it is -- it is something to

1 consider, that you could do it based on your -- sort of
2 a conditionality.
3 MR. SIEMANN: Okay. Thank you for that.
4 And switching a bit, we've talked a lot about VOCs. Is
5 that the only item that you estimate will push this
6 facility into a major source, or are there other items
7 that are of concern as well?
8 THE WITNESS: In the criteria pollutants,
9 you know, these are the pollutants that are sort of --
10 that have national ambient air quality standards and
11 VOCs are really regulated because it affects ozone which
12 has a national ambient air quality standard, I think
13 that's the main one. That's the only one. I'm not
14 worried about the combustion pollutants, NOx and sulfur
15 dioxide and carbon monoxide and even PM. But then
16 there's a class of hazard air pollutants or toxic
17 pollutants and you can -- for some of them, you have to
18 watch out. The thresholds are lower. They're like ten
19 tons a year and so on. Not a hundred. I haven't
20 frankly done those calculations because some of the VOCs
21 will be -- will be these hazard air pollutants.
22 Benzene's a good example. So there are lower thresholds
23 for hazard air pollutants, but if you control the VOCs,
24 you get control for that as well. So I would still
25 worry about VOCs.

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1 MR. SIEMANN: And final topic, for me
2 anyway, greenhouse gas emissions; you mentioned that we
3 should consider the greenhouse gas emissions from the
4 source in terms of transport from the source rather than
5 from the state line. Why is that relevant to us in
6 Washington State?
7 THE WITNESS: Well, simply because the
8 origin of your crude is not at the state line. The
9 origin of the crude, after all, is from some place else.
10 And similarly, the end point of the vessels is not your
11 state line. The end point is some place else.
12 I mean, if it is the intent of the
13 applicant -- what I'm saying is the -- we try, when we
14 do emission calculations, to try and match the spatial
15 and temporal boundaries of our analytical space with
16 what the project description is. Here there's a
17 mismatch. I mean, the project description says one
18 thing, the emissions envelope, spatial and temporal
19 envelope, is constrained. Unless there's a good reason
20 for that -- not a reason such that, well, we can all
21 imagine that if it's not coming here, it might have gone
22 somewhere else. That's not a good reason. Because
23 impacts will be felt here, the impacts will be felt --
24 let's take it very simply. If you start in Washington,
25 wouldn't the people across the state line in Idaho feel

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1 the impacts? So the impacts are local and therefore you
2 may not consider them to be permanent impacts, but
3 nonetheless they are impacts. So it is a question of
4 being consistent with your description.
5 MR. SIEMANN: Thank you.
6 JUDGE NOBLE: Mr. Stephenson?
7 MR. STEPHENSON: Thank you. Two issues.
8 First, in your permitting experience for a facility like
9 this, would the train engines on site and the vessel
10 engines on site, would those emissions be counted in the
11 facility permit?
12 THE WITNESS: The vessel engines, only to
13 the extent they're used in what's called hoteling. If
14 there's hoteling while they're there, that means they're
15 running while the ship's hoteling, they're usually
16 calculated. Vessel emissions are not included in
17 permitting if they're used for propulsion for the vessel
18 to take it in and out.
19 Train engines, similarly, there's no
20 counterpart to hoteling so they're only used for
21 propulsion, so they're not included as part of
22 stationary source permitting. So train engines, no;
23 vessel engines, only if they're used for hoteling.
24 MR. STEPHENSON: Thank you. Second issue,
25 it may be two parts. We're talking about National

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1 Ambient Air Quality Standards. Would you expect --
2 would you estimate higher VOC emissions, amongst other
3 things?
4 THE WITNESS: Yes.
5 MR. STEPHENSON: Would you expect that the
6 local ambient air, which is area-wide monitoring, would
7 you expect that to be impacted to the point that we
8 would come out of attainment?
9 THE WITNESS: My understanding, and I've
10 worked in the Portland area since 1992, dealing with a
11 variety of sources. The area has gone into
12 nonattainment, maintenance, a variety of things have
13 happened in the last 25 years. Remember, ozone ambient
14 air standards are decreasing and they get reviewed every
15 five years, and the health studies -- I'm not going to
16 belabor those -- indicate that, you know, levels should
17 actually be lower than where the standards are and push
18 continues. You are not so far in the clear that if you
19 add a VOC source that is several hundred tons that it
20 will not have any impact on your attainment status. You
21 would have to do that ozone modeling. I know that was
22 not done here for a variety of reasons, but you would
23 really have to put that into a CMAP model or a CAMEX
24 model, would be one step, and the agencies have these
25 models. They can run the models, even if an applicant

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1 cannot, to see how close you're coming to exceeding your
2 ambient -- predicted ambient standards. It's very
3 close.
4 MR. STEPHENSON: Thank you. So the second
5 part, we do area-wide monitoring and the two monitors in
6 the Vancouver area are quite a ways away on the other
7 side of I-5. Would you have any recommendations for
8 thinking about localized monitoring?
9 THE WITNESS: Are you talking about the
10 ozone or something else?
11 MR. STEPHENSON: Anything.
12 THE WITNESS: Well, the answer is different
13 depending -- for ozone, well, it's -- the requirements
14 for siting monitors is, in fact, a population-weighted
15 monitor that picks up things. They may be perfectly
16 sited for meeting those EPA requirements. But for
17 things like toxic diesel particulate matter,
18 particularly, because whether or not it is permitted or
19 regulated for permitting, you will have more DPM due to
20 the propulsion engines both on the marine side and on
21 the rail side. There you definitely should look to
22 siting monitors in more proximate areas. I mean, that
23 would go a long way, frankly, for the applicant to be
24 able to demonstrate with data that they don't have
25 impacts.

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1 I mean, data is always helpful. It's not
2 always helpful to the person who is asking for it. It
3 is what it is. If you have a monitor, at least the
4 community that is concerned will have numbers that they
5 can be more reassured, as opposed to having speculation.
6 We have -- we always are, you know, data
7 poor and speculation rich, and that starts to alter that
8 equation and it doesn't -- it's not necessarily -- I
9 have many industrial clients, and when they collect
10 data, more often than not it helps their case, because
11 they're able to now show that the data shows, I do not
12 have an impact. And if it does show an impact, it does
13 send them in a path forward to help reduce that impact.
14 So I would, for air toxins and for things like DPM,
15 certainly look at closer monitoring and go from there.
16 But for ozone, you may be okay.
17 MR. STEPHENSON: Thank you.
18 JUDGE NOBLE: Any further council questions?
19 Mr. Rossman?
20 MR. ROSSMAN: Yeah. Thank you for your
21 testimony.
22 This is a question about the stationary
23 versus mobile source, and I think that your testimony
24 mentioned that the -- as the tanks on the vessel are
25 being filled, that still counted as part of the facility

emissions.

THE WITNESS: Yes.

MR. ROSSMAN: I assume that any sort of gradual pressure releases subsequently while the vessel is in transit wouldn't be; is that right?

THE WITNESS: That's correct.

MR. ROSSMAN: Okay. You mentioned that there's a level of leakage allowable. Do you know what that level is?

THE WITNESS: No, it's not a fixed number. It depends on the size of the tank and volume of the tank. It's an allowable pressure drop depending on the parameters of the tank.

MR. ROSSMAN: Okay. Turning to the issue of the TANKS modeling versus -- and I'm forgetting the acronym --

THE WITNESS: DIAL.

MR. ROSSMAN: DIAL. Thank you. I believe there was some testimony about whether the sort of empirical testing should be taken to mean that the estimates in the TANKS models are wrong.

THE WITNESS: Well, let me put it this way. We have several DIAL studies right now. I mean, they have been done by industry, they've been done by agencies, they've been done by oversight with a lot of

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1 people. To my knowledge, they have not underpredicted
2 TANKS-related emissions. They've always over -- I mean,
3 they've always overpredicted and always predicted more
4 than TANKS to different degrees.
5 So the fact that the TANKS equations may not
6 be fully and properly predicting emissions is not the
7 issue. The issue is the degree to which they're
8 underestimating. And that's a fair -- you know, it's
9 not a consensus now that says it's only two times or
10 it's only seven times. That's what we're looking to see
11 as more studies come out. But the fact is here, why I
12 make this an issue is, they're trying to be a minor
13 source. What I said earlier. If you're already a major
14 source, from a regulatory standpoint, this has become a
15 technical vice to have, because you've already crossed a
16 bridge to becoming a major source. But when you're
17 trying to stay below that threshold, in some ways the
18 burden is more on you to be accurate, to show that
19 you're below the threshold, and that's the issue.
20 MR. ROSSMAN: And my last question, and I
21 think you may have answered it already, but this goes to
22 sort of the appropriate location and frequency of
23 testing for vapor pressure. And I guess I'm -- I'm just
24 wondering, since it doesn't sound like an acute safety
25 issue at the level, is there any reason to test some

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1 number of tank cars instead of periodically testing the
2 volume in the storage -- the levels in the storage
3 tanks?
4 THE WITNESS: When you're testing in the
5 storage tank -- and it's true that the requirement
6 applies in the storage tank, not in the tank cars. I
7 talked -- the discussion previously in testimony about
8 testing in the storage -- in the tank cars was if you
9 ended up with something higher, you didn't want to even
10 have the risk that you later on put it into the tank. I
11 thought that was to preclude that risk. Otherwise you'd
12 be proving a negative, like, I had 11.5. You would be
13 relying on dilution as a solution to pollution which you
14 don't want to do. It got smooshed in with yesterday's
15 tanks and railcar and I got something below.
16 So I don't know that you want to only limit
17 it to just testing the tank, because it depends on the
18 risk you take, and I think the risk is not negligible
19 that you may have high vapor pressure coming from the
20 Bakken. But I think that idea of doing some testing
21 more frequently, building that confidence based on data,
22 is maybe the way to consider it, for some period of
23 time, you know. Do more frequent testing. Again, I'm a
24 firm believer in data dictating the path forward.
25 MR. ROSSMAN: Thank you. No more questions.

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1 I appreciate it.
2 JUDGE NOBLE: Any other council questions?
3 Questions based on council questions?
4 Dr. Sahu, you're speeding up again.
5 RECROSS-EXAMINATION
6 BY MR. JOHNSON:
7 **Q. Dr. Sahu, your reference to flashing, I just**
8 **want to confirm that flashing is not the same as**
9 **boiling, correct?**
10 A. Right.
11 **Q. Okay. So it's not like all of the liquids**
12 **suddenly turns to a vapor.**
13 A. Well, let me clarify. Flashing in a sense is
14 like boiling except at lower than what would be typical
15 boiling-point temperatures. Flashing does, in fact,
16 mean a lot of the vapor -- but what I want to clarify is
17 when you have a big liquid like in a tank, you cannot --
18 they're always gradients of temperature within that.
19 You simply cannot flash all the contents of a tank. It
20 is still a surface-driven phenomenon.
21 **Q. And that's all I was trying to get at.**
22 A. And I'll -- and what happens is, when you flash,
23 it actually creates a local cooling because the heat of
24 the evaporation actually cools the local liquid. So in
25 a sense, you flash out the surface. Now, if you've got

heat coming in from a tire or something, now you've got a different story. But normally if you flash because of pressure, you -- it's more of a portion of the liquid.

Q. Thank you. And what was the -- you referenced the UK incident several years ago where there was a flash and a fire. Do you know what the product was?

A. It's Farnsboro. It was a town, Farnsboro, F-a-r-n-s-b-o-r-o --

Q. I'm sorry, I meant the product that flashed.

A. No, it wasn't crude oil. It was a -- I cannot remember the name of the product. But I can say it was not crude oil.

Q. Okay. And then I thought you said that the applicant had made a choice to maintain positive pressure in the vessels, and I may have misheard you; but it's not really a choice, is it? It's based on a federal requirement that we maintain positive pressure in the vessel?

A. Yeah, if I said it's a choice, I misspoke. I thought -- how about I say, the applicant has made a prudent choice to comply with safety regulations. How about that?

Q. Based on safety regulations?

A. Yes.

Q. Okay. And as to Mr. Stephenson's questions

1 **about ambient air monitoring, and you were talking about**
2 **TAPs and specifically I think DPM, isn't it true that**
3 **the ambient air monitors aren't source specific?**
4 A. That's true. You can collect data to do what's
5 called fingerprinting and determine fractions that are
6 coming from different sources. That's what is done
7 typically when you have multiple sources, let's say,
8 affecting a given monitor. You try and do apportionment
9 based on fingerprinting. But, of course, by their very
10 nature, ambient monitors will pick up whatever is in the
11 ambient air.
12 MR. JOHNSON: Okay. Thank you. Nothing
13 further.
14 JUDGE NOBLE: Ms. Brimmer?
15 REDIRECT EXAMINATION
16 BY MS. BRIMMER:
17 **Q. Very briefly, Dr. Sahu, on that same topic,**
18 **Councilmember Stephenson's question, I just want to be**
19 **clear. You said that the ozone ambient air quality**
20 **standard is decreasing, and I just want to make sure**
21 **that it is understood that means it is becoming more**
22 **strict, correct?**
23 A. It has been every time, at least in the last
24 several rounds of review, and they're five-year reviews
25 by the EPA; it has become stricter because the numerical

1 standard has become less and lowered.
2 **Q. And a new stricter ozone standard has just come**
3 **into place, hasn't it?**
4 A. Yes, it has.
5 **Q. And isn't one of the problems here the fact that**
6 **because the applicant has decided that they're a minor**
7 **source, they haven't done the modeling and the data**
8 **collection necessary to determine what impact they might**
9 **have on ozone relative to standards?**
10 A. That's true. I mean, that's one of the benefits
11 of being a minor source, is you don't have to do more
12 modeling and that's what has happened here.
13 MS. BRIMMER: Thank you. Nothing further.
14 JUDGE NOBLE: Dr. Sahu, thank you very much
15 for your testimony this afternoon. It's been a long
16 afternoon and we are grateful. You are excused.
17 THE WITNESS: Thank you. And I want to say
18 my final sorry to the much-impacted court reporter.
19 JUDGE NOBLE: You're excused as a witness.
20 THE WITNESS: Thank you very much.
21 JUDGE NOBLE: Well, we have come to the end
22 of the day again, which means that we have to say who
23 are the witnesses coming tomorrow. Don't leave after we
24 go off the record, because I had a question, especially
25 for Counsel for the Environment, about the issue that

1 was raised this morning concerning time. So just a
2 quick word after I hear the witnesses for tomorrow.
3 MS. BOYLES: Yes. Tomorrow morning we will
4 begin with Ms. Linda Garcia. She is a fact witness
5 representative of the Fruit Valley Neighborhood
6 Association.
7 Then we will turn to --
8 MS. CARTER: Good afternoon. Then we will
9 start -- then we'll begin with tribal witnesses, and the
10 first one will be Stuart Ellis. He will be speaking to
11 tribal fisheries and rebutting Mr. Challenger,
12 Mr. Schatzki and Mr. Carrico.
13 Next we'll have Ms. Kathryn Brigham. She's
14 a tribal fisher, and she will be rebutting also the
15 testimony of Mr. Challenger.
16 Following that with Mr. Audie Huber, and he
17 will be speaking to cultural resources and rail impacts
18 and he will be rebutting the testimony of Mr. -- maybe
19 Ms. Reese and Kaitala.
20 On deck we'll have Mr. Blaine Parker. He's
21 a biologist and he will be speaking to aquatics species
22 impacts and ballast water impacts.
23 JUDGE NOBLE: Pardon me. What impacts?
24 MS. CARTER: Ballast. And he will be
25 rebutting the testimony of Mr. Challenger,

1 Mr. Gunderson, Dr. Elliott Taylor and Mr. Bayer.
2 MS. REED: Sorry, what was his last name,
3 Blaine --
4 MS. CARTER: Parker, P-a-r-k-e-r.
5 JUDGE NOBLE: Could you say it again for the
6 council's benefit which of the tribal witnesses had
7 prefiled testimony? I think I remember, but I'm not
8 sure the council has that.
9 MS. CARTER: I apologize for that.
10 Mr. Ellis has prefiled testimony, Ms. Kat Brigham has
11 prefiled testimony, Mr. Audie Huber, as well as
12 Mr. Packer. So they all have prefiled testimony. Thank
13 you.
14 JUDGE NOBLE: Thank you.
15 MS. BOYLES: And, Your Honor, we have one
16 additional thing, you know, speaking with Mr. Johnson,
17 Mr. Russ Gibbs will be available on the phone, I
18 believe, at --
19 MR. JOHNSON: 1:00. And that was based on I
20 think Mr. Rossman's request.
21 JUDGE NOBLE: Thank you very much for that.
22 We'll plan for that.
23 Is there anything we need to do on or off
24 the record before we adjourn for the day? Seeing none,
25 we are adjourned until July 21, tomorrow, 9:00.

1 (Hearing adjourned at 4:58 p.m.)
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C E R T I F I C A T E

STATE OF WASHINGTON)
) SS.
COUNTY OF THURSTON)

I, Micheal A. Johnson, Registered Diplomate Reporter and Certified Realtime Reporter, do hereby certify that the foregoing transcript is true and accurate to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 26th day of July, 2016.

MICHEAL A. JOHNSON, RDR, CRR