

IN THE MATTER OF AN ARBITRATION BEFORE A TRIBUNAL
CONSTITUTED
IN ACCORDANCE WITH THE TREATY BETWEEN THE U.S.A. AND THE
REPUBLIC OF ECUADOR CONCERNING THE ENCOURAGEMENT AND
RECIPROCAL PROTECTION OF INVESTMENT, SIGNED AUGUST 27, 1993
(THE "TREATY")

and

THE UNCITRAL ARBITRATION RULES 1976

- - - - -x
 In the Matter of Arbitration :
 Between: :
 :
 CHEVRON CORPORATION (U.S.A.), :
 TEXACO PETROLEUM COMPANY (U.S.A.), :
 :
 Claimants, : PCA Case No.
 : 2009-23
 and :
 :
 THE REPUBLIC OF ECUADOR, :
 :
 Respondent. :
 - - - - -x Volume 7

TRACK 2 HEARING

Wednesday, April 29, 2015

The World Bank
700 18th Street, N.W.
J Building
Conference Room JB1-080
Washington, D.C. 20003

The Hearing in the above-entitled matter convened
at 9:00 a.m. before:

- MR. V.V. VEEDER, Q.C., President
- DR. HORACIO GRIGERA NAÓN, Arbitrator
- PROFESSOR VAUGHAN LOWE, Q.C., Arbitrator

Registry, Permanent Court of Arbitration:

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MR. RAYMUNDO TREVES

MS. NAYA PESSOA

Additional Secretary:

MS. JESSICA WELLS

Tribunal Expert:

MS. KATHRYN OWEN

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1 PROCEEDINGS
2 PRESIDENT VEEDER: Good morning, ladies and
3 gentlemen. We'll start Day 7 of this Hearing.
4 There are certain housekeeping matters we need to
5 address. First of all, a simple one. We classified the
6 Transcripts for days five and six as especially
7 confidential, given the evidence of Mr. Lynch and
8 Mr. Racich. I don't think we need to maintain that
9 confidentiality today, and I think my colleagues agree.
10 Do the Parties agree? We ask the Claimants first.
11 MR. BISHOP: Yes, we agree.
12 PRESIDENT VEEDER: And the Respondent?
13 MR. EWING: Yes, we agree.
14 PRESIDENT VEEDER: When we talk about the Terms of
15 Reference of Ms. Owen, we have to be slightly careful, but
16 I think we can take that as it comes.
17 Secondly, we're trying to complete the site visit
18 order. We do not think it is helpful to speak to the other
19 tribunal. We don't think it's absolutely necessary for us
20 to see the Order made in Burlington and Ecuador. If
21 there's a difficulty about that, we'll just move on. Or is
22 it going to be resolved, and we can see a copy today.
23 We ask the Claimants first.
24 MS. RENFROE: Thank you, Mr. President. Good
25 morning, Members of the Tribunal.

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09:00 1 We have the representatives of Burlington. We
2 have their authorization to disclose the Burlington
3 site-visit protocol and annexes with the following
4 condition. And if I might read this statement that I've
5 been provided by our client into the record to see if this
6 is acceptable to the Tribunal.
7 So, "As counsel for Claimants, we are also counsel
8 for Burlington Resources in ICSID Case Arbitration 085,
9 which is also adverse to the Republic of Ecuador, and which
10 we have referred to as the Burlington arbitration. We do
11 have Burlington's consent as a courtesy to Claimants and
12 Ecuador and for the sole purpose of facilitating the
13 understanding of the organizational and logistical issues
14 involved in the preparation of a site visit to disclose to
15 this Tribunal the site-visit protocol and its corresponding
16 annexes executed by the Parties in the Burlington
17 arbitration, provided that the Tribunal either issues a
18 confidentiality order covering the site-visit protocol and
19 the corresponding annexes or otherwise declares that the
20 Tribunal will treat that site-visit protocol and annexes as
21 confidential and without waiver of any confidentiality
22 provision or the Burlington site-visit protocol and
23 specifically without waiving the orders made by the
24 Burlington Arbitration Tribunal with respect to the
25 confidentiality."

09:01 1 And with that understanding, if it is acceptable
 2 to the Tribunal to treat the Burlington site-visit protocol
 3 and annexes as confidential, then I have them here, and I'm
 4 prepared to provide them.
 5 PRESIDENT VEEDER: Can we invite the Respondent to
 6 comment on that.
 7 MR. SILVA ROMERO: Thank you, Mr. President.
 8 We were, indeed, discussing with our colleagues
 9 about this question. We haven't finished our discussions
 10 after some exchange of e-mails.
 11 The first point is that the site-visit protocol
 12 and the annexes are not confidential in the Burlington
 13 arbitration. The confidentiality of these documents lasted
 14 some days after the site visit. The purpose of that
 15 confidentiality was to preserve the site visit without any
 16 problems, but then after the site visit, this
 17 confidentiality disappeared.
 18 We are, however, considering the statements made
 19 by Burlington to find a solution without involving the
 20 Tribunal on that confidentiality issue.
 21 The only confidentiality point in the Burlington
 22 Case is the one concerning the video. The Tribunal,
 23 issued, indeed, an order, saying that the Parties can only
 24 use the video of the site visit after asking for leave.
 25 So, in that circumstances, if we want to use the video, we

09:03 1 should either come to an agreement or request for leave.
 2 The last point I would like to make is that I
 3 understood from the exchanges with my friends that the idea
 4 of this Tribunal having the conversation with the Tribunal
 5 in the Burlington Case was acceptable, and more
 6 specifically a conversation with yourself, Mr. President,
 7 and the President of the Burlington Tribunal,
 8 Ms. Kaufmann-Kohler.
 9 Thank you.
 10 PRESIDENT VEEDER: It sounds as though you might
 11 need a bit more of a conversation between the two of you to
 12 square the circle. Is that useful?
 13 MS. RENFROE: Respectfully, Mr. President, and
 14 with due respect to my good friend Mr. Eduardo Silva
 15 Romero, I don't think any further conversations would be
 16 useful. It's as simple as this.
 17 Our client, Burlington Resources, has only
 18 authorized us to disclose the Burlington site-visit
 19 protocol on the condition that this Tribunal treat it as
 20 confidential and not disclose it. And without that, then
 21 we don't have the authority to disclose it.
 22 PRESIDENT VEEDER: Let me stop you.
 23 When you say, "this Tribunal," if it's this
 24 Tribunal, we can obviously decide to treat it as
 25 confidential; but if there is no confidentiality in the

09:04 1 document in the Burlington arbitration, is your client
 2 seeking to impose indirectly an obligation of
 3 confidentiality on the Respondent through any order we
 4 might make in this arbitration?
 5 MS. RENFROE: My client is not trying to expand
 6 the protection that it has from that arbitration, but we
 7 respectfully disagree with the characterization by my
 8 colleagues, and I was asked the question to ask our client,
 9 the Burlington Resources organization, through
 10 ConocoPhillips, whether they would be agreeable to
 11 disclosing the site-visit protocol, and we asked that
 12 question, and we have their willingness to do it on the
 13 condition that it be treated confidential, and that's the
 14 only authority I have today.
 15 PRESIDENT VEEDER: Just one moment.
 16 (Tribunal conferring.)
 17 PRESIDENT VEEDER: In the circumstances, we don't
 18 think we need to see the Burlington order, nor do we think
 19 we should be speaking on a private basis to any member of
 20 that Tribunal, so we'll leave it there.
 21 I think we've worked hard enough to get this order
 22 to its almost final destination, and we'd like to do that
 23 if not this week, then very early next week, and we'll
 24 proceed on that basis.
 25 So, thank you for your efforts, both of you. It's

09:07 1 a no thank you.
 2 MS. RENFROE: Thank you, Mr. President.
 3 PRESIDENT VEEDER: Now, before you go, you're both
 4 considering or, rather, the Respondent more than the
 5 Claimant this draft joint letter or letter from the
 6 Tribunal to the journalist. How is that draft going?
 7 MR. BLOOM: And with apologies, that's actually in
 8 my lap. I still need to have an exchange with Mr. Bishop.
 9 PRESIDENT VEEDER: Take your time. So, we'll come
 10 back to that later.
 11 Now, Ms. Owen, this is the main item of
 12 housekeeping.
 13 As you recall, we made an Order Number 34 on the
 14 30th of March 2015, effectively re-appointing Ms. Owen as
 15 an expert to the Tribunal, but her Terms of Reference were
 16 there limited to attending a certain part of this Hearing,
 17 and the question is whether we should, I think as requested
 18 by the Respondents originally, expand her Terms of
 19 Reference and what those Terms of Reference should be,
 20 consistent with Article 27 of the UNCITRAL Arbitration
 21 Rules. As you remember, the procedure there is information
 22 has to be given to the Expert, when she may have all the
 23 information she needs, but we would, I think, if you went
 24 down this route, have her Terms of Reference permit her to
 25 contact the two experts jointly for any further

09:08 1 clarification that she may need. She would then produce a
2 report, and that report would be communicated obviously to
3 the Parties, who would be given the opportunity to express
4 in writing their opinion on the Report, and then if either
5 side wished to, they could examine any document on which
6 the Expert has relied in her Report, and then to question
7 the Expert at a hearing.

8 Now, what is the position--we ask the Claimants
9 first--in regard to this possible procedure?

10 MR. BISHOP: It is the Claimants' position that we
11 see no need for any Terms of Reference to be given to
12 Ms. Owen. Mr. White can discuss this in more detail, but
13 quite frankly, we think that the party-appointed experts
14 have essentially agreed on what the forensic evidence is.
15 There are obviously inferences to be drawn or not drawn by
16 the Tribunal, but that is simply a matter for the Tribunal,
17 not for a tribunal-appointed expert.

18 So, it's our view that there is no necessity for
19 this. As I said, Mr. White can discuss the details
20 further.

21 PRESIDENT VEEDER: Thank you.

22 Mr. White.

23 MR. WHITE: Yes.

24 And we have a letter, which Mr. Calabro will pass
25 up.

09:11 1 response to each of these issues, which demonstrate that
2 all of the issues that Ecuador previously indicated it
3 wanted the Tribunal Expert to look at have all become
4 common ground between the party-appointed experts. Now
5 there is no dispute over those issues. We could go through
6 them in detail but I've handed those up in writing instead.

7 Mr. Ewing late yesterday evening sent over a new
8 list that's rather different from the list we looked at
9 before. I will just take a couple of examples from there
10 to demonstrate the point. The last item on Mr. Ewing's
11 list is essentially that Ecuador would ask Ms. Owen to look
12 at the forensic evidence and confirm that the New Computer
13 and the Old Computer were mapped to each other, and that
14 somebody accessed the Providencias document a number of
15 times from the New Computer using this mapping feature.
16 That is undisputed. Mr. Racich pointed that out, and
17 Mr. Lynch agreed with it. It's also irrelevant. The
18 relevant issue for the Tribunal to determine is Claimants'
19 contention that Mr. Zambrano testified falsely when he said
20 that the entire drafting of the Judgment was done on the
21 New Computer. And the issue there is whether the drafting
22 was done exclusively on the New Computer.

23 Mr. Racich and Mr. Lynch both agree that that's
24 not true. Mr. Racich very candidly said no, activity on
25 the document he identified as becoming the Judgment, the

09:10 1 Essentially the issue is what Mr. Bishop just
2 described that during the course of the exchange of the
3 Expert Reports and during the course of the direct and
4 cross-examination over the last two days, it's very clear
5 that the Experts have essentially agreed on the key
6 issues--in fact, I think I would characterize it as
7 Mr. Racich having conceded most of the key issues that may
8 have appeared to have been in dispute prior to the Hearing.
9 Just as an example, one of the important issues in the
10 Hearing is that neither the Selva Viva Database or any of
11 the other Plaintiffs' unfiled work-product documents were
12 found on the Zambrano computers. Mr. Racich agreed with
13 that. He also agreed that Mr. Lynch's comparison of the
14 text of the various documents on Mr. Zambrano's computer
15 that had Judgment text and the Final Judgment were
16 accurate.

17 There are a number of other examples.

18 What we have done with this letter is to go
19 through and take the list--we understood from Mr. Ewing
20 yesterday afternoon, that Ecuador would be sending over
21 essentially the list that was attached to the letter it
22 sent to the Tribunal from January with a few additions
23 arising out of things that came up during the Hearing, so
24 we have taken the list from the January letter from Ecuador
25 and attached it to this letter, along with Claimants'

09:13 1 Providencias document, was done on the Old Computer. So,
2 it's been established that Mr. Zambrano testified falsely
3 on that point. Having Ms. Owen go in and re-do the
4 technical analysis of the computers to confirm the
5 irrelevant point that is common ground between the Experts
6 that the mapping feature was used on some occasions doesn't
7 advance any issue that the Tribunal needs to resolve.

8 Now, we could sit here and go through all of the
9 issues Mr. Ewing sent over, but they're all in the same
10 vein. Ecuador is asking the Tribunal to expand Ms. Owen's
11 mandate to confirm facts that aren't in dispute, and
12 they're characterized in a way that's calculated to leave
13 the Tribunal to draw certain inferences that Ecuador would
14 like drawn. But that's not a proper exercise for a
15 tribunal-appointed expert.

16 And that's why we say, with the greatest respect
17 to Ms. Owen, that it wouldn't be appropriate for the
18 Tribunal to bring in a tribunal-appointed expert now to
19 conduct the exercise that Ecuador envisions.

20 PRESIDENT VEEDER: Thank you for that.

21 Just talk us through what documents you have
22 given. You've given us a letter of the 29th of April 2015
23 addressed to the Tribunal, signed by Mr. Bishop.

24 MR. WHITE: That's correct. The first document
25 we've given you is a letter dated April 29th, which sets

09:14 1 out the position with respect to what's happened at the
 2 Hearing, and essentially it goes through a list of the
 3 issues that are not in dispute--and it's clear they're not
 4 in dispute, after the testimony of the party-appointed
 5 experts, and I think makes very clear that this judgment
 6 was ghostwritten. I don't think there can be any doubt
 7 about that after what we've heard over the last few days.
 8 So that's very clear.

9 The second document that we've attached, is
 10 Mr. Bishop's letter of February 9th, 2015, which set out
 11 the position as of the time that the
 12 party-appointed--sorry, set out the position as of that
 13 date, point and time when all of the Expert Reports except
 14 Mr. Racich's March 15 report was in, and the main reason
 15 we've put that in is it explains--sets out the position
 16 under the UNCITRAL Rules on the proper role for a
 17 tribunal-appointed expert, but also so it's available for
 18 the Tribunal's reference on what the position was when we
 19 just had the Expert Reports and not the testimony.

20 And then the last attachment is the proposed list
 21 of issues that Ecuador had sent over in January. We
 22 endeavored to confer with Ecuador about this yesterday
 23 during the day and yesterday evening, but weren't able to
 24 talk about the substance. We were instead advised that we
 25 would get a supplement to this list. So, we thought it

09:17 1 impressed with Claimants' ability to brief things on a
 2 moment's notice. This is something we were unable to do
 3 last night as, hopefully, is not surprising, so we have not
 4 had an opportunity to respond to this, as you surely know.

5 The technical issues, I think, you may have
 6 noticed are something that I and Mr. White have become
 7 relatively fluent in. Mr. Lynch, Mr. Racich--it's another
 8 language that each of us has had to learn, and we believe
 9 that Ms. Owen would be able to be a very helpful translator
 10 for you to understand the technical issues that we talk
 11 about fluently, as if they are normal. I understand that
 12 they are not common language for everyone, and we would
 13 submit, then, that having Ms. Owen as a resource for the
 14 Tribunal to ask its own questions, to ask and listen to the
 15 answers to the Parties questions would be immensely helpful
 16 for you as you do deal with these very troublesome and
 17 interesting facts of how do you weigh what is true and what
 18 is not true.

19 In our list, for instance, you will see Number 10
 20 is a reference to yesterday's discussion of the HTML
 21 fragments, and Mr. White put up on the screen some
 22 fragments that were recovered from Mr. Guerra's computer,
 23 from--and they showed an e-mail SDonziger@gmail. And as
 24 the Tribunal noted, Steven Donziger--the inference was that
 25 there was some e-mail communication from Mr. Donziger to

09:15 1 would be helpful for us to provide Ecuador's list along
 2 with cites to the Transcript where each of these issues has
 3 been addressed by the party-appointed experts and, I think,
 4 demonstrates that there is really no useful exercise for
 5 the tribunal-appointed expert to engage in in light of the
 6 candid admissions from Mr. Racich.

7 That doesn't contain an exhaustive list of
 8 everything that was sent over to us by Ecuador most
 9 recently, we haven't had an opportunity to prepare
 10 something in writing on that. But we've reviewed the list
 11 and none of that changes the position.

12 PRESIDENT VEEDER: Just for clarification. The
 13 second document where you comment on the Respondent's list
 14 of issues, that doesn't reflect what you received last
 15 night?

16 MR. WHITE: It doesn't reflect what we received
 17 last night. We didn't have time to put something in
 18 writing on that. This is based off the prior list that we
 19 had received.

20 PRESIDENT VEEDER: And what's the position of the
 21 Respondent?

22 MR. EWING: Mr. President, could I hand you our
 23 list from last night, please?

24 PRESIDENT VEEDER: Sure.

25 MR. EWING: Mr. President, again, I'm very

09:19 1 Mr. Guerra. And we believe that's not true, and that the
 2 forensics is very clear about that. We know that
 3 Mr. Guerra e-mailed Mr. Donziger--that is not in dispute at
 4 this point. The question from yesterday seems to be a new
 5 inference based on this information that I believe is very
 6 clear, and I think something that Ms. Owen would be able to
 7 very aptly and clearly discuss with you and demonstrate
 8 what we're--what we believe is the case. So, we think that
 9 these questions would be a useful starting point for the
 10 Tribunal.

11 I understand that some may be things that we can
 12 agree on. We tried to provide a more exhaustive list. And
 13 as Mr. White pointed out, maybe we can agree on Number 13,
 14 maybe we can agree on a few other ones. Given our long
 15 history, we probably can work many things out. But in the
 16 amount of time that we have, probably can't work everything
 17 out.

18 So, I would submit that having Ms. Owen as a
 19 resource for the Tribunal would be very helpful.

20 And specifically with regard to your proposed
 21 procedure, communication with the Experts, we would be
 22 happy for her, for Ms. Owen, to talk to Mr. Racich and
 23 Mr. Lynch, to provide a report to examine her documents,
 24 and to question her at Hearing. All would be an
 25 appropriate procedure, we believe.

09:20 1 PRESIDENT VEEDER: You would accept, as we do,
 2 that Article 27 does not permit us to consult Ms. Owen
 3 privately. She can't be an adviser to the Tribunal other
 4 than the procedure, the transparent procedure, in
 5 Article 27?
 6 MR. EWING: I understand that all communication
 7 with her would need to be transparent, but I would also
 8 believe that you would be able to submit questions to
 9 her--with transparency to the Parties, of course--but yes.
 10 PRESIDENT VEEDER: It sounds as though you may
 11 need--if we went down this route at all, which is a
 12 question of principle we have to decide--that you would
 13 need a bit more time to sort out what the Terms of
 14 Reference might or might not be, so, don't feel the need to
 15 respond in detail to these questions. But putting that
 16 aside, is there anything the Claimants want to respond to
 17 what they've heard from the Respondent?
 18 MR. WHITE: Yes, Mr. Veeder.
 19 We would suggest that if the Tribunal is inclined
 20 go down this route, which we think is not appropriate--and
 21 we think that can be shown by looking at whatever questions
 22 might be asked by Respondent, the ones in this list or if
 23 they--or whatever they may be--we would say that the more
 24 appropriate way to proceed would be that if the Tribunal is
 25 confused about anything, as Mr. Ewing seems to be

09:23 1 Would the Claimants object to that? We've
 2 obviously started a discussion last week as we indicated we
 3 would, but I want to make sure there is no difficulty if we
 4 take this a little bit further, in the light of the
 5 documents we have just received.
 6 We ask the Claimants first.
 7 MR. BISHOP: I think, Mr. President, simply asking
 8 those questions in the abstract as to whether someone has
 9 something to contribute may bias the answer, and I'm not
 10 sure that that moves the ball forward. So, I think from
 11 our standpoint that's not a useful exercise.
 12 PRESIDENT VEEDER: And the Respondent?
 13 MR. EWING: Mr. President, we would have no
 14 objection to you discussing the procedural with Ms. Owen.
 15 Just to quickly respond to what Mr. White said,
 16 from his perspective, the ghostwriting evidence is clear,
 17 and as is probably not surprising, I have a feeling that we
 18 will disagree with most of what's in here. So, just so
 19 we're--we are clear, we don't think it's so evident in
 20 their favor.
 21 But to answer your original question, no, we have
 22 no objection to your discussing the procedure with
 23 Ms. Owen.
 24 PRESIDENT VEEDER: One moment.
 25 (Tribunal conferring.)

09:22 1 suggesting may be the case, or has any questions about
 2 specific issues, or perceives that there is a true conflict
 3 in the evidence that may be causing some difficulty, that,
 4 as a first step, the Tribunal should recertify those
 5 questions to the Parties and we could then go back to the
 6 record in the arbitration as it exists now and find the
 7 answer, help find the answer, either in the Expert Reports
 8 or in the testimony from the last few days.
 9 And then, if there was still something
 10 outstanding--we really don't think there would be, but if
 11 there was--at that point, we could address--we could take
 12 this issue up again.
 13 But sort of moving forward with expanding the
 14 Tribunal-appointed Expert's mandate now, when it appears
 15 that the issues are all very clear in the record and that
 16 the Tribunal has all the assistance it needs from the
 17 Party-appointed Experts, would not be a useful exercise.
 18 PRESIDENT VEEDER: Thank you.
 19 I take it you wouldn't object if we discussed the
 20 issue of principle with Ms. Owen, because obviously her
 21 views as to whether she has anything to contribute would be
 22 quite important for us to know beforehand. We're not going
 23 to ask her what the answers are to any of these particular
 24 points, but whether she thinks there is any useful purpose
 25 in this exercise.

09:26 1 PRESIDENT VEEDER: I think the Tribunal would
 2 appreciate more time to think this through, but it may be
 3 helpful if we just explained where we might be going.
 4 We are not asking for Terms of Reference to be
 5 enlarged for Ms. Owen to the extent of the same exercise
 6 undertaken by the two Parties' Expert Witnesses. What
 7 we're interested in is very much what Mr. White touched
 8 upon: From a forensic expert point of view, is there
 9 common ground in the way that has been suggested by the
 10 Claimants and may not be agreed by the Respondent? So, I
 11 think that's quite important for us to know that there is
 12 common ground from a forensic point of view or not.
 13 If there is a forensic difference, it's always
 14 helpful for a tribunal to know--and this applies to all
 15 experts--as to why the experts differ, and it may be that
 16 the input's the difference. That is, it is not a forensic
 17 expert difference, it's because they have been given
 18 factual assumptions or they have made factual assumptions
 19 which produced a different result. But if you swapped the
 20 factual assumptions, as a matter of forensic expertise,
 21 they would come to the same answer. Again, that's quite
 22 helpful for us to understand why people differ.
 23 And then a point came up during the
 24 cross-examination as to whether some matters on which
 25 opinions were expressed were matters of forensic science,

09:27 1 or whether it was simply an intelligent deduction, which is
 2 more appropriate for a tribunal to make than for an expert
 3 witness.
 4 So, it's really a fairly limited exercise, and
 5 this is why we would like to speak to Ms. Owen, is whether
 6 she thinks there is any contribution she could make to
 7 confirm where there is common ground between the Expert
 8 Witnesses as a matter of expertise and why they differ.
 9 But she would not go on and express an opinion as to the
 10 result of that difference. That's something that we have
 11 in the record from the Expert Witnesses on which the
 12 Parties can make submissions. So, it's perhaps not quite
 13 the exercise that may take place in other cases. This is a
 14 fairly limited exercise.
 15 But having said that, we haven't formed a view
 16 about this. We are still going to have to think about it
 17 as a matter of principle.
 18 But with that in mind, we ask the Parties to
 19 comment again, if they are minded to do so. Claimants
 20 first.
 21 MR. WHITE: Yes--thank you, Mr. President.
 22 I think if that is--and I understand, I think,
 23 what has just been said--if that is the purpose of the
 24 discussion that we're having now, I think the most helpful
 25 thing to do would be for Ecuador to identify in the

09:30 1 one moment.
 2 (Tribunal conferring.)
 3 PRESIDENT VEEDER: Well, thank you for that. We
 4 will have to think a little bit more. We'll come back to
 5 you. But we would like to raise with Ms. Owen this general
 6 approach--not specific questions or specific answers.
 7 Because if there is no point in doing this, we want to know
 8 that. If there is, we will come back to you.
 9 Anything else by way of housekeeping from the
 10 Claimants' side?
 11 MR. BISHOP: No, Mr. President.
 12 PRESIDENT VEEDER: And the Respondent?
 13 MR. EWING: No, Mr. President.
 14 PRESIDENT VEEDER: Well, let's resume the
 15 cross-examination.
 16 But, first of all, we have to ask our Lord and
 17 Masters if they need a break.
 18 COURT REPORTER: We're fine.
 19 PRESIDENT VEEDER: They don't need a break.
 20 Let's proceed.
 21 MR. EWING: Mr. President, if we could just have
 22 two minutes for us to change stage a little bit.
 23 PRESIDENT VEEDER: We can have five minutes'
 24 break. Don't worry.
 25 MR. EWING: Perfect. Thank you.

09:29 1 testimony in the Expert Reports any areas where they think
 2 there is a true conflict of the kind that you've just
 3 identified, and then we can take that up and determine that
 4 we either agree there is actually a conflict--because
 5 Mr. Ewing is suggesting there is; we don't really think
 6 there is--and then revisit the issue in light of that
 7 submission by the Respondents.
 8 MR. EWING: Mr. President, we have now briefed
 9 this many times, and we are still at a point where we have
 10 diametrically opposed understandings of what the forensic
 11 evidence shows, what it means, what the facts are. I agree
 12 with Mr. White that there are some things that are common
 13 ground. There are things that are not common ground. And
 14 while we will brief it, if you would request, I think that
 15 what would be more effective and efficient for you would be
 16 to discuss this with Ms. Owen as you've outlined. I think
 17 the differences in the Parties sort of prove our case and
 18 would sort of lend itself to this idea of what you're
 19 proposing.
 20 MR. WHITE: I'm sorry, Mr. President, may I just
 21 say, we're not suggesting a brief. We're just suggesting a
 22 list of issues with references to the Transcripts and the
 23 Expert Reports identifying the conflicts that Ecuador
 24 perceives.
 25 PRESIDENT VEEDER: We've understood that. Just

09:31 1 (Brief recess.)
 2 JOHN A. CONNOR, CLAIMANTS' WITNESS, RESUMED
 3 PRESIDENT VEEDER: Good morning, Mr. Connor.
 4 There'll be further questions from the Respondent.
 5 THE WITNESS: Thank you.
 6 CONTINUED CROSS-EXAMINATION
 7 BY MR. EWING:
 8 Q. Good morning, Mr. Connor. How are you today?
 9 A. Very good.
 10 Q. Could we start with your 2010 Report, which is
 11 Tab 5 in our first binder or in your copy.
 12 A. Yes, I have it.
 13 Q. And at Page 16, Paragraph 15, there's a section
 14 called, "the types of pits used in oil field operations."
 15 Do you see that?
 16 A. Yes.
 17 Q. Okay.
 18 And if we turn the page to Page 17, we have
 19 Figure 5, which I understand is the use of earthen pits in
 20 oil well drilling and production.
 21 A. Yes.
 22 Q. Is this an accurate representation of a typical
 23 well?
 24 A. Yes, it's meant to be a representation of the
 25 types of operations of a common well. They'll certainly

09:39 1 differ from one application to the next, but this is
 2 not--this is common.
 3 Q. So, if we could walk through the pits that you
 4 have here, in this diagram at the top you have A, the
 5 drilling of the oil well, and I understand that the gray
 6 area underneath the oil rig is the platform; is that
 7 correct?
 8 A. Yes, on a land-based system, that would correspond
 9 to what's called the platform in this case, which is a
 10 gravel pad.
 11 Q. And then to the upper left corner you have a water
 12 pit?
 13 A. Yes.
 14 Q. And that is a water pit that is filled with water;
 15 is that correct?
 16 A. Yes.
 17 Q. And it's dug directly into the ground, so that's
 18 an earthen pit as well?
 19 A. In this example, yes.
 20 Q. Okay. And this is typical, is a typical layout
 21 for Ecuadorian wells in the Oriente; is that correct?
 22 A. I can't speak as to what technologies have been
 23 used today because Petroecuador has advanced its
 24 technologies quite a bit, but this would have been
 25 certainly the common technology used during the era of

09:42 1 A. In this example, it is. Just like the water pit,
 2 the soils are able to retain those fluids, so if you could
 3 dig a water pit into the clay and it holds water, it will
 4 also hold the mud.
 5 Q. I understand that your contention is that it is
 6 clay lined; is that correct?
 7 A. It's based in natural soils clay. That's why the
 8 water pits in this area did not require synthetic liners.
 9 Q. You told us yesterday that the water--that the
 10 rain in the Oriente falls at three meters per year; is that
 11 correct?
 12 A. In this particular region, yes.
 13 Q. Do those water pits overflow on an almost constant
 14 basis?
 15 A. I don't know. I suppose it depends on how
 16 actively they're being used.
 17 Q. If I have an unused water pit and I'm adding three
 18 meters of water per year, wouldn't you expect that pit to
 19 overflow pretty frequently?
 20 A. It would depend on the water balance into that
 21 pit.
 22 If you've been to the Oriente, you'll know that it
 23 will rain very hard but then dry off very quickly. That's
 24 why people don't use umbrellas in that area because after a
 25 very hard rain, they will dry very quickly, and that's

09:40 1 TexPet operations and still used in many places around the
 2 world today.
 3 Q. Okay. So, these diagrams that we're looking at
 4 are your understanding of a typical TexPet operation in the
 5 Oriente between 1972 and 1992?
 6 A. I believe it would correspond to that, yeah, for a
 7 water-based mud application.
 8 Q. And as far as you know, all of the wells were
 9 water-based mud operations?
 10 A. Yes.
 11 Q. So, this is a typical diagram for TexPet's
 12 operations in the Oriente from 1972 to 1992; correct?
 13 A. Yes, I think it would apply.
 14 Q. So, we just talked about the water pit, which is a
 15 pit filled with water that is dug directly into the earth;
 16 is that correct?
 17 A. Yes.
 18 Q. And then still in the first frame we have a
 19 reserve pit to the bottom left; correct?
 20 A. Yes.
 21 Q. And that reserve pit is also dug into the dirt;
 22 correctly--correct?
 23 A. Yes.
 24 Q. And it is unlined with any kind of manmade
 25 material; correct?

09:43 1 called a process of evapotranspiration. So the water
 2 falls, but the water also evaporates, so that the issue,
 3 then, Mr. Ewing, is the net water gain in that pit. If the
 4 net water gain was such that it could overtop the pit,
 5 depending on how that worked out, but it wouldn't be such
 6 that the pit had to retain 3 meters of water.
 7 Q. And we saw the video of you at Aguatico 2 the
 8 other day where we recognize that these pits did overflow,
 9 and that was not an uncommon event?
 10 A. They do overflow. I don't know that it was
 11 uncommon. At that particular location it appears that that
 12 had happened. I didn't observe that at many locations, but
 13 there, yes.
 14 Q. Let's move back to the types of pits.
 15 So, we have a water pit, and then we have a
 16 reserve pit; and the reserve pit, according to your
 17 diagram, is filled with soil and rock cuttings and excess
 18 drilling mud. That's all the material that's coming in and
 19 out of the well as the bore drills down; is that correct?
 20 A. Yes.
 21 Q. And then moving to the second frame, B, the
 22 operation of the well, there are some changes here that I
 23 want to talk through. First, to start with what's the
 24 same, the water pit is still there and is a water supply,
 25 as you said, if needed; right?

09:44 1 A. Yes.
 2 Q. And then now, the reserve pit is listed as
 3 remediated.
 4 A. Yes.
 5 Q. And that means that any contaminants in that
 6 reserve pit have been properly disposed of or treated, and
 7 then that pit has been covered; is that correct?
 8 A. It means specifically that the pit has been closed
 9 in accordance with the standard procedures that are
 10 described in my Report, where I cite the specifications of
 11 the World Bank, the EMP forum, and many others, that
 12 describe a process whereby the materials are dried,
 13 solidified, compacted, and overlain. It's not considered
 14 that a mud pit would normally--or a reserve pit, excuse me,
 15 would normally contain any contaminants of environmental
 16 concern.
 17 Q. And in this picture, the wells currently in
 18 operation, the drilling rig has been removed; correct?
 19 A. Yes.
 20 Q. And the reserve pit has been remediated?
 21 A. It's been remediated and closed, yes, as I
 22 described.
 23 Q. So, once a well is in operation, the reserve pit
 24 is not needed?
 25 A. Yes, that's right. Unless the--and it wouldn't be

09:46 1 re-needed unless the--it wouldn't be needed again unless
 2 the well was extended in some manner to a different depth
 3 by drilling, whether some additional drilling operation in
 4 the future.
 5 Q. But that would be more of an exceptional
 6 circumstance, not the norm?
 7 A. It depends on the location, whether or not they
 8 will do an offset and do a horizontal well, so it really
 9 depends on the field and the decision of the Operator.
 10 Q. And if we could maintain the focus on TexPet's
 11 operations in the Oriente from 1972 to 1992, are you aware
 12 of any circumstances where this happened, where they
 13 drilled a well later?
 14 A. You mean, extended the well?
 15 Q. Extended the well.
 16 A. No, I'm not. I'd have to look back at the
 17 records. I don't recall that happening in particular.
 18 Q. And then there's a third pit now listed in section
 19 or frame B, and this is called the workover pit or test
 20 pit.
 21 Do you see that?
 22 A. Yes.
 23 Q. And your description says: "It is used to contain
 24 oily waste associated with well repair or testing." Is
 25 that correct?

09:47 1 A. Yes.
 2 Q. And this is also a pit that was also dug into the
 3 soil; correct?
 4 A. Yes.
 5 Q. And it had no artificial liner?
 6 A. In the cases I observed, I don't believe so.
 7 Q. And if we move to--
 8 A. Those guidelines changed later in Ecuador with
 9 regard to liner specification, but in that era that we're
 10 discussing, no, to my knowledge.
 11 Q. And then moving to Frame C, we again see the water
 12 pit, but now the water pit says, "may remain in use at
 13 discretion of property owner." Is that correct?
 14 A. That's what it says, yes.
 15 Q. So, this water pit, in a typical well drilling
 16 site, is on private land?
 17 A. That will really depend on the lease, whether
 18 it's--for example, in the U.S. it could be on Federal land,
 19 it could be on private land, it could be on land that was
 20 purchased by the oil field owner or Operator, but in some
 21 cases it can be on private land, and the operations will
 22 entail in this country, in the U.S. at least, some
 23 contractual relationship between the Parties.
 24 Q. And, Mr. Connor, I have done my best to narrow
 25 down my questions and to only bring a few examples today

09:48 1 for each point, but if you could stay focused with me on
 2 the areas that we're looking at, and in this we are looking
 3 at a typical well in the Oriente from TexPet's operations
 4 from 1972 to 1992. Is it your understanding that the water
 5 pits were typically put into or dug into private land that
 6 is off the platform?
 7 A. The water pits were off the platform. It's my
 8 understanding that at times it was private land, but I
 9 can't say what it was in all cases. I don't know.
 10 Q. And the same for the reserve pit. We still see
 11 that it is remediated. It also appears to be on private
 12 land, according to this diagram?
 13 A. Well, I don't think the diagram indicates, but it
 14 could be on private land as well. I don't know what the
 15 circumstances are at each of the well sites in the Oriente.
 16 Q. And, finally, the workover pit or test pit now
 17 appears to have the same cover on it that the remediated
 18 reserve pit does, but it doesn't say that it's been
 19 remediated; is that correct?
 20 A. No, it doesn't say that on this diagram.
 21 Q. And this pit also is, based on this diagram, off
 22 the platform?
 23 A. It's off the platform, correct.
 24 Q. So, in a typical well in the Oriente from TexPet's
 25 operations from 1972 to 1992, you would agree with me that

<p>Sheet 11</p> <p style="text-align: right;">1480</p> <p>09:50 1 there are three pits typically? 2 A. There are three types of pits as is shown on this 3 diagram, yes. 4 Q. And each well would need each of these three types 5 of pits; correct? 6 A. At some point in its operation, I believe so. 7 That's fair. 8 Q. And TexPet drilled at least 322 wells; is that 9 correct? 10 A. I believe there were 322 wells identified in the 11 HBT Agra audit. I don't know who drilled them all, but it 12 could certainly be TexPet had drilled all of them. 13 Q. Do you have any reason to dispute that TexPet 14 drilled all 322 that were identified in the HBT Agra audit? 15 A. No. 16 Q. Now, Mr. Connor, could we move on now to discuss 17 the RAP. 18 You've testified that the RAP program addressed 19 pit and soil remediation at 148 of the 344 well sites in 20 the Concession Area. And this I'm looking at Tab 19. This 21 is your 2015 Report at Page 9. 22 A. Yes, I see that. 23 Q. And you also included this in your slides in your 24 opening presentation--correct?--a discussion of what the 25 RAP did and did not address.</p>	<p style="text-align: right;">1482</p> <p>09:54 1 site, if I recall, because there were--hang on a second. I 2 could tell you exactly how many there were. 3 (Witness reviews document.) 4 A. The total number of pits remediated was 162 at 88 5 sites, so it's approximately two pits per site were 6 included in the remediation program. Those were not all 7 the pits at those sites as we both know. 8 Q. So, it's approximately--we'll go two pits per 9 site, approximately? 10 A. Yes. 11 Q. You have mentioned the RAP as an agreement between 12 the Parties. Do you understand who the Parties were to the 13 RAP? 14 A. Mr. Ewing, I just want to correct a statement I 15 made. I referred to Table I(b). I should have said Table 16 1(a) for the record. Sorry. 17 The Parties to the RAP, as far as I understand, 18 Mr. Ewing, are those that had signed that document or were 19 signatory to that document. 20 Q. And you understand that the Parties to that 21 document who signed that document were TexPet and the 22 Ministry of Energy and Mines? 23 A. I'd have to look at the document. I have it here 24 with me. I can read those--or you can read them. 25 Q. So, you don't remember who signed?</p>
<p style="text-align: right;">1481</p> <p>09:52 1 A. Yes, but the number on the slide will be slightly 2 different because this number would include the overlap of 3 the two assignments, but at some wells they did both soil 4 remediation and pit remediation. 5 Q. And--thank you. I wasn't going to--I'm not 6 disputing you on the 344, but you know, Mr. Connor, that 7 the RAP did not address all of the features at every site; 8 correct? 9 A. Correct. 10 Q. And, in fact, you have said that it addressed only 11 some features at some of the sites? 12 A. It addressed the specific features that the 13 Parties agreed on that were identified in the tables 14 attached to the RAP, and those were specific features at 15 specific sites. 16 Q. So, for instance, at the 157 sites--and I put your 17 slide from your opening up on the screen--at 157 sites, 18 TexPet agreed to remediate 108 pits. 19 A. Correct. They actually remediated more pits at 20 more sites. And that's indicated on Table I(b) of my 2010 21 Report, which summarizes the ultimate work that was 22 completed during the implementation of the RAP. But yes, 23 this was the Agreement, as you stated. 24 Q. And that's less than one pit per site; correct? 25 A. Just a second. It averaged around two pits per</p>	<p style="text-align: right;">1483</p> <p>09:56 1 A. Well, it's in small print here. I could--no, I 2 don't remember without looking at that. 3 Q. Okay. Yesterday you used an analogy of a speed 4 limit for regulations, and you said that environmental 5 regulations are like the speed limit where the State may 6 set 65 miles an hour on the beltway, or it may set 35 miles 7 an hour in my neighborhood as the speed limit; correct? 8 A. Yes. 9 Q. And it may set 15 miles an hour in front of a 10 school; is that correct? 11 A. Yes, that's right. 12 Q. If I bought a large piece of land and put roads on 13 it, you would agree that I could set my own speed limit on 14 my property; correct? 15 MS. RENFROE: Objection to the question. That's 16 calling for a legal conclusion. 17 PRESIDENT VEEDER: I wonder whether this is a 18 helpful analogy in the first place, so you might want to 19 move on. 20 MR. EWING: I will move on, then. 21 BY MR. EWING: 22 Q. During the RAP, there are many sites that 23 TexPet--many pits that TexPet had closed that were not 24 addressed during the RAP; correct? 25 A. I guess I don't understand your question.</p>

09:58 1 Q. In your opening you referred to pits that were
 2 closed before June 30th, 1990, that had no visible impacts
 3 as sites that were not included in the RAP. Do you
 4 remember that?
 5 A. Yes. The Parties agreed on that provision that if
 6 there were such pits that existed that had been closed
 7 prior to that date, they were understood to exist, but only
 8 those that were observed to have indicia of poor closure
 9 during the implementation of the RAP would be incorporated
 10 into the RAP as additional sites.
 11 Q. And when you say sites that "had indicia of poor
 12 closure," you mean sites that had no visible soil impacts?
 13 A. No, but that's my interpretation of the language
 14 "visible soil impacts."
 15 For example, yesterday, we discussed the pits that
 16 the property owner had closed himself by covering with
 17 earth at the Shushufindi 4 well site, and you showed a
 18 video of Mr. John Slocum standing atop that pit and noting
 19 visible soil impacts. That was an example of a pit that
 20 hadn't been properly closed and that the sign of that is
 21 that oil in the pit squeezes out and comes to the surface.
 22 Q. So, that would be enough evidence to include a pit
 23 in the RAP?
 24 A. The Parties agreed to that. That's what they had
 25 agreed to say that would be the basis for including it in

10:01 1 A. There's a few negative switches in there. I might
 2 not understand your question, but I know there's two pits
 3 that did have visible--that were understood by the Parties
 4 to have been closed before June 30, 1990, did have visible
 5 evidence of soil impacts on the ground surface and were
 6 included in the RAP. To my knowledge, the RAP did not
 7 include a list of the pits that did not have visible
 8 impacts on the surface and had been closed prior to
 9 June 30th, 1990.
 10 Q. So, if we look at Tab 36--and this is the Chevron
 11 Playbook for Lago Agrio 6--and according to this document--
 12 A. Can you indicate a page number?
 13 Q. Sorry.
 14 At the bottom you will see GSI 0460859.
 15 A. Thank you.
 16 MR. EWING: And for the Tribunal's benefit, this
 17 is an example of a Playbook that Chevron put together
 18 leading up to the Lago Agrio 6 Judicial Inspection.
 19 MS. RENFROE: And for the benefit of the Tribunal,
 20 I respectfully disagree with your characterization, but
 21 just for the record.
 22 MR. EWING: I meant that to be non-controversial,
 23 so we can clarify that later.
 24 BY MR. EWING:
 25 Q. Do you see where it says here that Pit 1 is

09:59 1 the RAP, if it did have such signs.
 2 Q. So, the pit that Mr. Slocum was standing on should
 3 have been listed as a pit closed before June 30, 1990?
 4 A. No, it was closed by the owner a few years before
 5 the time that Mr. Slocum was standing on it, and I don't
 6 recall the specific time, but I believe it was around 2005,
 7 and the owner had testified that he had closed it himself
 8 only a short time before that. It was not a pit that at
 9 the time of the RAP was--had been closed by TexPet, it was
 10 not closed by TexPet. It certainly was not closed before
 11 June 1990.
 12 Q. So then it should have been listed in the RAP--is
 13 that correct?--because it would have been then open before
 14 2005 when the owner testifies he closed it.
 15 A. It would be listed--I would have to look at the
 16 RAP to see if it's listed. It would only be listed in the
 17 RAP if Shushufindi 4 were one of the 157 sites--excuse me,
 18 one of the 108 sites for which pit remediation was
 19 designated. And if that were the case, then it could be
 20 listed, subject to the various caveats that are listed or
 21 the four caveats I listed on that slide that you're now
 22 discussing.
 23 Q. Do you know how many pits were closed before
 24 June 30th, 1990, and included on the list of pits not to be
 25 included in the RAP?

10:03 1 identified in the Remedial Investigation as located
 2 northwest of the wellhead?
 3 A. Yes, I see that. It prints--you have it on the
 4 screen. That's really tiny, but I do see it.
 5 Q. My understanding from this is that the RAP only
 6 identified one pit.
 7 MS. RENFROE: With respect, Mr. Ewing, if you're
 8 going to ask him questions about the RAP, might you give
 9 him a copy of it?
 10 MR. EWING: He does have a copy of it. I was
 11 trying to short circuit this a little bit.
 12 MS. RENFROE: It might be helpful if you could
 13 refer him to where the RAP is in these binders. Thank you.
 14 BY MR. EWING:
 15 Q. Mr. Connor, let me come back to this example when
 16 I know the tab number for the RAP.
 17 You said in your opening presentation that the
 18 scope of the RAP was governed by the Scope of Work that was
 19 agreed between the Parties; correct?
 20 A. The Scope of Work set out certain tasks, and the
 21 RAP detailed those tasks, and the RAP set up certain
 22 provisions that additional--that further defined those
 23 tasks and led to additional work during its implementation.
 24 Q. And in your opening slide, you identified five
 25 things that these RAP completed, five tasks.

10:05 1 A. Yes.
 2 Q. And if we could put that back up, you identified
 3 pit remediation, soils and spills--it's coming--P&A of
 4 wells, which I understand is plug and abandon wells?
 5 A. Yes.
 6 Q. Tank dikes, and produced water equipment.
 7 Is that your understanding of what the Statement
 8 of Work required?
 9 A. Yes.
 10 Q. The Statement of Work did not address remediation
 11 of sediment; correct?
 12 A. The Statement of Work did not specifically use the
 13 word "sediment." If you look in the RAP itself, you will
 14 see that the description of some of the sites indicates
 15 that the adjacent stream was affected, and that was
 16 included in the RAP. There were seven instances of that.
 17 Q. So, you're saying that the RAP included
 18 remediation of a total of seven streams in the Oriente?
 19 A. There were seven spills that were added to the RAP
 20 that were observed during the implementation. Those spills
 21 at more than one site had affected the local stream. If
 22 that were the case and that were a part of the scope, they
 23 were addressed. Shushufindi 13 is an example. I can't
 24 recall the other examples, but the scope of the Settlement
 25 Agreement and the scope of the RAP did not specify that

10:07 1 streams adjacent to these facilities would be remediated,
 2 and that was not part of the work assignment for TexPet,
 3 unless it fell under the categories that I described.
 4 Q. So, what you're saying is that, of the 27 spills
 5 listed here, seven of those affected a stream and,
 6 therefore, they were--that stream was also addressed; is
 7 that what I understand?
 8 A. No, not exactly. The soils and spills that are
 9 listed there as incorporated in the Scope of Work that's
 10 attached to the Settlement Agreement was directed towards
 11 oil staining on the surface of the pad or on--within the
 12 confines of the production station. There were oil spills
 13 within the facility.
 14 There were seven additional spills that were added
 15 to the work program at the request of the Government
 16 Inspectors that were not confined to the area of the
 17 platform. Some of those extended into streams; and, if
 18 they did so, remediation of the area of the spill also
 19 incorporated the sediments that they had affected.
 20 Q. And if we could pull up one more video, I have a
 21 question for you on this. This is C-938.
 22 (Video played.)
 23 Q. So, you would agree with me, Mr. Connor, that not
 24 all of the spills were addressed during the RAP, either?
 25 A. That's correct. They weren't assigned to TexPet,

10:09 1 if they weren't assigned in the work program, then they
 2 weren't included in the work program.
 3 Q. So, you would agree with me that there were spills
 4 present at the time that were not assigned to TexPet and
 5 that TexPet did not clean up?
 6 A. That's right. If the work was not assigned to
 7 TexPet, then, in completion of their obligations, they did
 8 not complete the work that was not in their obligation.
 9 Q. So, if the Parties did not agree to a particular
 10 cleanup, TexPet was not required to do it?
 11 A. That's generally true, with the caveat that during
 12 the implementation program, the Government Inspectors did
 13 identify additional tasks that were posed to the Parties to
 14 decide whether it would be added and a number of tasks were
 15 added, 25 additional pits and seven spill areas. This was
 16 not one of those spill areas that was added at the request
 17 of the Inspectors and a decision of the Parties.
 18 Q. If you would turn to Page 35 of your 2010
 19 Report--are you there?
 20 A. Yes.
 21 Q. --in Paragraph 62 and 63, you discuss the soil
 22 remediation criteria from the RAP. Am I correct that in
 23 reading this that there were two standards applied,
 24 depending on when a pit was closed, either there is the
 25 soil leachate test or a 1,000-milligram per liter soil

10:12 1 leachate test or a 5,000 milligram per kilogram TPH
 2 composite test; is that correct?
 3 A. Yes, there were two different criteria. The first
 4 was applied throughout the program. The second was an
 5 added additional criteria that was added to work done after
 6 March 20, 1997.
 7 Q. And yesterday you used the tea bag analogy to
 8 explain the TCLP test and explain that the TCLP test is
 9 equivalent to measuring how much tea gets into the water
 10 outside of the tea bag; is that a proper recounting of your
 11 analogy?
 12 A. Well, specifically, I used that analogy to define
 13 what leachate is. Leachate is the soluble fraction of the
 14 soil or a chemical that will be released as water moves
 15 through that material, much as water moving through a tea
 16 bag. But the TCLP test is a specific laboratory Protocol
 17 to derive--extract leachate from a solid substance.
 18 But in general, the material that comes out is a
 19 leachate, much as what you would get out of a tea bag.
 20 Q. So, when water passes through a tea bag, some of
 21 the chemicals of the tea dissolve into the water, and that
 22 is what we then drink as tea; correct?
 23 A. Yes.
 24 Q. So, it's the dissolved component of the tea that's
 25 in the water?

10:13 1 A. Yes.
 2 Q. And then you remove the tea bag, and you can drink
 3 your tea?
 4 A. Yes.
 5 Q. Do you know in the TCLP test how much oil can
 6 dissolve in the water?
 7 A. You mean any--of a crude oil?
 8 Q. Correct.
 9 A. It depends on the crude oil itself. If the crude
 10 oil has a significant light infraction as we discussed
 11 yesterday, a gasoline fraction, those chemicals are
 12 relatively soluble in water compared to the heavier
 13 compounds, so the ability to dissolve in water depends on
 14 what portion of the oil is related to those lighter soluble
 15 compounds. If they're not present, then you will not have
 16 significant dissolution. If they are present, you will get
 17 more tea.
 18 Q. And if we look and think about an Ecuadorian
 19 Crude, how much Ecuadorian Crude would dissolve into the
 20 water?
 21 A. If I recall correctly--I guess we talked about
 22 this a bit yesterday, the soluble portion of the fresh
 23 crude is on the order of 20 percent, if I remember that
 24 right. It's called a topping test. It's the volatile
 25 fraction. So, fresh crude you could have a more

10:15 1 significant amount dissolving into the water, and that
 2 there is some complex chemistry that controls that. But in
 3 the weathered crude, very little because that soluble
 4 portion is gone, just as if you had used the tea bag many,
 5 many times, and that final time you used the tea bag,
 6 you're not getting any tea. That's similar to what you
 7 would find with the weathered crude, where the tea is gone
 8 for various reasons but it no longer contains it. So when
 9 you do the leachate test on the weathered crude, you get
 10 almost nothing in that water.
 11 Q. Yesterday, we looked at a sample of liquid crude
 12 that had approximately 24 milligrams per kilograms of GRO.
 13 Is that the volatile range that you're now referring to?
 14 A. Yes.
 15 Q. So, if we had run the TCLP test on that liquid
 16 crude from that pit with 24 milligrams per kilogram of GRO,
 17 what would you expect the TCLP results to be?
 18 A. They may have run that test on that material. We
 19 can look in the Report to see if that had been done, but it
 20 could result in a measurable--it could result in a
 21 detectable fraction of soluble components in that leachate
 22 test, but I would have to look at the Reports and see if
 23 that were done or not.
 24 Q. And still just staying in the theoretical, I'm not
 25 asking about the specific--we're just using that as an

10:16 1 example, assuming there is 24 milligrams per kilogram of
 2 GRO in the sample, would you expect the TCLP milligrams per
 3 liter to be on the order of ten, on the order of a hundred?
 4 What would you roughly estimate?
 5 A. I really couldn't estimate, Mr. Ewing. There is
 6 sort of a complex relationship that defines how much of
 7 that will come out to the water, and the best way to know
 8 is actually to run the test. If they ran the test, we can
 9 certainly look at that and see what that result is.
 10 The reason we run tests is that we don't know the
 11 answer.
 12 Q. Do you disagree with Dr. Short's conclusion that
 13 the TCLP test never would have been--never would have
 14 failed the 1,000 milligrams per liter because oil cannot
 15 dissolve in water to that extent?
 16 A. I would agree that these samples, as tested, both
 17 during the RAP and during the Judicial Inspection, never
 18 did exceed that limit. In fact, nearly all the samples had
 19 non-detectable leachate concentrations, and that supports
 20 the finding of high weathering of that material. The tea
 21 bag is worn out. Whether that material ever would have
 22 exceeded a value of 1,000 to me is somewhat immaterial
 23 because, regardless of what the criteria were, that
 24 material leached nothing, almost nothing, and it would have
 25 met any criterion that were in effect at that time.

10:18 1 But I don't know--I can't answer whether or not a
 2 fresh oil of any composition would have specifically
 3 exceeded that criterion because I haven't done that
 4 analysis.
 5 Q. But you agree with me that the weathered crudes
 6 that were analyzed during the RAP, none of them came even
 7 close to violating the RAP 1,000-milligrams-per-liter
 8 standard?
 9 A. That's right. All the samples that were tested
 10 did not release leachate. None of them were capable of
 11 contaminating the groundwater because they contained no
 12 soluble fractions.
 13 Q. So, if we could look at Tab 18--and this should be
 14 in the first binder--oh, sorry, it should be in the second
 15 binder. I'm just giving you an opportunity to lift both.
 16 MR. EWING: And for the record, this is Exhibit
 17 C-43, it is the Woodward-Clyde Report.
 18 THE WITNESS: Which tab did you say again?
 19 BY MR. EWING:
 20 Q. Eighteen.
 21 A. Yes, I'm there.
 22 And do you have a specific page number?
 23 Q. For some reason, Woodward-Clyde, along with some
 24 of our other historic Contractors didn't believe in page
 25 numbers. We are looking--it's Table 3-24, and it's just on

<p>Sheet 15</p> <p style="text-align: right;">1496</p> <p>10:20 1 this side of the middle. You will see there is a large 2 collection of tables in the middle, and we're looking at 3 Table 3-24. 4 A. Yes, I see that. It's multiple pages, and they're 5 indicated sheet one of--X of six at the bottom. Perhaps 6 you know which page that is. 7 It's sheet four of six. I found it. If you find 8 Table 3-24, in the lower right-hand corner, there is a new 9 numbering. 10 Q. But if we could look at the results for Sacha 86, 11 which as you said is on sheet four of six, and the way this 12 table is set up, so that we're all on the same page, is pit 13 number is listed on the left, and then we have 14 pre-remediation results and then we have remediation 15 verification results; correct? 16 A. Yes. 17 Q. And if we look down at Sacha 86, the 18 pre-remediation TPH results, we see 17,000 milligrams per 19 kilogram, 19,000 milligrams per kilogram, et cetera; 20 correct? 21 A. Yes. Those are the two values for 86.1, which 22 refers to Pit 1 at the Sacha 86 well site. 23 Q. And at Pit 2 there were 9300; correct? 24 A. The pre-remediation concentration of Total 25 Petroleum Hydrocarbon in that soil was that value, correct.</p>	<p style="text-align: right;">1498</p> <p>10:24 1 A. Yes. The evaluation criteria that was applied 2 during the Judicial Inspections by the Chevron Experts was 3 10,000 parts per million, consistent with those other 4 values that were prevailing at that time. 5 Q. Now, could we turn to the bottom of the next page, 6 where we have Sacha 91. So, now, this is sheet five of 7 six. 8 A. For clarity, Mr. Ewing, I should point out that 9 that criterion was applied outside of pits, not in 10 remediated pits, not in the RAP pits, because the RAP pits 11 had their agreed upon specified criteria. At locations 12 outside of pits, for which there--things that were not in 13 the RAP, then the criteria of 10,000 was used by the 14 Chevron experts to evaluate whether those were actionable 15 conditions. So, I didn't mean to mislead you to indicate 16 that that 10,000 was applied inside a RAP pit. It was not. 17 I'm sorry, I interrupted you on your second 18 question. 19 Q. During the Judicial Inspections, then, you're 20 testifying that, for RAP pits, Chevron asked the Court to 21 evaluate whether the RAP was effectively completed, whether 22 the criteria from the RAP were completed for RAP pits; is 23 that your understanding? 24 A. No, it's actually the opposite. The Court asked 25 the experts to make that determination. The Court</p>
<p style="text-align: right;">1497</p> <p>10:22 1 Q. And then if we look to the far right, we see the 2 TPH by TCLP, which is the leachate test we were just 3 discussing; correct? 4 A. Yes. 5 Q. And we see here that that came out as less than 6 five, which is a non-detect; correct? 7 A. Yes. 8 Q. So, the leachate test found nothing? 9 A. The leachate test did not detect any hydrocarbon 10 in the water because that hydrocarbon mass is non-soluble. 11 Just as for an example, if you're familiar with asphalt 12 pavement. Asphalt pavement is not soluble, but it's 13 100 percent hydrocarbon. This was not asphalt, but it 14 shared that characteristic of being non-soluble. 15 Q. So, this is the site where Mr. Slocum was 16 standing; right? It was Sacha 86 that he was standing at 17 yesterday? 18 A. I thought that was Shushufindi 4. 19 Q. Okay. You're right. I have confused my videos. 20 If we go look at the TPH result, we see that 21 post-remediation it is still 16,000; correct? 22 A. Correct. 23 Q. During the Judicial Inspections, Chevron's Experts 24 recommended what they called an international criteria of 25 10,000 milligrams per kilogram; correct?--for TPH.</p>	<p style="text-align: right;">1499</p> <p>10:26 1 specifically, at the request of the Parties, posed the 2 question: Were the RAP pits remediated in accordance with 3 the specifications that were agreed upon by the Parties in 4 the September 1995 RAP document? That was the question 5 posed by the Court, not by Chevron. 6 Q. And then the portions outside of the pit, 10,000 7 milligrams per kilogram, was applied; correct? 8 A. Yes. That was to answer the second two categories 9 of questions: What are the environmental conditions at the 10 site, and to help in the evaluation of do those conditions 11 pose a human health risk. And that was one of the 12 criterion that were applied for that, to answer those 13 questions--particularly the former, not the latter. 14 Q. And if we look at Sacha 91.2, which is the last 15 line on this page, NS means "not sampled"? 16 A. Yes. 17 Q. And after remediation, this pit still had 11,000 18 milligrams per kilogram of TPH? 19 A. Correct. 20 Q. But had a non-detect for TCLP? 21 A. Yes. The oil in that pit is non-soluble. It had 22 been cemented and sealed within the soil mass, but it's 23 non-soluble and, therefore, it met the criteria of not 24 posing a risk to the environment via leaching. 25 Q. When you say it's not soluble, you're not saying</p>

10:28 1 it's not liquid?
 2 A. Oh, no.
 3 In this particular case, in the RAP pits, I did
 4 not observe liquid oil. It's not impossible that there
 5 could be some droplets of liquid along those pits. But
 6 weathered oil, when I've talked about weathered oil,
 7 doesn't mean that it's solid. It can still be a liquid.
 8 In this case, this I would expect would have been a
 9 solidified solid mass that embodied 11,000 parts per
 10 million of oil.
 11 Q. And you're not saying, when you say it's not
 12 soluble, you're not making a conclusion about its toxicity,
 13 either, are you?
 14 A. No, that doesn't relate to its toxicity. It
 15 relates to the exposure potential. So, regardless of what
 16 the chemical is, if the chemical can't exit the solidified
 17 mass, then it can't impact groundwater and it can't harm a
 18 well. So, it's important in that aspect, but it is not,
 19 per se, a measurement of toxicity. But it's an important
 20 consideration when you do the complete risk assessment.
 21 Q. Understood, and we're not talking about doing a
 22 complete risk assessment. I'm just trying to understand
 23 what the conditions were at the time.
 24 Could we move on to--actually, before I do, do you
 25 know how many more sites there are like this, where

10:31 1 Q. And when you say that the non-detects for TCLP is
 2 consistent with the weathered state, you're assuming that
 3 even fresh oil could violate the five milligrams per liter
 4 detection limit; is that right?
 5 A. I don't think that assumption--it's not dependent
 6 on that assumption. We talked about that earlier, and I
 7 would expect that fresh oil could exceed that limit, but my
 8 conclusion is not dependent on the behavior of fresh oil.
 9 It's dependent on the observed behavior of the weathered
 10 oil, and that's complemented by oil-weathering
 11 fingerprinting analyses that were done on every single soil
 12 sample collected during the Judicial Inspection by Chevron
 13 to quantify the degree of weathering. That, in complement
 14 with the leachate test, supports the finding that
 15 the--well, it was weathered, and that it did not release
 16 leachate to water.
 17 Q. And again, when you used the term "weathered,"
 18 you're not making a statement about its--necessarily about
 19 its toxicity?
 20 A. The term "weathered" indicates a change in the
 21 chemical composition; and throughout the Reports, I've
 22 indicated that those two things are related. But the
 23 change in the chemical composition did perforce reduce the
 24 toxicity of that material because it entailed the removal
 25 of the most toxic components, most of which occur in that

10:29 1 pre-remediation and post-remediation TPH results are high
 2 but TCLP was below the criteria?
 3 MS. RENFROE: I will object to that question,
 4 respectfully, Mr. Ewing. It's awfully vague and ambiguous,
 5 the way you've framed it. Could you try and reframe it?
 6 When you say high, we don't know what that means. It's a
 7 very relative term.
 8 Q (By Mr. Ewing)
 9 BY MR. EWING:
 10 Q. Do you understand my question? Or should I
 11 rephrase?
 12 A. You might want to clarify for the record what you
 13 mean by high.
 14 Q. Happy to. Do you know how many more sites there
 15 are like this where pre-remediation and post-remediation
 16 TPH results are above 10,000 milligrams per kilogram, but
 17 TCLP was below or non-detect?
 18 A. No, I haven't done that evaluation. I understand
 19 that of all the TCLP tests that were done, I believe the
 20 highest detection was marginally above five. I believe
 21 there may have only been one such test, and that
 22 was--that's consistent with the weathered state of that oil
 23 that was embodied in those soils. But I haven't--I can't
 24 recall the data to that degree to be able to answer your
 25 question.

10:32 1 light-end range, and some of which occur in the middle
 2 range, so that in all cases the weathering did have the
 3 effect of reducing the toxicity.
 4 Q. You would agree with me that PAHs are a toxic
 5 component of crude oil; correct?
 6 A. PAHs are considered toxic chemicals. There is
 7 some debate over what their native concentration is in
 8 crude oil, but they were measured in the weathered crude
 9 oil at this site, yes.
 10 Q. And would you agree with me that, as PAHs are
 11 weathered--let me rephrase.
 12 Would you agree with me that, as crude oil is
 13 weathered, PAH concentration increases?
 14 A. No.
 15 Q. Do PAHs weather at the same rate as the rest of
 16 the crude oil?
 17 A. That's a good question that I may not be able to
 18 answer for you, Mr. Ewing. I can only answer to the extent
 19 that I observed in the data was that the degree of
 20 weathering of the light ends and degree of weathering of
 21 the PAHs was both observed to be significant, ranging from
 22 60 to 80 percent loss of those chemical mass by virtue of
 23 the various weathering processes.
 24 There are certain ambient conditions that would
 25 result in faster weathering of the light ends, and I think

10:34 1 that's common, but the end result that was observed in
 2 these samples that were analyzed by Mr. Greg Douglas--or
 3 Dr. Greg Douglas, I should say--indicated that both of
 4 those chemicals had experienced significant reduction in
 5 mass.
 6 Q. You are not a petroleum chemistry Expert; right?
 7 A. No, I'm at--I understand petroleum chemistry to
 8 the degree that it is applied within the environmental
 9 realm, but apart from that, no.
 10 Q. So, if Mr. Douglas--or Dr. Douglas--agreed with me
 11 that PAH concentration does increase on oil weathering, you
 12 would agree with him?
 13 A. Well, I would consider Dr. Douglas' opinion, what
 14 the basis was for that, and determine if I would agree with
 15 him or not. There are certain compounds to which he may be
 16 referring, but they are the biomarkers that you're
 17 referring to that are used for calculation of a weathering
 18 index or a weathering state. But the PAHs that I'm
 19 discussing are the 16 compounds that comprise the USEPA
 20 priority pollutant list. Those are the compounds that I
 21 considered in my evaluation, and I wouldn't expect those
 22 concentrations to increase relative to the oil mass, given
 23 that they also experienced significant reduction.
 24 Under your--what you're positing is that if the
 25 light infraction of the oil disappears faster than middle

10:36 1 infraction, then in the resultant mass those compounds
 2 would be a relatively higher portion of the mass, and I
 3 believe that would be true.
 4 Q. So, I think that you have ultimately agreed with
 5 my original question, but would you defer to Dr. Douglas on
 6 this issue generally speaking as--since he is a Doctor in
 7 petroleum chemistry?
 8 A. I think Dr. Douglas certainly is more
 9 knowledgeable of this area. But whether or not I agreed
 10 with his findings would depend on the specific circumstance
 11 of the case. But he has certainly considered those issues
 12 to a greater degree than I have in this matter.
 13 Q. Could we turn to Page 30 of your 2013 Report,
 14 please.
 15 MR. EWING: And for everyone's benefit, I have a
 16 short line of questions here, and then maybe we can take a
 17 break. Is that appropriate?
 18 THE WITNESS: 2013?
 19 BY MR. EWING:
 20 Q. Correct. 2013, Page 30. And it's your second
 21 full paragraph, stating: "Furthermore, phenol is not
 22 uniquely related to petroleum operations but is a naturally
 23 occurring organic compound associated with decaying leaf
 24 litter."
 25 Do you see that?

10:38 1 A. Yes.
 2 Q. And am I correct that this is in response to the
 3 fact that LBG found phenol in the surface water, and LBG
 4 concluded that that was an indicator that the surface water
 5 has been contaminated by petroleum hydrocarbons? Is that
 6 correct?
 7 A. Not exactly.
 8 Q. What are you responding to in this sentence?
 9 A. I'm responding to two issues. In their First
 10 Report, the Ecuador Experts had observed certain data that
 11 had been collected in the course of their Remedial Action
 12 Program, and they had misunderstood that data to be extreme
 13 data when actually it was water treatment data within the
 14 pits. In the eight-step process for remediation, one of
 15 those processes is treatment of the pit water prior to
 16 discharge. That pit water prior to discharge contained
 17 phenol, but the measurements were not from the stream.
 18 I then went on to explain that, if they were
 19 measurements from the stream, those are very common to find
 20 in this area. It's a chemical that degrades very rapidly
 21 and would not be expected to be an indicator of oil
 22 contamination.
 23 Q. It would not be an indicator of oil contamination,
 24 in your opinion, because it's naturally occurring, and, if
 25 it is there, it would degrade rapidly?

10:40 1 A. Those are certainly relevant. Those are certainly
 2 correct. But in order to be an indicator, it needs to have
 3 some unique association to the source material or a unique
 4 association in combination with other chemicals.
 5 So, in this case, phenol is not a reliable
 6 indicator because it is such a ubiquitous chemical.
 7 Q. So, if we showed that phenol is not, in fact,
 8 naturally occurring but it was found in the water samples
 9 taken by LBG, you would agree with me, then, that it would
 10 be an indicator of oil contamination?
 11 A. You've set up a hypothetical there that is
 12 contrary to my experience. Phenol is sourced by many
 13 materials. Phenols is sourced by many materials and,
 14 therefore, it is not a reliable indicator of oil
 15 contamination. Oil does contain phenol, as do many others,
 16 but giving the very short life of phenol in the environment
 17 and its relationship to other materials, it's not a
 18 reliable indicator. You need an indicator that's unique
 19 and persistent to be reliable.
 20 Q. So, your conclusion is that phenol will always be
 21 detected in an environment like the Oriente, regardless of
 22 whether there is oil production activities?
 23 A. It can be. It depends. It won't always be
 24 detected, but it can be.
 25 Q. And that's because of the leaf litter?

10:42 1 A. The streams in the Oriente are choked with
2 decaying vegetation. It's very common. Decaying
3 vegetation does generate phenol. Low levels of phenol in a
4 stream are not indicative of oil contamination.
5 Q. So, if you turn to Tab 57--this is the Peters and
6 Crowell article that you mentioned. Peters and Crowell.
7 This is in the--actually in our fourth binder that we are
8 going to hand you after the break, so, we will stop for
9 there, so don't look for this for right now.
10 Let me quickly wrap up this line of questions and
11 we will come back to this.
12 In your 2015 Report, at Page 50, there is another
13 chemical that LBG pointed to called naphthenic acids. And
14 LBG concluded that the presence of naphthenic acids in the
15 water again was an indicator that petroleum hydrocarbons
16 had contaminated that water. Do you remember LBG's
17 conclusion?
18 A. Yes, I think that's generally consistent with
19 their statement.
20 Q. And in response, you said, in your first full
21 paragraph at Page 50, that the background level of
22 naphthenic acids in surface water has been reported in a
23 range of 0.16 to 1.01 milligrams per liter, and then you
24 cite to RAMP 2013; correct?
25 A. Yes.

10:44 1 Q. And then you say, "also, background levels in
2 groundwater have been measured in the range of four to 55
3 milligrams per liter," and you cite to an article by
4 Headley and McMartin from 2004.
5 A. Correct.
6 Q. And my understanding from what you have here is
7 that you are telling us that naphthenic acids can have
8 these concentrations naturally and, therefore, if LBG found
9 results in these ranges, those could just be natural.
10 A. The purpose of this statement is to indicate that
11 naphthenic acids do have background concentrations. The
12 background concentrations at Oriente have not been measured
13 as part of LBG's investigation. And therefore, to draw a
14 conclusion as to the relationship of the naphthenic acids
15 to the oil impacts would require that type of background
16 analysis.
17 This is in concert with comments made earlier in
18 this same report that the laboratory relied upon by the
19 Ecuador Experts to conduct the naphthenic acid analyses
20 found naphthenic acid in every single sample it analyzed,
21 including all the laboratory blanks. Pure water was found
22 to contain naphthenic acid.
23 Therefore, armed with that knowledge, one cannot
24 then say that naphthenic acids were indicative of oil
25 contamination in environmental samples. That would be

10:46 1 compounded by the fact that no background analyses were
2 conducted in this area.
3 Q. And we will be addressing the blank issues that
4 you and Dr. Douglas have raised with Dr. Douglas, so let's
5 put that aside.
6 My understanding of what you're saying here is
7 that you are offering some potential ranges for what
8 backgrounds of naphthenic acids could be.
9 MS. RENFROE: Well, pardon me, let me just respond
10 to your instruction to the Witness. If he needs to
11 consider the blank contamination issue in answering your
12 question about naphthenic acids, then he can do that.
13 PRESIDENT VEEDER: He can do that, can't he?
14 MR. EWING: He can, of course, do that. I didn't
15 even think that needed to be said. I was just trying to
16 focus him on what is written here in this paragraph.
17 THE WITNESS: Well, to answer your question then,
18 I think it's, as I stated before, that the statements on
19 this page are in context of my complete discussion of the
20 laboratory results presented by AXYS Laboratories, and that
21 includes the blank problem, and it includes the issue of
22 failure to classify or characterize the background
23 occurrence of naphthenic acids.
24 The background occurrence of naphthenic acids is
25 not something that's well-understood in our business. I've

10:47 1 never seen it analyzed on any oilfield investigation in my
2 35 years.
3 I found two studies that had done that. The
4 values that are found in those studies are not necessarily
5 relevant to the Oriente. I suspect that they might not be.
6 However, what they point out is that in the oilfield
7 regions where these studies were conducted, they did
8 observe naphthenic acids in the absence of oil spills. So,
9 it's more related to the qualitative issue rather than the
10 quantitative issue that the fact that background analyses
11 are very important for--to establish a baseline rather than
12 the specific numerical values that were observed in those
13 other oilfields.
14 Q. So, you would agree with me that both the RAMP
15 article that you cite to and the Headley article are
16 dealing with naphthenic acids in the Alberta oil sands; is
17 that right?
18 A. I would have to look specifically, but I believe
19 that's correct. I don't know that all of the RAMP samples
20 were, but in general, they were samples from natural
21 streams in an oil production area, but they were streams
22 from areas where no oil production had yet occurred. But
23 they were in areas of oil production.
24 Q. But you understand that the Alberta oil sands are
25 approximately twice the size of Ecuador and one meter thick

<p>Sheet 19</p> <p style="text-align: right;">1512</p> <p>10:49 1 of heavy hydrocarbons; correct? 2 A. I don't know how big the Alberta oil sands are. 3 Q. Would you--do you believe that they are bigger or 4 smaller than Ecuador? 5 A. I don't know. 6 Q. You have no idea? 7 A. No, I actually don't. 8 Q. Okay. Let's take a break there, if you don't 9 mind, and move on--I can move on to the next later. 10 PRESIDENT VEEDER: Let's do that. We'll come back 11 at ten past 11:00. 12 And again, please don't discuss the case or your 13 testimony away from the Tribunal. 14 THE WITNESS: Yes, sir. 15 (Brief recess.) 16 PRESIDENT VEEDER: Let's resume. 17 BY MR. EWING: 18 Q. Mr. Connor, I would like to turn to what hopefully 19 will be some interesting subjects to wrap this up and 20 hopefully get out of here and be done before lunch. If you 21 could please first turn to your 2013 Report at Page 15. 22 A. Yes. 23 Q. And do you see where you say: "To provide an 24 accurate measure of the actual area of soil impacts, the 25 Chevron experts conducted delineation sampling to establish</p>	<p style="text-align: right;">1514</p> <p>11:13 1 list of all sites I visited and when. I could look at 2 that, if you wish. 3 Q. That's all right. 4 Looking at this, this is the Site Sampling Summary 5 Form or Site Summary Report Form, and it lists that you 6 went there in December 2003. 7 Now, looking at the map-- 8 A. Was that map in one of the binders? 9 Q. This map we just have on the screen. 10 A. Okay. 11 Q. You can look at, if you would like, Tab 36, which 12 is the Chevron Playbook for Lago Agrio 6, which has a 13 similar map. It did not reproduce as well on the screen. 14 This is Tab 36. 15 A. Do you know where exactly in this diagram this 16 Tab 36 I might find that? 17 Q. There is a similar picture at the bottom right 18 corner. You'll see the GSI Bates stamps, and it's 19 GSI_0460866. 20 A. Yes, I see that. 21 Q. And Tab 36 that we're looking at is the Playbook 22 that was provided to the Judicial Inspection Experts who 23 did the Judicial Inspection at Lago Agrio 6; correct? 24 A. This is the--yes, I believe this is the 25 Pre-Inspection Report prepared for the Lago Agrio 6 well</p>
<p style="text-align: right;">1513</p> <p>11:10 1 a clean perimeter around each pit or affected area"? 2 A. Could you point me to the paragraph? 3 Q. Yes. And I will just find it again. 4 Thank you. Paragraph 3? 5 A. Second full paragraph, perhaps? 6 Q. Correct. 7 A. Yes, I see that. 8 Q. And in your opening presentation, you showed us a 9 slide of Shushufindi 21 where you explained your step-out 10 and perimeter samples; is that correct? 11 A. Yes. 12 Q. So, I'd like now to put up now an image from the 13 clickable database, Lago Agrio 6. 14 Do you recognize this as the sketch-map that 15 Chevron had or that GSI had for Lago Agrio 6? 16 A. It looks similar to the maps. I'd have to look at 17 that particular map to see if that's the final version of 18 it that was in--is this from the JI Report, you're saying? 19 Q. This--I will attest to you this is copied directly 20 from the 2007 clickable database that was provided to the 21 Republic. 22 Do you remember visiting this site in 23 December 2003? 24 A. No, but I visited 86 sites. 25 I could look at my--in my 2010 Report I have a</p>	<p style="text-align: right;">1515</p> <p>11:15 1 site. 2 MR. EWING: And it's the page ending in 866. 3 BY MR. EWING: 4 Q. And you just said that this is the Judicial 5 Inspection Report prepared for the Lago Agrio 6 well site? 6 A. If I said that, I misspoke. It's the 7 Pre-Inspection Report. 8 Q. And at the cover of this, it says--actually it's 9 called the Judicial Inspection Playbook; correct? 10 A. Yes, that's what it says. 11 Q. So, this is an example of what we have been 12 talking about as playbooks? 13 A. Yes. 14 Q. Now, looking at this site, we see that Chevron has 15 identified two pits; correct? 16 A. Yes, on this diagram. 17 Q. And now if we put up a map--and this is a zoomed 18 version. Now, putting up a map that we put together of all 19 of Chevron's samples, this will show you all of the PIs and 20 the JIs for this result--for this site--sorry, this is your 21 map. And this can be found in the Playbook if you skip 22 past the aerial photos, starting at page ending in 883. 23 And you'll see that 883 is the water results, and 884 is 24 your soil results. 25 Do you see that?</p>

11:19 1 A. Yes, I see that.
 2 Q. And these maps include just the PI results, the
 3 Pre-Inspection results, because the Judicial Inspection had
 4 not yet happened?
 5 A. Correct.
 6 Q. So, what we have done is taken this map, these
 7 results, and put them on to an aerial image of this site
 8 and included the PI results and the JI results and the
 9 Rebuttal results.
 10 MS. RENFROE: Pardon me, Mr. Ewing. I don't
 11 believe this map is in the record. If it is, can you tell
 12 us where we could find it?
 13 MR. EWING: This map, like all of the other
 14 demonstratives, this is displaying the data that's in the
 15 record and the aerial images that are in the record. We've
 16 just put them together.
 17 MS. RENFROE: So, this is not in the record
 18 because this map is not included in any of your Expert
 19 Reports or any of the Memorials that we have seen.
 20 MR. EWING: We have included very similar maps.
 21 This slide itself, just like all the other slides I think
 22 everyone has presented in the last seven days, are not
 23 exactly as they are in the record.
 24 MS. RENFROE: I'm sorry, I don't accept that
 25 characterization, and I will object to any questions of

11:20 1 this Witness about this map which is not in the record.
 2 PRESIDENT VEEDER: Just slow down because I think
 3 we need to know very clearly when something is a
 4 demonstrative and when it's already in the evidential file,
 5 and I am speaking for myself, and I speak for my
 6 colleagues. I misunderstood when you started with this
 7 document, I thought it was in the evidential file. But as
 8 I now understand it, it's a demonstrative, and you're
 9 simply putting it forward pictorially, but it's not
 10 evidence in itself.
 11 MR. EWING: So, what I have done and what we have
 12 done on this demonstrative is we have taken the data from a
 13 table that was provided to us by Chevron and put those
 14 locations on to a map, and we have submitted similar maps
 15 with almost all of our Reports for various sites, but this
 16 as it looks exactly like this is not a particular file in
 17 the record. It is bringing together data from the record.
 18 PRESIDENT VEEDER: What we would be anxious to do
 19 is not to catch people by surprise, but this Witness has to
 20 be re-examined, and what does a re-examiner do with this
 21 document? Can you tell where the information comes from in
 22 the evidential file? Is it sourced?
 23 MR. EWING: All of the data for this is from
 24 Chevron's analytical database.
 25 PRESIDENT VEEDER: What's the reference?

11:21 1 MR. EWING: That is R-968.
 2 PRESIDENT VEEDER: Does it have a page reference,
 3 paragraph number?
 4 MR. EWING: It doesn't, because it is an Access
 5 database. It is a table of all of Chevron's analytical
 6 results, and it's thousands of Rows. And instead of
 7 showing that in a table format, we put it onto a map so you
 8 can visually see where these samples were taken.
 9 MS. RENFROE: Mr. President, if I might respond,
 10 there have been numerous reports on behalf of--submitted by
 11 experts on behalf of the Republic of Ecuador, including
 12 many, many maps. It is not a simple matter of taking a map
 13 like this and comparing the data. That cannot be done in a
 14 matter of minutes. And in our experience, there have been
 15 problems with data being mislocated on maps supplied by the
 16 Republic's experts. So, that's why I'm troubled about
 17 having our witness confronted with a map that he has never
 18 seen before without an opportunity to review the data and
 19 whether the data is properly plotted and completely
 20 plotted.
 21 MR. EWING: Mr. President, I think we can make
 22 this a little easier. I don't think that Mr. Connor or
 23 Ms. Renfroe is suggesting that we are purposefully
 24 inappropriately putting the data up or incorrectly, but
 25 let's move aside from this map and let's go back to

11:22 1 Chevron's own Judicial Inspection Playbook map, and I think
 2 we can make the same points.
 3 PRESIDENT VEEDER: This applies to both sides. We
 4 do need to know--we do need to know very clearly when
 5 something is simply demonstrative and when it's in the
 6 evidential file, so we assume, unless we're told, in a
 7 situation like this, that it's in file, and we need to be
 8 told it was a demonstrative, but try and find another way
 9 to make your point.
 10 ARBITRATOR LOWE: Sorry, are you using this
 11 graphic on the screen now or not?
 12 MR. EWING: We will move on from this.
 13 BY MR. EWING:
 14 Q. So, if we could look at Page 884 of Chevron's
 15 Judicial Inspection Playbook for Lago Agrio 6.
 16 And, Mr. Connor, these are the PI results for Lago
 17 Agrio 6; correct?
 18 A. You're looking at 884?
 19 Q. Correct.
 20 A. Yes, they are.
 21 Q. And they are--
 22 A. I'm assuming the display is the same map; correct?
 23 Q. Yes.
 24 A. Okay.
 25 Q. If we could just turn the display off for now.

11:24 1 A. Well, this is Lago 2.
 2 Q. And I'm asking to you look at Lago Agrio 6, which
 3 should be in front of you at Page 884.
 4 A. Okay. It's in the display was a different site;
 5 right?
 6 Q. Do you understand now we are looking at Lago
 7 Agrio 6?
 8 A. Yes.
 9 Q. Page 884?
 10 A. Yes.
 11 Q. And looking at these results, what information is
 12 presented here?
 13 A. On Page 884, the title reads: "Recent sampling
 14 results 2003 to 2005 soil and sediment." Therefore, my
 15 understanding would be that the laboratory test results
 16 that were collected by those Parties at this site are
 17 recorded on this map.
 18 Q. The laboratory test results are only those of
 19 Chevron--correct?--on this map.
 20 A. I believe that's correct.
 21 Q. And you testified during your opening that the
 22 Pre-Inspections were conducted so that Chevron's experts
 23 would understand where the pits were and where they
 24 stopped; correct?
 25 A. Yes. If there is insufficient information of that

11:26 1 sort for remediated pits, then one of the tasks of the
 2 Pre-Inspection was to supplement that information using,
 3 for example, the step-up boring procedure.
 4 Q. So, for instance, looking at Pit Number 2, which
 5 is the right pit at the top corner of the platform, the
 6 Chevron Pre-Inspection results seemed to be on the edge of
 7 pit two, and they have identified, looking at the call-outs
 8 above, TPH DRO of 4500 milligrams per kilogram.
 9 Do you see that?
 10 A. Yes, I believe that's correct, a sample LA-06 PI
 11 Sp5 one-meter has TPH as DRO as 4500.
 12 Q. So, that means that one meter down, Chevron found
 13 4500 milligrams per kilogram of DRO?
 14 A. Yes, in a pit that wasn't included in the RAP,
 15 that's correct.
 16 Q. And the other sample, the duplicate, it's the next
 17 box down that ends in DUP. That means a duplicate of that
 18 same location?
 19 A. Yes.
 20 Q. That has a TPH as DRO of 6900 milligrams per
 21 kilogram; correct?
 22 A. Yes.
 23 Q. And there are no samples to the north of that pit;
 24 right?
 25 A. Not as indicated on this map, that's correct.

11:28 1 Q. And it's your testimony, then, that this PI
 2 information would have been given to Chevron's Judicial
 3 Inspection Expert so that that Expert could then sample
 4 that pit during the Judicial Inspection and then identify
 5 where that contamination stopped so that the Court could
 6 properly understand where pits were and where they were
 7 not?
 8 A. I think my testimony would be that, subject to the
 9 specific requests at each site, the pits would be located
 10 and the delineation samples, if requested, would be either
 11 located around the site or around pits. And in some cases,
 12 if the pit was not a RAP pit, not a RAP-remediated pit, the
 13 pit was not sampled unless instructed because it was
 14 already known that it contained oil. It was already
 15 identified, and the sampling in that pit provided no
 16 additional information.
 17 Q. So, you did not believe it was not necessary to
 18 delineate non-RAP pits during the Judicial Inspections?
 19 A. It wasn't my decision. The Court requested that
 20 be done at certain times, and it was. The different
 21 Judicial Inspection Experts would make their decision as to
 22 how to implement that request, and they did that in
 23 different manners.
 24 Q. So, it was your understanding as a Judicial
 25 Inspection Expert--let me start over.

11:29 1 It was not your understanding as a Judicial
 2 Inspection Expert for Chevron as an assistant to the Court
 3 that you were supposed to delineate and identify all of the
 4 site features at each site so that the Court could properly
 5 assess what risks were and were not present?
 6 A. We were asked to--the term "assistant to the
 7 Court" is a legal term I can't respond to, but we were
 8 asked to investigate the specific features and respond to
 9 the specific questions posed at each site. That was our
 10 instruction. And as I said in my testimony, those
 11 questions generally fell under the three categories I
 12 described: The remediation, environmental conditions,
 13 risk. The particular features that were included in that
 14 were different for every site as posed by the Parties.
 15 Whether or not those comprised all the features a site, I
 16 can't say. It would depend on the site.
 17 Q. So, it's your understanding that if, as a judicial
 18 inspection Expert nominated by Chevron to the Court--and I
 19 thought I was using your language of, "assistant to the
 20 Court" yesterday--but in that role that you were filling,
 21 it was not your understanding that you needed to disclose
 22 to the Court all information about the environmental
 23 conditions of any particular site for which you were the
 24 Judicial Inspection Expert?
 25 A. I'm not sure--I'm not quite sure the meaning of

11:31 1 your question, Mr. Ewing, but I would say that my
 2 understanding was that we were asked to answer specific
 3 questions about each site, and the information that we were
 4 allowed to employ for that was restricted to the
 5 information that was collected during the time period of
 6 the Judicial Inspection itself in the presence and company
 7 of the counterpart Expert on the other side. I was
 8 specifically instructed, as were all the other experts,
 9 that information collected prior to or after the period of
 10 the Judicial Inspection was not admissible for
 11 consideration by the Court; therefore, whatever features
 12 were considered were those features that were specifically
 13 requested by the Parties at that time.

14 Q. So, as an example, if Lago Agrio 6, Pit Number 2
 15 was covered and not visible to the naked eye, yet you knew
 16 that it was there because you had taken Pre-Inspection
 17 sampling results, Pre-Inspection samples, and you had
 18 analyzed historical aerial imagery, you were under no
 19 obligation to report that information or to request that
 20 the Court take samples at that location so that it could
 21 understand what the environmental conditions were at that
 22 site?

23 A. Well, Mr. Ewing, I was not the Judicial Expert on
 24 this site, so I can't speak to the particulars of what was
 25 requested of the Plaintiffs' Expert or the Chevron Expert,

11:35 1 fulfilled your obligation to the Court to disclose to it
 2 all information that was available to you at Sacha 6?
 3 A. I responded to the Court's questions faithfully
 4 and fully to the degree I could. I could not provide the
 5 Court for its consideration all the Pre-Inspection data
 6 because we were specifically instructed that that was not
 7 admissible. Most of that work was repeated, as it was in
 8 many cases, in response to the Court's request at the time
 9 of the Judicial Inspection. I would have to review--if
 10 your question is was every sample repeated or was all of
 11 that information duplicated, I can't say without
 12 specifically looking at those documents.

13 Q. So, thinking to Sacha 6, you fully disclosed to
 14 the Court the location of all of the pits that you knew of
 15 at the time of the Judicial Inspection Report; is that
 16 correct?

17 A. In my Report--I'm going to say this with a
 18 caution, that I have a limited recollection of what's in
 19 that report, and I would need to review that in order to
 20 answer your question specifically. All the RAP pits that
 21 existed at that time are identified in that report--I do
 22 recall that--but there were other pits that existed to the
 23 north of the platform which were not completely understood
 24 at that time, or there is an indication on the map that I
 25 submitted that there were other pits in that area, but I

11:33 1 and so I can't really answer your question in that regard.
 2 I know that on my sites, the information that was available
 3 to me was fully made available to the Court. It was also
 4 shared with the Plaintiffs' experts in our daily
 5 conversations and discussions and in implementing the site
 6 investigations.

7 Q. So, if I understand what you said correctly, at
 8 Sacha 6, which was one of your sites for which you were a
 9 Judicial Inspection Expert, your testimony today is that
 10 you shared all of the information that was available to you
 11 with the Plaintiffs and the Court.

12 A. The information that was available to me was
 13 presented in the Judicial Inspection Report, and I
 14 identified a number of historical features at that site. I
 15 did not present the Pre-Inspection data in my Reports
 16 because it was not admissible, and neither did
 17 Mr. Calmbacher present the Pre-Inspection data that he had
 18 collected in a very extensive drilling and sampling
 19 program.

20 Whether that comprises all of the information that
 21 was presented that was compiled in the Pre-Inspection, I
 22 can't say, but I know that the features of the site were
 23 duly investigated and reported in response to the Court's
 24 request.

25 Q. So, your testimony today is that you fully

11:36 1 didn't understand the full extent of those pits.

2 Q. Okay. And I have your Sacha 6 JI Report which,
 3 unfortunately for all of us, is huge, and we're going to
 4 pass it out to you now. This is the fourth binder.

5 MS. RENFROE: Pardon me, Mr. Ewing, which tab are
 6 we supposed to be looking at?

7 MR. EWING: You're supposed to be looking at
 8 Tab 56, but that is not the JI Report, so we seem to have
 9 had a production problem.

10 BY MR. EWING:

11 Q. Mr. Connor, your understanding of your--what you
 12 accomplished and what you did at Sacha 6 is that you
 13 responded to the Court's questions about the existence of
 14 environmental--about the environmental conditions at
 15 Sacha 6 and the risks to human health at that location; is
 16 that correct?

17 A. The specific questions that were posed at Sacha 6
 18 are enumerated in an attachment to the Sacha 6 report, and
 19 each of those questions is listed in the Report and duly
 20 answered, and an answer was provided to each of those
 21 questions in that document.

22 Q. And I actually do have your Report from Sacha 6.
 23 It's Tab 39. I had the wrong number, and that's in
 24 Binder 3.

25 A. Which binder again? I'm sorry.

11:40 1 Q. This is Binder 3, Tab 39?
 2 A. Okay. Thank you.
 3 Q. And if I understand what you're saying correctly,
 4 we are looking now at Page 24, which is the questions and
 5 answers section.
 6 A. Oh. This is the English version of the Report?
 7 Q. That is correct.
 8 A. This is not the final and official version of the
 9 Report. The final and official version was in Spanish, but
 10 I made an effort at that time to create an English
 11 translation by myself, but I can't--I just want to clarify
 12 for your sake, Mr. Ewing, but this may not be precisely the
 13 same as the document that was submitted to the Court.
 14 There could be some differences.
 15 Q. So, just so we are all clear, this is Exhibit
 16 C-497, which is an exhibit that the Claimants have
 17 submitted and have represented to us is the Judicial
 18 Inspection Report at Sacha 6, in English. Are you saying
 19 that it's not that?
 20 A. I'm just saying that I wrote two versions on the
 21 first two Judicial Inspections, which was quite arduous;
 22 and, after that, I just wrote in Spanish. But in order
 23 to--I think it should be a faithful copy, but I know that I
 24 couldn't always go back and revise the English version to
 25 meet the Spanish version, so I can't say this is not the

11:42 1 official version provided to the Court. This wasn't
 2 provided to the Court, but it was my effort to create an
 3 English version of the entire document.
 4 Q. If at any point in these questions today you
 5 believe that what Chevron has provided to us is not a
 6 faithful representation of what you provided to the Court,
 7 could you just please let me know?
 8 A. I don't know what they've provided you, Mr. Ewing.
 9 Q. What we're looking at.
 10 A. Well, the record also had two versions of the
 11 Report in it, so I can't say whether or not you have both
 12 versions.
 13 Q. Okay. Let's move forward with this Report. And
 14 if there is some problem with the translation, I'm sure
 15 Claimants' counsel will let us know if we run into
 16 something, either now or in the future.
 17 If we could look at Page 24, is this the questions
 18 and answers section that you are referring to?
 19 A. Yes, that's correct.
 20 Q. And if I understand this correctly, Section 4.1
 21 are the technical requests posed by Dr. Adolpho Callejas
 22 for Chevron/Texaco; correct?
 23 A. Yes, he was the legal representative for
 24 Chevron/Texaco at this Judicial Inspection.
 25 Q. So, these are requests made by Dr. Callejas?

11:43 1 A. Yes.
 2 Q. Not by the Court?
 3 A. No, you may misunderstand that. Both Parties
 4 would pose questions, and the Court would then turn to the
 5 Experts and say that you respond to that question. We were
 6 instructed to respond to both those questions, not only in
 7 the terms of reference but during the process itself. But
 8 those were the questions that were presented to the Court
 9 and then presented to us. The questions originated with
 10 Dr. Callejas.
 11 Q. And if we look briefly on Page 97, we see
 12 Section 4.2, and those are the technical requests posed by
 13 Dr. Alberto Wray for the Plaintiffs.
 14 Do you see that?
 15 A. Yes, I do.
 16 Q. And this same format would have been followed at
 17 all the Judicial Inspections that you just outlined; is
 18 that correct?
 19 A. The same process was followed at all the Judicial
 20 Inspections. The way the Reports were constructed were not
 21 in the same manner. But this Report was quite long because
 22 it answered every question individually, and the other
 23 Reports, the Experts combined those questions in a more
 24 efficient manner to deal with repetition. But as far as
 25 the process, it was the same process, yes.

11:45 1 Q. So, the first question here, it says: "The
 2 Experts will please prepare a detailed description of Well
 3 Sacha 6 and its facilities which I had specified earlier as
 4 well as of the specific buildings in the immediate
 5 surrounding."
 6 Do you see that?
 7 A. Yes.
 8 And you're speaking about Page 24 now?
 9 Q. Correct.
 10 So, is your understanding that you were asked to
 11 give to the Court a detailed description of Well Sacha 6
 12 and its facilities?
 13 A. Within the context of what he said, that he had
 14 listed earlier, yes.
 15 Q. Could you please clarify that?
 16 A. In the Acta, you'll find a long discourse by each
 17 Party, each representative; and, in that discourse, they
 18 will describe the areas around the site or the site so that
 19 it provides a context when they say to the north or to the
 20 south or over by that tree, they will describe that. So,
 21 within the context of what he said, he's asking the Experts
 22 to provide that description.
 23 Q. So, would that have been--would he have specified
 24 which pits he wanted you to describe?
 25 A. That I don't recall.

11:46 1 Q. If there was a pit there, and you knew about it,
 2 did you feel the--were you obligated to tell him about it?
 3 A. If he asked you about that information, you
 4 provided that information.
 5 Q. But you don't remember whether the Judge asked you
 6 to tell him about all of the pits?
 7 A. I would have to look at the Acta to see what the
 8 specific questions were that were posed to the Experts.
 9 Q. And looking at your Judicial--looking at your
 10 Judicial Inspection Report, you can't answer that question?
 11 A. If you provided me time to look at the Acta and
 12 the Judicial Inspection Report, I would be happy to do so.
 13 Q. And we talked about this at your deposition. Do
 14 you remember that?
 15 A. We did talk about the Sacha 6 well site. I don't
 16 think we talked about this particular aspect of it.
 17 Q. So, your testimony today is that you would need
 18 even more than this information to be able to answer my
 19 question about what the Judge asked you to do than the
 20 Judicial Inspection Report?
 21 A. What?
 22 PRESIDENT VEEDER: I think he's answered that
 23 question.
 24 MR. EWING: Okay.
 25 BY MR. EWING:

11:48 1 Q. If we look to Page 35, is this an accurate map of
 2 the well site?
 3 A. It was certainly considered an accurate map based
 4 on the information available at the time.
 5 (Sound interference.)
 6 A. Was that just in my head? Or did everybody hear
 7 that?
 8 Q. No, it's just you.
 9 (Laughter.)
 10 Q. Let me take a step back. If you could look at
 11 Tab 40 in the same binder, this is from your deposition in
 12 the Saldana versus Shell Oil Case, and if we could turn to
 13 Page 264, you said--and this is at Line 20 to 24, in
 14 response to a question asking, "Was it your objective as a
 15 participant in the Judicial Inspection of any of the five
 16 sites to take samples?"
 17 And your answer was: "As the--I was the Expert on
 18 those five sites, and the objectives were to collect
 19 samples to answer certain questions that had been put forth
 20 by the Parties and then mandated by the Judge."
 21 Which seems to be consistent with what you're
 22 saying today.
 23 A. Correct.
 24 Q. And then you go on to say: "And those questions
 25 involved a complete characterization of the site from an

11:50 1 environmental perspective."
 2 Is that still your understanding of what your role
 3 was as a Judicial Inspection Expert?
 4 A. Yes, and I think I've provided more information
 5 about that in my presentation yesterday, that in responding
 6 to the questions, there were several components of
 7 information that would be collected on a site-specific
 8 basis, and in my presentation I describe what those were.
 9 Those would be tailored at each site to answer the
 10 questions at each site.
 11 Q. And then if you turn to Page 265 of that
 12 deposition, starting at Line 3, you said: "What I mean is
 13 that, the directives from the Judge involved investigating
 14 all components of the site, which included whatever pits
 15 might be there, whatever crude oil spills may have
 16 occurred, evaluating the surrounding domestic water wells,
 17 investigating the adjacent streams, and investigating the
 18 soils that were present around the locations of pits or
 19 spills to determine the extent of the petroleum by means of
 20 perimeter sampling."
 21 Is that still your understanding of what the
 22 directives from the Judge were?
 23 A. Yes. The directives varied from site to site, but
 24 in general, they fell within that scope.
 25 Q. So, at Sacha 6, your role as a Judicial Inspection

11:52 1 Expert, would have been to include whatever pits might be
 2 there that you were aware of, whatever crude oil spills may
 3 have occurred that you were aware of; correct?
 4 A. It would include investigating whatever
 5 issues--whatever--were related to that site that were
 6 requested by the Judge. And in cases--in a number of
 7 cases, you will see that the adjacent streams were not part
 8 of the scope of the questions, and in those cases they
 9 weren't sampled or certain issues were not part of the
 10 request. The requests were tailored to the specific
 11 request of the Judge at each site, but in body, they fell
 12 within the scope of the list of things I presented here,
 13 but they weren't the same at every site. Not every
 14 component occurred at every site.
 15 Q. To focus in on what you have testified about
 16 Sacha 6 and about the four other sites that you were an
 17 Expert--at which you were an Expert, if you knew that a pit
 18 existed, and the Judge did not specifically ask you about
 19 that pit, were you obligated to inform the Judge that that
 20 pit existed?
 21 A. I think I've answered that question. If you were
 22 asked the question that related to that, you answered that
 23 question. I think the example you show here on this
 24 Page 35 is a pit that was identified in my Judicial
 25 Inspection Report in response to the questions to the

11:54 1 Parties, but if you weren't asked to sample that pit, you
 2 did not sample that pit.
 3 Q. I'm trying to understand exactly what your
 4 obligations were as a Judicial Inspection Expert. If you
 5 knew that a stream was contaminated based on your
 6 Pre-Inspection analysis of that stream, and then you went
 7 to a Judicial Inspection at one of your sites--let's say
 8 Shushufindi 21--were you obligated to inform the Court that
 9 that stream was contaminated, or that you believed it might
 10 be?
 11 A. No, your obligations were to answer the specific
 12 questions of either Party. If either Party was interested
 13 in the quality of that stream, then that stream was to be
 14 investigated duly during the period of that Judicial
 15 Inspection. So, the scope of the Judicial Inspection
 16 investigation was dependent not on the data collected prior
 17 to it, but on the specific questions that were posed during
 18 that period, and only those questions.
 19 Q. So, for instance, at Lago Agrio 2, a site that we
 20 will visit--
 21 A. Oh, man.
 22 Q. --Chevron's Pre-Inspections found that the stream
 23 was contaminated.
 24 A. Do you want to look at that data?
 25 Q. I want to talk just about--I'm not asking to look

11:56 1 at the values. I want to talk about the concepts here,
 2 using that as an example.
 3 And if the Plaintiffs asked for inspection of the
 4 stream at Lago Agrio 2 because they believed it was
 5 contaminated, were you under an obligation to disclose to
 6 the Court the extent to which you already knew it was
 7 contaminated or only the amount of contamination that you
 8 found during the actual Judicial Inspections?
 9 A. Well, let's me start by saying that I was not the
 10 Judicial Inspection Expert for Lago 2, so I can't speak in
 11 detail as to the obligations that either the Chevron Expert
 12 or Plaintiffs' Expert felt they were subject to. But in
 13 general, the response of the Chevron Expert was to address
 14 the questions that were asked at that time.
 15 And on the Lago Agrio 2 site, that involved a
 16 two-part response. Some of those samples were collected by
 17 what was called a Rebuttal team, and some were collected by
 18 what was called a Judicial Inspection team, and those two
 19 components were submitted to the Court. And my
 20 recollection of looking at that is that in combination,
 21 those samples responded to all the requests of the Court.
 22 Q. So, let's talk about another conceptual example
 23 for which you were the Judicial Inspection Report--or
 24 Expert. Shushufindi 21 is another site where you were the
 25 Judicial Inspection Expert; correct?

11:58 1 A. Sacha 21 I was the Expert, not Shushufindi 21.
 2 Q. I apologize. Sacha 21.
 3 Was there a stream at Sacha 21?
 4 A. There was a drainage--without looking back at the
 5 Report--I'm just going from recollection--and if you want a
 6 more specific answer, we would need to do that. I believe
 7 there was a water drainage that was to the west of the site
 8 flowing in a southernly direction, and there was an
 9 impoundment and land clearing to the southwest where there
 10 was some type of new activity that was not related to
 11 historical operations but some other type of activity was
 12 underway in that direction.
 13 Q. Let me try and get somewhere a different way.
 14 You are a risk assessor; correct?
 15 A. Yes.
 16 Q. And, as a risk assessor, you have ethical
 17 obligations that you uphold?
 18 A. I would say that as a professional in any field,
 19 you have ethical obligations that you uphold, and that
 20 includes Professional Engineers, Professional Geoscientists
 21 like myself.
 22 Q. But as a risk assessor, do you have an ethical
 23 obligation to inform of a risk of which you're aware?
 24 A. My understanding of that, as it's embodied in the
 25 engineering code of the State of Texas is that registered

12:00 1 engineers such as myself have a duty to report imminent and
 2 substantial endangerment to public health, such that if you
 3 investigate a bridge and that bridge is in danger of
 4 collapse, you have an obligation to report that. Or if
 5 there is, in the case of environmental, if you find that an
 6 actual drinking water supply is being consumed or to be
 7 impacted creating a very real--not potential, but very
 8 real--health threat, then that would also be incumbent upon
 9 you to make that information available to Parties that
 10 could respond to that critical risk.
 11 Q. See, you've answered the question as a
 12 Professional Engineer, which wasn't exactly what I asked
 13 you.
 14 As a risk assessor, do you have an ethical
 15 professional obligation to report known risks?
 16 A. Well, I would say that, in my capacity as a risk
 17 assessor, and as a Professional Engineer and Professional
 18 Geoscientist, if I encountered a risk that was a critical
 19 human health risk--not a hypothetical risk, not a risk that
 20 could occur with 30 years of exposure to the earth, but
 21 rather a critical, acute risk to human health--I would find
 22 it personally incumbent upon myself to take measures to
 23 inform and respond to that condition, and that would be my
 24 personal ethical sense of that situation.
 25 Q. And as an Expert nominated by a Party to a

12:01 1 litigation like you were in the Lago Agrio Litigation by
2 Chevron, and thinking of yourself in that role, at the five
3 sites at which you were a Judicial Inspection Expert, did
4 you believe that you had an obligation to the Court to
5 inform it of environmental conditions of which it was not
6 already aware, or was your role simply to follow the
7 Court's instructions?

8 A. That's a different question. I just want to make
9 sure we understand that the switch, as I understand it in
10 your question. You previously asked me if I would feel an
11 ethical obligation to report an acute critical health
12 situation. Yes, my answer is absolutely. You then asked
13 me if working on the Judicial Inspection I would feel an
14 obligation to report all environmental conditions related
15 to a site. It's very different. If I had encountered an
16 acute critical health condition, regardless of the Court's
17 instructions, I would have felt that it was important to
18 report that, not within the confines of the legal
19 proceedings, but within my role as an individual.

20 But I didn't find any situations like that. At no
21 place throughout the Concession Area did I encounter any
22 situation that posed an acute critical risk to human
23 health. Never.

24 I did encounter situations that I've duly reported
25 to this arbitration panel and in my other reports that are

12:03 1 situations that do require remediation response. The risk
2 associated with those are what we call "chronic." The
3 risk--they low-level risks that could occur due to daily
4 direct exposure over many years' time. That's a very
5 different situation. It's a hypothetical situation. It's
6 not a real or a critical risk. And in that regard, no, I
7 did not feel within a directive of the Court or ethically
8 an obligation to report non-risk conditions of that nature.

9 Q. Okay, Mr. Connor. Could we move on--and let's try
10 and wrap this up--your June 2013 Report at Page 12.

11 Actually, let's skip to the chase and look at your
12 May 2014 Report. So, it's in the same binder. In our
13 binder it's--

14 A. May 2014?

15 Q. Yep. May 2014. At Page 34.

16 A. May. May. Okay. Yes.

17 Q. And this is in response to LBG's concerns
18 regarding the reliability of Chevron data. You say, in
19 Letter D, that the Chevron sampling program--and I think
20 you're referring to the PIs and JIs and Rebuttals at this
21 point--was conducted in the context of the JIs, which, as
22 recorded in the JI Actas, entailed "specific directives to
23 the experts."

24 Do you see that?

25 A. Yes.

12:06 1 Q. And that included the use of composite soil
2 sampling, and the general delineation of the site by means
3 of perimeter soil samples; is that correct?

4 A. Yes, that's what it says.

5 Q. Do you still believe that was what the Chevron
6 sampling program was intended to do?

7 A. As I said in my presentation, there was a general
8 construct that was employed by a number of the Chevron
9 experts--it varied from site to site--but it did entail, it
10 did include these various components, subject to the
11 specific directives of the site and the judgment of the
12 individual expert.

13 Q. And your understanding is that the Court
14 authorized the Judicial Inspections themselves; correct?
15 When the Court was present, the Court had authorized those
16 Judicial Inspections?

17 A. I guess that's true. The Judicial Inspection
18 commenced at the Order of the Judge at the time that the
19 Parties had gathered at the site.

20 Q. And the first Judicial Inspection was the Judicial
21 Inspection that you conducted at Sacha 6, and that started
22 on August 18th, 2004.

23 A. Yes.

24 I don't know the specific date, but it was
25 August 2004, and that was the first JI, yes.

12:08 1 Q. If you aren't sure about the date and you want to
2 check, it is Tab 45. I'm not going to ask necessarily the
3 Tribunal to turn there. I will represent to you that I've
4 got the date right.

5 A. That's fine, yes.

6 Q. And the Ecuadorian judge was at that Judicial
7 Inspection; correct?

8 A. Yes, Judge Novillo was the presiding--President of
9 the Court at that time.

10 Q. And the Lago Agrio Plaintiffs were there; correct?

11 A. Yes.

12 Q. And--

13 A. Oh, excuse me, excuse me. No, the lawyers for the
14 Plaintiffs were there. I never met a Lago Agrio Plaintiff,
15 because they were listed, but the legal representatives of
16 the Plaintiffs were there.

17 Q. Just let me clarify that.

18 The legal representatives for the Lago Agrio
19 Plaintiffs were at the Judicial Inspection; correct?

20 A. Correct.

21 Q. And their experts were present; correct?

22 A. That's correct.

23 Q. And Chevron's legal representatives were
24 correct--or--

25 A. They were correct, yes.

<p>Sheet 27</p> <p style="text-align: right;">1544</p> <p>12:09 1 (Laughter.) 2 Q. Strike that. 3 Chevron's legal representatives were present; 4 correct? 5 A. Yes. 6 Q. Okay. Sorry, I just lost it. 7 In your June 2013 Report, you say--and this is 8 Tab 13 at Page 12. 9 A. Excuse me--the--which report are we in? 10 June 2013? 11 Q. June 2013 at Page 12. 12 A. Yes. 13 Q. And it says, as you can see on the screen, "The 14 activities of experts appointed on behalf of the Plaintiffs 15 and the Defendants were defined under the Terms of 16 Reference." Correct? 17 A. Correct. 18 Q. And those Terms of Reference were issued by the 19 Court? 20 A. That's correct. 21 Q. And those are the same Terms of Reference that you 22 referred to in your opening slides? 23 A. Yes. 24 Q. And they instructed the experts to complete the 25 site investigations in accordance with the specific</p>	<p style="text-align: right;">1546</p> <p>12:12 1 for the Pre-Inspections. They only had Terms of Reference 2 for the Judicial Inspection process itself which was the 3 only process in which admissible data could be compiled. 4 Q. And I understand that you believed that the Judge 5 responded to that, and we will look at one of the Judges' 6 responses in a moment. But was the Judge present at any of 7 the Pre-Inspections? 8 A. Not to my knowledge. 9 Q. Did the Judge from the Court provide direction for 10 the Pre-Inspections? 11 A. No, I don't believe so. 12 Q. Or oversight? 13 A. No. He was focused on the legal process of the 14 Judicial Inspections, not the Pre-Inspections. 15 Q. But as I understand, the Terms of Reference said 16 that the inspections are to be carried out under the 17 direction of the President of the Court. But you have just 18 stated that he did not provide any direction for the 19 Pre-Inspections. 20 MS. RENFROE: Objection. That mischaracterizes 21 his testimony. Maybe you could rephrase your question. 22 BY MR. EWING: 23 Q. My earlier question was: Did the Judge from the 24 Court provide direction for the Pre-Inspections, and you 25 said "no, I don't believe so." And then I asked you: "The</p>
<p style="text-align: right;">1545</p> <p>12:10 1 petitions of the Court and the representatives of the two 2 Parties; correct? 3 A. Yes. 4 Q. And you attached that to your June 2013 Report at 5 Attachment B-2; correct? 6 A. You mean the Terms of Reference document itself? 7 Q. Correct. 8 A. Let me check. 9 Attachment B. 10 Yes, that's correct. 11 MR. EWING: And for the Tribunal's reference, 12 these are also Tab 46, and it's Exhibit C-177. 13 BY MR. EWING: 14 Q. And the Terms of Reference stated: "In accordance 15 with the provisions of Articles 246 to 253 of the Civil 16 Procedure Code, the inspections shall be carried out under 17 the direction of the President of the Superior Court of 18 Justice of Nueva Loja starting on the date and time fixed 19 for each one." 20 A. Correct. Yeah. I think that's a reasonable 21 translation, yes. 22 Q. Did the Judge from Nueva Loja provide a Term of 23 Reference for any of the Pre-Inspections? 24 A. No, the Judge responded to the Parties to permit 25 the Pre-Inspections but they didn't have Terms of Reference</p>	<p style="text-align: right;">1547</p> <p>12:13 1 Terms of Reference state that the inspections are to be 2 carried out under the direction of the President of the 3 Court"; is that correct? 4 A. Yes, that's what it says. 5 And I think that perhaps for the benefit of 6 the--of yourself and the panel, you could look at the top, 7 the title of this document. I don't know what tab--are you 8 at the right tab? The title is "Terms of Reference for the 9 Experts Carrying Out Judicial Inspections." During the 10 Judicial Inspections. So, everything in here refers to the 11 Judicial Inspections. 12 Q. We looked at your Report earlier where you said 13 that the Pre-Inspections were a part of the Judicial 14 Inspections, though. 15 A. They're part of what I characterized as the 16 Judicial Inspection process as it was implemented by myself 17 and other experts. So, it included the preparation for 18 Judicial Inspection, the work on the Judicial Inspection 19 and/or the rebuttal phase, and the presentation of that 20 information. So, all that information, as I defined in my 21 Report, is what I termed to Judicial Inspection process. 22 So, it wasn't the definition of the Court's. The 23 Court--that's not the same as the Court's definition of the 24 Judicial Inspection. 25 Q. So, under the Court's definition of Judicial</p>

<p>Sheet 28</p> <p style="text-align: right;">1548</p> <p>12:15 1 Inspections, that did not include Pre-Inspections? 2 A. That's correct. 3 Q. And you visited Sacha 6 on January 15th, 2004; do 4 you remember that? And I will-- 5 A. No. 6 Q. You visited in early January or early 2004. Do 7 you remember generally? 8 A. I visited 86 sites. Very possible. 9 Q. Let me just--I think I'm going to show you a 10 video. 11 A. Oh, okay. 12 PRESIDENT VEEDER: The video of all 86 sites? 13 (Laughter.) 14 MR. EWING: All 86. The popcorn is coming. 15 MS. RENFROE: But is the point of the video to 16 establish the date of that Judicial Inspection? 17 MR. EWING: We will--I'll show you in just a 18 second. 19 MS. RENFROE: Well, could we have a question? I 20 mean, or are you just going to play a video without a 21 question? 22 MR. EWING: I need to play the video and then ask 23 the question, like I've done with the other videos. 24 PRESIDENT VEEDER: Please do that. 25 (Video played.)</p>	<p style="text-align: right;">1550</p> <p>12:18 1 A. Machismo? 2 Q. Um-hmm. 3 A. Machismo? I don't know. 4 Q. Anyway. 5 A. What do you think? That's because all Spanish men 6 are buff, so, they need the word. 7 PRESIDENT VEEDER: Let's move on. 8 MR. EWING: Yes. 9 PRESIDENT VEEDER: I should just warn you, we are 10 going to take lunch a little bit early, between half past 11 and quarter to 1:00. So, just adjust your questions 12 accordingly. 13 MR. EWING: I think I will be able to finish 14 before that. 15 PRESIDENT VEEDER: Okay. 16 BY MR. EWING: 17 Q. In the video you mentioned that you found 18 petroleum-impacted soils at least half a meter deep; 19 correct? 20 A. Yes. 21 Q. Okay. And during the PIs, in your June 2013 22 Report at Page 14, you state that Chevron's experts 23 conducted a "time-consuming trial and error series of soil 24 borings first to find the pit and then to define its 25 dimensions based on clean perimeter samples."</p>
<p style="text-align: right;">1549</p> <p>12:17 1 BY MR. EWING: 2 Q. In this video, the small group of men that we saw, 3 when you were talking about doing hand-augering, they were 4 conducting, I presume, hand-augering? 5 A. That's correct. 6 Q. And hand auger is a hand-operated drill or auger; 7 is that correct? 8 A. Yes. 9 Q. And it is used to take samples below the surface; 10 correct? 11 A. Yes. 12 Q. How deep did you take samples? 13 A. I don't recall specifically in that case. It's 14 sometimes as a function of the buffness of the operator, 15 but it's different at different--in different materials. I 16 don't recall. 17 Q. Understood. And in the-- 18 PRESIDENT VEEDER: Did you say "buffness"? 19 (Laughter.) 20 THE WITNESS: Yeah. "Buffness" is a technical 21 term, with a hyphen, so, buff-ness. 22 PRESIDENT VEEDER: What is "buffness" in Spanish? 23 THE WITNESS: Good question. 24 BY MR. EWING: 25 Q. Machismo.</p>	<p style="text-align: right;">1551</p> <p>12:19 1 A. Which--I'm sorry, Mr. Ewing, I missed which page 2 reference you are making there. 3 Q. So, there are two references to this, both your 4 presentation yesterday and your June 2013 Report at 5 Page 14. 6 So, looking at that line, it seems to me to say 7 that you are--Chevron's experts used the Pre-Inspections to 8 identify where all of the contamination was located through 9 this time-consuming trial and error series of soil borings. 10 A. That's what it says, yes. 11 Q. And that's what you had presented yesterday with 12 your diagram of Shushufindi 21; correct? Where you start 13 in the middle and you take steps out to find the edges? 14 A. That's right. If you don't have good information 15 of where that pit was located, it can be quite 16 time-consuming. And the larger the pit, the more 17 time-consuming it is. 18 Q. And I understand that you are saying or that 19 Chevron is saying--let's stick with what you were 20 saying--you were telling us that the PIs were acceptable 21 because both Parties conducted them; correct? 22 A. No, I'm not saying that they're acceptable for 23 that reason. I believe that they were completely 24 acceptable for meeting the objectives of Judicial 25 Inspection, whether they were conducted by either Party.</p>

12:21 1 But the fact is they were conducted by both Parties.
 2 Q. And you were the Judicial Inspection Expert at
 3 Sacha 6. We've already, I guess, discussed that at length.
 4 Are you aware that Chevron tried to cancel the
 5 Sacha 6 JI the day before it started?
 6 A. No. I don't recall that.
 7 Q. Did you know that Chevron tried to cancel the JI
 8 because--
 9 MR. EWING: And this is at Tab 50, if the Tribunal
 10 would like to turn to it. And this is, in fact, in
 11 Binder 4.
 12 THE WITNESS: Is that the binder without--
 13 BY MR. EWING:
 14 Q. It's the one that says Binder 4 at the bottom.
 15 MR. EWING: Sorry for--I was just explaining to
 16 Mr. Connor.
 17 THE WITNESS: In which tab, Mr. Ewing?
 18 BY MR. EWING:
 19 Q. Fifty. Five-zero.
 20 A. Okay.
 21 Q. And this filing by Mr. Callejas, who was the
 22 attorney for ChevronTexaco, first recounts media reports
 23 that the Plaintiffs are conducting a campaign through the
 24 media; correct?
 25 A. I don't recall reading this before. I do now

12:25 1 A. Yes, I see that it says that.
 2 Q. And in Paragraph 4, they're describing what was
 3 done and the Judicial--the Pre-Inspections that allegedly
 4 the Plaintiffs had conducted.
 5 Chevron's teams had already visited the site four
 6 times and conducted sampling each time by the time the
 7 Judicial Inspections started; correct?
 8 A. I don't remember--oh, here you have it--how many
 9 times that had been visited. They had visited it, and
 10 Mr. Calmbacher's team had visited it, and the dispute at
 11 the time wasn't the fact of the visit, it was the fact of
 12 the extensive alteration of property. That's why I
 13 mentioned in my presentation yesterday that we were
 14 instructed not to alter the property, not to leave markings
 15 and flagging. And that was, as I recall, the basis of the
 16 dispute. The property had been cleared, signage was up,
 17 drilling, labeling, press information. And I believe
 18 that's what the--that was my understanding of what the
 19 complaint was. And, therefore, going forward, it
 20 was--there was not an instruction not to do a
 21 Pre-Inspection, but that in doing those Pre-Inspections,
 22 the property was not to be altered such that the Court
 23 would not be afforded to the opportunity to see the
 24 property in its native form, rather than to be altered by
 25 the performance of the Pre-Inspection. And that is the

12:23 1 recall the circumstances around this. I haven't read this
 2 carefully. I don't know if I've ever read it, but do you
 3 want me to do so?
 4 Q. No, I would like you to turn to Paragraph 6.
 5 A. Yes, I see that.
 6 Q. And in the second paragraph it says: "The 'status
 7 and circumstances' of the above-mentioned sites"--and they
 8 reference the sites earlier--"have been unlawfully altered,
 9 which makes it impossible to comply with any procedural
 10 steps therewith evidentiary force."
 11 Do you see that?
 12 A. Yes.
 13 Q. And then looking at Paragraph 9, do you see it
 14 says: "According to Chevron, Plaintiffs' Pre-Inspections
 15 were 'a violation of rights to legal security and the due
 16 process of law provided for in Article 2326 and 27 of
 17 Ecuador's Political Constitution.'"
 18 Do you see that?
 19 A. I see where it says that, yes.
 20 Q. And looking at Paragraph 5, not only did Chevron
 21 believe that these actions were a violation of their due
 22 process, but Chevron also argued that the Plaintiffs'
 23 "furtive actions by themselves constitute a severe
 24 environment negative impact whose magnitude is unknown."
 25 Do you see that?

12:27 1 instruction that I followed.
 2 Q. So, looking at Paragraph 12, in 12.1, do you see
 3 here where the complaint, the first complaint, by
 4 Mr. Callejas is that allegedly the Plaintiffs were
 5 performing soil drilling using drills or other mechanical
 6 means?
 7 A. Yes, it says that.
 8 Q. And that's no different from using your hand
 9 auger, is it?
 10 A. I think that the hand auger constitutes a similar
 11 activity.
 12 MR. EWING: Mr. President, I have probably about
 13 five more questions, or five more minutes of questions--or,
 14 actually, no, I have about 15 minutes more of questions.
 15 Would you rather I finish those now, or would you rather we
 16 take a break for lunch and go from--
 17 PRESIDENT VEEDER: I'm not sure I heard you. Was
 18 it 50 minutes?
 19 THE WITNESS: One five.
 20 PRESIDENT VEEDER: One five.
 21 (Tribunal conferring.)
 22 PRESIDENT VEEDER: I think it will be better if we
 23 broke now and we'll come back at 1:30.
 24 MR. EWING: I will endeavor to shorten them even
 25 further.

12:29 1 PRESIDENT VEEDER: Okay. Thank you very much.
 2 Again, please don't discuss the case away from the
 3 Tribunal, or your testimony.

4 THE WITNESS: Yes, sir. Certainly.

5 PRESIDENT VEEDER: And we will resume at 1:30.

6 (Whereupon, at 12:30 p.m., the Hearing was
 7 adjourned until 1:30 p.m., the same day.)
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01:30 1 A. Mr. Ewing, I don't recall specifically those
 2 numbers, but I do recall in general that somewhere on the
 3 Order of 95 percent of the impacts had happened prior to
 4 the Year 2000, and that most of those were related to the
 5 management of drilling wastes that were generated at the
 6 time of drilling. But there were other issues that
 7 occurred as well that were part of that 90-plus percent
 8 number that weren't related to drilling.

9 But in general, in that case, most of the
 10 questions in issues in question were related to issues
 11 associated with drilling wastes that happened during
 12 drilling.

13 Q. And in that case, Burlington, your client, did not
 14 drill the wells?

15 A. For clarification, Burlington was a member of a
 16 consortium for which the Operator was a different party.
 17 That Consortium did drill some wells, a number of wells,
 18 but some of the environmental costs were associated with
 19 their drilling activities, but the bulk of them were not.

20 Q. But you would agree with me that Burlington did
 21 not drill most of the wells?

22 A. Again, in that case, the Consortium drilled most
 23 of the wells, if I recall it correctly, in Block 21, which
 24 was a relatively new development, but they did not drill
 25 most of the wells in the Block 7 or Coca-Payomino unified

1 AFTERNOON SESSION

2 PRESIDENT VEEDER: Let's resume.

3 CONTINUED CROSS-EXAMINATION

4 BY MR. EWING:

5 Q. Mr. Connor, we're going to briefly discuss the
 6 Sacha 53 well site and then hopefully be done for today.
 7 Sacha 53 was a well drilled by TexPet; correct?

8 A. I believe so. I'd have to look at the
 9 information, but I believe it was one of the wells drilled
 10 by TexPet.

11 Q. Do you remember testifying in the Burlington
 12 Hearing that 95 percent of contamination occurs when a well
 13 is drilled?

14 A. In the Burlington Hearing, my testimony was
 15 specific to the conditions in Block 7 and Block 21. It was
 16 not generic to all applications. Only in that particular
 17 circumstance the events that had contributed to the
 18 problems were during the drilling of the well, because they
 19 were well drilling wastes. That would not be the case in
 20 the Chevron block--excuse me, the Petroecuador Texaco
 21 block. It was a very specific statement for a very
 22 specific set of circumstances.

23 Q. So, just to clarify, in Burlington, you did
 24 testify that 95 percent of the drilling--95 percent of the
 25 contamination occurred at drilling for those two blocks?

01:32 1 fields.

2 Q. Mr. Connor, you would agree with me that when you
 3 assessed risks, you look at both the current and the future
 4 use of the land; correct?

5 A. Depends on which risk you're evaluating, but if
 6 you're evaluating you rendering the current conditions, you
 7 look at those conditions, say, as they exist now, but if
 8 you're anticipating future chronic risks under different
 9 land use scenarios, you also consider those different land
 10 uses, yes.

11 Q. In this arbitration, when you have assessed risk,
 12 you have looked at both the current and the future use of
 13 the land; correct?

14 A. In this arbitration, all the calculations that I
 15 presented which are documented in my 2010 Report are based
 16 on residential land use. Residential land use in most
 17 cases is neither the current or likely future use of that
 18 land, but as a conservative measure, I assumed the most
 19 stringent land use. So, regardless if the land were
 20 agricultural or industrial, which comprises nearly the
 21 entirety of the land use in this area, I assumed that the
 22 places where impacts were found would be home sites.

23 Q. And as you said in Burlington, the children would
 24 play in it, that it would be their front yard, that they
 25 would come into intimate contact with that material every

01:33 1 day for 30 years.
 2 A. The assumption in the default exposure scenarios
 3 that are applied to develop those screening limits assumed
 4 that children and adults will be exposed to that material
 5 on a daily basis for a prolonged time period and to only
 6 that material. So, if you have a small area of
 7 contaminated soil, for the purpose of screening, you ask
 8 the question, if someone, a child and adult were exposed to
 9 this every day for many years would this--to just this
 10 soil, would it cause based on dose response analysis, could
 11 this cause a low-risk of a health impact. That's the
 12 question that's posed.
 13 Q. In their opening, Mr. Connor, Claimants stated
 14 that, "the crowning blow to the Plaintiffs' effort to mount
 15 a legitimate case fell at Sacha 53 in early 2006, when the
 16 five independent Settling Experts found that there was no
 17 significant risk to human health or the environment."
 18 Do you remember that from the opening?
 19 A. I don't specifically remember that statement, but
 20 it's in the Transcript. The person here responsible for
 21 the Transcript is quite talented.
 22 Q. I've heard the same.
 23 The Settling Experts were asked by the Court to
 24 look at the Parties' JI sampling results; correct, at
 25 Sacha 53?

01:35 1 A. Correct.
 2 Q. And then the Settling Experts were asked to answer
 3 particular questions from the Court about the site;
 4 correct?
 5 A. Yes, I believe that's a fair characterization.
 6 Q. Before we actually pull up the Report--and we will
 7 do that--I want to go back to when you conducted
 8 pre-investigations at Sacha 53. And if you want to look
 9 at, while we're talking, at Tab 58, this is the Sacha 53
 10 Playbook. It's in binder Number 4.
 11 A. It's Sacha 53, but it's a different tab. I'm
 12 sorry. I just got confused.
 13 Q. Sorry. This is just the map. I have the map for
 14 you. We're just going to be looking at the map?
 15 A. Which tab is it?
 16 Q. Fifty-eight.
 17 A. Fifty-eight, for fifty-three.
 18 Q. And, according to this map, Chevron's PI
 19 results--and this is a map that Chevron or GSI created;
 20 correct?
 21 A. This image--Chevron did not create this map. This
 22 map would have been created by the staff at GSI.
 23 Q. Okay. And according to the map that's at Tab 58,
 24 the TPH results that Chevron received for Pit 1 and Pit 2
 25 were, respectively, 17,900 milligrams per kilogram and

01:37 1 16,000 milligrams per kilogram; is that correct?
 2 A. Yes, that's what's indicated on this diagram.
 3 Q. And if you could look at Tab 59, which is the last
 4 tab, or look on the screen, these are the JI results from
 5 Chevron's database.
 6 And am I correct that the JI results for Pit 1
 7 have non-detects for TPH; is that correct?
 8 A. Yes, that's what's reported.
 9 Q. And for Pit 2, the highest of the two values is
 10 520?
 11 A. Yes.
 12 Q. So, let's turn to the Settling Expert Report
 13 quickly, and this is Tab 51, but we will put it up on the
 14 screen. And we're going to turn to Page 69.
 15 And do you remember this Settling Expert Report is
 16 set up as Court question, Claimant Chevron's statement by
 17 Mr. Baca, the Lago Agrio Plaintiffs statement by
 18 Mr. Camino, and then the comments of the Settling Experts?
 19 A. I'm sorry, Mr. Ewing, I didn't catch which tab it
 20 was. I'm running a little bit behind you. I will catch up
 21 quickly, if I can.
 22 Q. Tab 51, please. And we're going to start at
 23 Page 69, and so the Tribunal is familiar, if you look, for
 24 instance, starting at Page 65, at the very bottom you see a
 25 question from the Court, and then on Page 66 you see

01:39 1 Mr. Baca's answer, who is Chevron's representative. His
 2 answer continues on 67, where you see his Judicial
 3 Inspection results that we were just looking at?
 4 A. My copy seems to have the numbers in reverse; it
 5 starts, but I'll try to find--Page 66. Just a second.
 6 Okay. I found it.
 7 Q. And so on Page 69 are the comments of the Settling
 8 Experts. They come after the Settling Experts have quoted
 9 the opinions of the Parties.
 10 A. Yes.
 11 Q. And you see on Page 69 where it says, "Number 1,
 12 under two areas have been identified that can be
 13 potentially considered as sources of contamination," and
 14 they have identified here an old spill located west of
 15 Pit 1.
 16 And it says: "From the analyses made by the
 17 Parties, it can be seen that lower levels of the soil
 18 contain concentrations that are higher than the allowable
 19 limits established for TPH, chrome VI, copper,
 20 benzo(a)pyrene in the environmental legislation for the
 21 citation."
 22 Do you see that?
 23 A. Yes.
 24 Q. So, the Settling Experts are finding exceedances
 25 for TPH, chrome VI, and benzo (a) pyrene in this old spill;

01:41 1 correct?
 2 A. That's certainly their statement, but there is no
 3 benzo (a) pyrene criterion in Executive Decree 1215. They
 4 do make that statement, it seems not quite clear what their
 5 basis was for that statement, but yes, they do state that.
 6 Q. Okay. And if we turn--
 7 A. And also chrome VI, there is no criteria in
 8 Executive 1215 for chrome VI or--I don't believe copper
 9 either, but nevertheless, yes, they do make that statement.
 10 Q. So, the Settling Experts--to be clear, the
 11 Settling Experts here are saying that they have found, in
 12 their expert opinions--the five of them--that there are
 13 exceedances for TPH, chrome IV, copper and benzo (a)
 14 pyrene?
 15 A. Correct. That's what they say.
 16 Q. And if we turn to Page 80, I want to skip right to
 17 the risk assessment: At the very top of this page you see
 18 the bullet that says, "sensitive receptors," and this is
 19 the end, if you want to check back on 79, of more comments
 20 of the Settling Experts.
 21 And do you see here where it says: "There are no
 22 homes next to the pits. The two families residing in this
 23 area are located at a distance of over 250 meters from the
 24 wellhead. The presence of human beings is occasional,
 25 primarily when they're doing farm work."

01:43 1 A. Yes, that's their determination that they have
 2 presented based on their own investigation of the site.
 3 Q. And if we look at Page 82, we will see a similar
 4 conclusion for the old spill area. There is a bullet for
 5 sensitive receptors.
 6 Do you see that?
 7 It says: "There are no homes next to the spill
 8 area. The spill is located in a palm grove. The presence
 9 of human beings is occasional, primarily when engaged in
 10 farm work in the palm grove."
 11 A. Yes, I do see that.
 12 I haven't read this Report in a long time. I
 13 can't, without reviewing it carefully, I can't speak to
 14 what all the references are, but it certainly does say that
 15 in this text.
 16 Q. Okay. And would you turn now to Page 95. And I'm
 17 looking at the last paragraph that starts with, "Since
 18 1972."
 19 Do you see that?
 20 A. Yes.
 21 Q. And this again is comments of the Settling
 22 Experts, who are saying: "Since 1972, when Sacha 53 well
 23 was drilled, there is evidence of the occurrence of a
 24 series of events that have caused contamination by crude
 25 and other elements in the area of the pits and surrounding

01:45 1 area."
 2 And then it says, skipping one sentence:
 3 "Following this period, we can state that there are still
 4 recalcitrant crude fractions present in the area."
 5 Do you see that?
 6 A. Yes.
 7 Q. And this Report was filed in--do you remember what
 8 year?
 9 A. No. It may say so on it.
 10 Q. February 1st, 2006.
 11 A. Correct.
 12 Q. And if we turn the page now to 96, looking at the
 13 top in bold, the Court is asking the Parties and then the
 14 comments of the Settling Experts. The Court is asked: "If
 15 the experts believe that exposure to environmental impacts
 16 currently existing at the Sacha 53 well can be attributed
 17 solely and exclusively to the operations of the
 18 Petroecuador Texaco Consortium, they shall evaluate the net
 19 benefit that the persons possibly affected can gain from
 20 carrying out any mitigation measures."
 21 Right?
 22 A. Yes, that's what it says.
 23 Q. So, the Court is asking there for the personal
 24 gains that these individuals will get from mitigation
 25 measures?

01:46 1 A. This is the English translation. To understand
 2 exactly the language of how the Court poses this question
 3 would be important as to the Spanish because it seems that
 4 maybe your folks are going to turn a phrase that might have
 5 some legal implications, and I really can't advise you in
 6 that regard.
 7 Q. And I am not asking you to advise me on the legal.
 8 PRESIDENT VEEDER: But have you the Spanish?
 9 MR. EWING: We do. This is the exhibit that was
 10 submitted by Mr. Connor. It was Exhibit 48 to his Report.
 11 I'm sure that we can find the Spanish. I just have
 12 provided his exhibit.
 13 BY MR. EWING:
 14 Q. And then below the Court's question, Mr. Baca
 15 says: "The degraded petroleum nor the asphalt represents
 16 a threat to the livestock and plants, and no corrective
 17 actions are required."
 18 Do you see that?
 19 A. Yes, I see that.
 20 Q. And then Mr. Camino, who is a Lago Plaintiffs
 21 expert, carries on to estimate the size of the pits, the
 22 cubic volume of soil that needs to be remediated, and then
 23 provides a dollar cost per cubic meter to remediate that
 24 soil.
 25 Do you see that?

01:48 1 A. Yes.
 2 Q. And he's doing that in response to the Court's
 3 request for benefit to individuals for mitigation measures?
 4 A. Well, it doesn't seem responsive to the question,
 5 but clearly that's how the Settling Experts organize the
 6 Report.
 7 Q. And that's how Mr. Camino responded? Whether he
 8 was right or not, that's how Mr. Camino responded to this
 9 question?
 10 A. Well, perhaps what we need to understand,
 11 Mr. Ewing, is that question wasn't posed to Mr. Camino.
 12 These are questions posed to the Settling Experts, and then
 13 they went through the Reports of the Chevron Expert and the
 14 Plaintiffs' Expert and cut and paste what they thought were
 15 their most responsive. So, Mr. Camino was never asked that
 16 question. This is just what the Settling Experts decided
 17 would be considered responsive to the best of their
 18 efforts, per their Judgment.
 19 Q. And then the last question about this document, at
 20 the bottom of 96 and going on to 97, the comments of the
 21 Settling Experts are: "According to the results of the
 22 laboratory analyses, the 'area of the old spill' is the one
 23 that has petroleum contamination (TPH concentrations in
 24 excess of 5,000 milligrams per kilogram at depths ranging
 25 from 0.8 to 6.8 meters."

01:51 1 spill area. It was a different location.
 2 Q. And then the experts conclude: "This area must be
 3 remediated, even though the origin of the contamination is
 4 unknown (due to the lack of scientific evidence)."
 5 Do you see that?
 6 A. Yes.
 7 Q. So, their final conclusion was that at least the
 8 old spill area must be remediated?
 9 A. That appears to be their conclusion, yes.
 10 MR. EWING: I have no further questions.
 11 PRESIDENT VEEDER: Thank you very much.
 12 Are there questions from the Respondent by way
 13 of--from the Claimants by way of re-examination?
 14 MS. RENFROE: Yes, Mr. President.
 15 PRESIDENT VEEDER: Give us for planning purposes
 16 how long you think that might take.
 17 MS. RENFROE: My hope is to be finished within 30
 18 minutes.
 19 PRESIDENT VEEDER: Please proceed.
 20 MS. RENFROE: Thank you.
 21 PRESIDENT VEEDER: Unless you want to break.
 22 MS. RENFROE: No, I don't need a break, unless
 23 anyone else does.
 24 Thank you very much.
 25 May I ask my colleagues' technical adviser who

01:49 1 So, they found oil contamination had spread
 2 6 meters deep.
 3 And goes on to say that the, "maximum TPH DRO
 4 value recorded between 0 meters and 0.8 meters is 1900
 5 milligrams per kilogram, and heavy metals."
 6 Correct?
 7 A. Yes, that's what it says.
 8 One clarification to your characterization is that
 9 the Settling Experts are indicating the sample depth
 10 according to the Plaintiffs' report, but the drilling
 11 method employed by the Plaintiffs' Expert in this case had
 12 the effect of dragging contaminants down to great depth,
 13 and that is explained in the Report of Mr. Baca. So that
 14 the 6.8 meters is not a correct or realistic
 15 characterization of the depth of that spill. But apart
 16 from that, yes, that's what it states.
 17 Q. And they state here that the maximum that they
 18 were informed of was 1900 milligrams per kilogram; right?
 19 TPH DRO.
 20 A. For the old spill area, correct.
 21 Q. Even though Chevron in its PIs had found a higher
 22 milligrams per kilogram maximum?
 23 A. No, I don't believe that's correct.
 24 They found--the data that we looked at earlier was
 25 related to pits one and two. It wasn't related to the

01:52 1 just had the Sacha 53 Settling Expert document up, could he
 2 take us back there, please, while we are there?
 3 MR. EWING: Of course.
 4 MS. RENFROE: And could you specifically go to
 5 Page 82--actually Page 80.
 6 THE WITNESS: This is Tab 51 again?
 7 REDIRECT EXAMINATION
 8 BY MS. RENFROE:
 9 Q. Yes, sir, it's Tab 51. While we are on this
 10 document, I thought we might just address one or two more
 11 points, and then we can move on to something else.
 12 A. That just closed it, so getting back there.
 13 Yes, I'm there.
 14 Q. I want to draw your attention and the Tribunal's
 15 attention to the question in this joint Settling Expert
 16 report for Sacha 53. The question is 4.6.2, and L.32 and
 17 L.16.
 18 Do you see that?
 19 And specifically the first question says--and I'm
 20 just setting this for context: "The experts shall inform
 21 the Court whether the persons who have homes in the areas
 22 surrounding the platform and the pits that were remediated
 23 by TexPet in the Sacha 53 well could be exposed to
 24 concentrations of crude oil at levels and with a frequency
 25 that makes them hazardous to their health. The experts

01:53 1 shall give technical and scientific support for both their
2 opinion and the source of that crude oil."
3 Do you see that question, Mr. Connor?
4 A. Yes.
5 Q. Now, if you could, and if our technical adviser
6 could please turn us to Page 82, and let's find the
7 conclusion of the Sacha 53 Settling Experts. If you look
8 towards the bottom of the page, the paragraph starting, "In
9 view." And if we could ask the gentleman to highlight that
10 for us, thank you very much.
11 Can you read that to us, Mr. Connor, please. And
12 tell us what conclusion was reached by the Sacha 53 joint
13 Settling Experts in response to the question about
14 potential health risk.
15 A. It states that: "In view of the fact that the
16 concentration of hydrocarbons (TPH-DRO) and barium are
17 located at depths of over 0.4 meters, the risk to human
18 health is low, with a probability of impact equally low,
19 unless there are drastic changes in the site's current
20 conditions, which would increase the risk (removal of the
21 soil by mechanical operations, intense water erosion,
22 felling of the trees with consequent exposure of roots and
23 soil)."
24 The statement here is that they would not
25 anticipate current or future risks in the absence of

01:56 1 different if the material is on the surface than if it's in
2 the subsurface. Materials that are on the surface, it is
3 plausible that someone could come into contact with that
4 material much more so than something that is at subsurface.
5 At each of the locations of a remediated pit, the Chevron
6 Experts collected samples both at the surface and at the
7 subsurface in order to answer those questions.
8 Q. And so, as you read the conclusion of the Sacha 53
9 joint Settling Experts, they concluded that there was
10 low-risk to human health, even though there were
11 concentrations of TPH at depth?
12 A. Correct.
13 Q. Now, when you did your risk assessment that is
14 included in your September 2010 Report in this arbitration
15 case, which data did you consider?
16 A. I considered all of the data that had been
17 collected and submitted to the Court by all of the Parties,
18 and that included the data compiled by the Chevron Experts
19 within the JI/Rebuttal process, all of the data collected
20 by the Plaintiffs' Experts in the JI process, and all of
21 the data compiled by Mr. Cabrera in Phase II of the JIs.
22 Q. Okay. And did that data include samples at the
23 surface as well as samples at depth?
24 A. Yes.
25 Q. Okay. Now, earlier, Mr. Ewing asked you about

01:55 1 extensive modification of the sites' physical
2 characteristics.
3 Q. And so, let's help the Tribunal understand this
4 question of risk assessment and evaluating samples from the
5 surface and samples from depth.
6 And you commented a little bit earlier about
7 having done a risk assessment in your September 2010
8 Report.
9 So, while we are on this topic, could you explain
10 to the Tribunal how a risk assessment is done and the
11 significance of evaluating samples at the surface and
12 samples at depth.
13 A. Yes. As briefly as I can.
14 The risk assessment entails a step-wise process by
15 means of which the Measured concentration of samples are
16 compared to concentrations that would be safe under any
17 anticipated situation where, as I described earlier, if
18 someone were to be in direct contact with these materials
19 every day for many years. In my analysis, all of the
20 samples, whether they're on the surface or subsurface were
21 compared to those concentrations to see if any exceeded.
22 The second step is then to evaluate whether those
23 materials are in a location where exposure such as
24 anticipated in the calculation of every day for 30 years,
25 could actually occur. And the answer to that is very

01:58 1 assumptions about future land use, and I just want to make
2 sure that we're clear on what you meant when you were
3 explaining the assumptions that you used in performing your
4 risk assessment about future use of the land.
5 So, could you explain to the Tribunal, when doing
6 a risk assessment, what assumptions you make for purposes
7 of evaluating risk?
8 A. Yes. It's similar to the description I gave you
9 during my presentation of there being different speed
10 limits for different streets and different cleanup
11 standards for different types of land use.
12 In my analysis, I assumed that all the land would
13 be converted to residential use, which is the use under
14 which persons have the greatest degree of contact with the
15 soil or water; therefore, regardless of the future use, I
16 would have a conservative basis for developing protective
17 conditions. The land may well be agricultural in the
18 future, it may well be industrial or commercial, but by
19 assuming it would be residential, I then would have the
20 most conservative and protective criteria on which to
21 assess the risk, and that's what I did.
22 Q. Now I would like to switch topics and take us back
23 to address a few issues that were raised yesterday. I just
24 want to make sure that the record is very clear.
25 So, let me ask you to get in front of you--and the

01:59 1 Tribunal may wish to have in front of it--a copy of your
2 slides, and then as well, if you could also open,
3 Mr. Connor, your September 2010 Report and turn to Page 2,
4 please.

5 If you could look at the bottom paragraph on
6 Page 2 of your 2010 Report, can you tell us the dates that
7 the Consortium operated, the TexPet Consortium--the
8 TexPet-Petroecuador Consortium operated, as you've
9 memorialized it in your Report.

10 A. Yes. My understanding was that the TexPet serving
11 as the Operator for the Consortium comprised the years 1972
12 through June 30, 1990.

13 Q. And so, today, to the extent that Mr. Ewing was
14 asking questions about the operations--asking questions
15 about TexPet's operations through 1992, would that be
16 inconsistent with your understanding of the period of time
17 that TexPet acted as the Operator?

18 A. Yes, that would be inconsistent.

19 Q. And tell us again the last date that TexPet was
20 the Operator?

21 A. My understanding in all of the documentation I
22 reviewed was that the role of TexPet as the Consortium
23 Operator terminated on June 30, 1990, and, thereafter the
24 field was under the exclusive operation of Petroecuador.

25 Q. Okay. Now, let's turn to another topic that,

02:03 1 There may be some confusion in the record because
2 there's a number of different issues here and a number of
3 different Parties. Any time I referred to the RAP, I was
4 referring to these entities.

5 Q. Okay. Now, let's go to the RAP. And I believe we
6 have handed out, or we are about to hand out, a very, very
7 small group of documents, and I want to make sure that you
8 and the Tribunal have it handy, so let's see if we can get
9 those circulated now.

10 And, Mr. Connor, I would ask you to turn to
11 Slide 8 of your slide presentation.

12 A. I don't have a copy of the slide presentation with
13 me. Is it possible to get a copy? Is it here? Perhaps it
14 is.

15 (Document handed to the Witness.)

16 A. Yes, I have it, thank you.

17 Q. Okay. So, I think just for this discussion on
18 this next point, it would be helpful if we can open up the
19 Remedial Action Plan, or the RAP. And if you can then also
20 have Slide 8 in front of you.

21 And I would like to ask you to describe in a bit
22 more detail exactly the process that was included or
23 required in the RAP for remediating those pits that are
24 identified in the tables in the RAP.

25 A. Okay. The eight step process that I've depicted

02:01 1 again, just to make sure we have a very clear record, and
2 that has to do with what you have meant or who you have
3 been referring to when you've spoken about the Parties.
4 And in this respect, I would ask you to turn, and I'd ask
5 our technical colleague to open up, Mr. Connor, your
6 Slide 5.

7 Do you have that, sir?

8 A. Yes.

9 Q. And if we can--I mean, the question I want to put
10 to you--and I'm hoping you can answer it from this
11 slide--is to identify for us who the Parties are to the
12 Remedial Action Plan. And if we can enlarge--if we have
13 the ability to enlarge those signatures, perhaps,
14 Mr. Connor, you can tell us?

15 A. No, I have a copy of the plan that I can read.

16 Q. So, who are the Parties to the Remedial Action
17 Plan that you have been talking about for the last
18 day-and-a-half?

19 A. To the Remedial Action Plan, the Parties were the
20 Ministry of Energy and Mines; the Environmental Unit,
21 Environmental Protection Unit of Petroecuador; Texaco
22 Petroleum Company; and Woodward-Clyde, who was the
23 Contractor. But when I referred to "the Parties," I was
24 referring to the first of those three, not to the
25 Contractor.

02:05 1 on this Slide 8 of my presentation is spelled out in more
2 detail on Pages 13 through--13 through--this goes on for
3 quite a while--just a second--at least through 17. Just a
4 moment. Well, and it also reappears on Page 21 for the
5 revegetation.

6 Nevertheless, in this document, this particular
7 process is laid out for treatment of oil pits. And would
8 you like for me to describe that, Ms. Renfroe?

9 Q. Please.

10 And I would like you to help the Tribunal
11 understand how the process is laid out in this Remedial
12 Action Plan, so that if they want to understand in more
13 detail what was done and where it was to be done, they know
14 how to navigate the RAP, the Remedial Action Plan document.

15 A. Okay.

16 This diagram on Slide 8 corresponds to the
17 procedures specified for closure of pits with oil. You
18 will see that reference first appear on Page 13 of the RAP
19 document, which I--the document I'm holding here is labeled
20 Connor-7.

21 Q. And let's make sure that the Tribunal is with you.
22 Okay. Thank you. Go ahead.

23 A. Turning then to Page 14, you will see the two
24 headings, one called "site preparation" and one called
25 "removal and debris--of debris and crude oil," and those

<p>Sheet 36</p> <p style="text-align: right;">1580</p> <p>02:07 1 correspond to Steps 1, 2 and 3 as indicated on Slide 8. 2 The process involved removing the vegetative cover from 3 around the pit, removing all the debris and vegetation, 4 logs or whatever other material might be inside the pit, 5 and then making an effort to recover for recycling any oil 6 that could be extracted from that pit. Those are the steps 7 that are described on Page 14 and depicted on Steps 1, 2, 3 8 of Slide 8 of my presentation. 9 That oil as you see on the top of Page 15 would be 10 transported to an oil recovering recycling facility that 11 was constructed for the purpose of this project on the 12 Sacha Central Production Station. That facility still 13 exists today. That oil would be transported there for 14 re-cover and replacement in the oil pipeline. 15 Then the water that remained in the pit now free 16 of oil would be processed as it's shown in Diagram Number 4 17 on Slide 8. It would be placed within a temporary holding 18 basin and processed with chemical additions as needed to 19 precipitate solids and meet the discharge criteria of 20 Acuerdo 621 issued in 1992 and incorporated into the RAP, 21 as it says here under the heading "discharge of water" on 22 Page 15. 23 The next step is called "treatment of bathtub ring 24 and other soil contamination," and it is depicted as 25 Number 5 on Slide 8. This involved a variety of different</p>	<p style="text-align: right;">1582</p> <p>02:11 1 landowner and selection of appropriate species at the 2 requesting Grievant and landowner to determine what was the 3 best vegetative restoration method for that site, and those 4 were memorialized in certificates that were signed by the 5 landowner and by TexPet on every property. So, that then 6 corresponds to Number 8 on Slide 8, Image Number 8, and the 7 completed sites as they appear today are indicated in the 8 last photo on that slide. 9 Q. You mentioned yesterday that inspectors were 10 involved in this process. Can you explain a bit more about 11 who those inspectors were and who they were acting for? 12 A. There were several different persons that were 13 tasked with that responsibility, and my recollection is 14 there were at least five of them, and they were from three 15 different organizations. They were from the Ministry of 16 Energy and Mines, they were from Petroecuador and 17 Petroproducción. 18 And their responsibility was to inspect the sites 19 as the work was underway to confirm that the work was being 20 conducted in compliance with the RAP specifications and to 21 take actions if they felt that that was not the case. 22 Q. Now, did the specifications that the Parties--that 23 is, Ecuador and Petroecuador and TexPet--agreed to in the 24 RAP, did those specifications allow residual Total 25 Petroleum Hydrocarbons, or TPH, to remain in a remediated</p>
<p style="text-align: right;">1581</p> <p>02:09 1 treatment methods that could be employed at the option of 2 the Contractor or TexPet. In some cases soil washing was 3 used to remove oil, in other cases cementing was used, in 4 some cases biotreatment was used, but whatever method was 5 used was applied to the materials on the walls and in the 6 interior of the pit in order to stabilize it, remove the 7 oil, and render it in a condition consistent with the safe 8 closure of that pit. 9 Once that was completed, and the sludge in the pit 10 had also been treated as indicated on Page 16, the next 11 step as indicated on Diagram Number 6 or Image Number 6 on 12 Slide 8 was that the material in the base, that now the 13 treated material in the base of the pit would be sampled 14 and analyzed by a sampling team from Universidad Central in 15 Quito. If that material met the cleanup criteria specified 16 in the RAP, the next step indicated on 17 and Photo 17 Number 7 on Slide 8 would then be implemented, and it gives 18 very specific instructions on Page 17 as to how that 19 backfill was to be placed. Backfill is the clean soil 20 that's now placed atop the remediated material at the base 21 of the pit. 22 Later in this document--assuming I can find the 23 page--it specifies how the site is to be revegetated, and 24 you will see that, I believe, starting on Page 21. That 25 revegetation process involved communication with the</p>	<p style="text-align: right;">1583</p> <p>02:13 1 RAP pit? 2 A. Yes. 3 Q. And can you explain why that is. 4 A. There are at least two reasons: The remediated 5 material, if it's cemented, will retain its full mass of 6 hydrocarbon. But as we saw in the many leachate tests that 7 were conducted both during the RAP and thereafter, that 8 that tea bag would not release any of its hydrocarbon to 9 the environment. Therefore, the tea, the mass of tea that 10 remained in the bag is immaterial to the environmental 11 protection if it can't move out of the tea bag. And that 12 was understood, I believe, by the Parties at the time they 13 developed these specifications. It's certainly understood 14 as a principle today in remediation of these pits. 15 Q. So, it was--it was within the Parties' agreement 16 that certain amounts of or remnants of crude oil could 17 remain within a pit remediated under the Remedial Action 18 Plan? 19 A. Yes, certainly. 20 Q. And that was approved by Ecuador and Petroecuador? 21 MR. EWING: Objection. Leading question. 22 MS. RENFROE: I will rephrase. 23 BY MS. RENFROE: 24 Q. If you turn to your next slide, Slide 9, where 25 you've identified the Actas, what is your understanding</p>

02:14 1 about the Final Acta and the Approval Actas with respect to
 2 permitting remnants of crude oil to remain in remediated
 3 pits?
 4 A. The Approval Actas recognized the remnants of
 5 crude oil in those pits. The inspectors were provided
 6 those data, reviewed those data. And based on the Reports,
 7 found that the pits which contained remnants of petroleum
 8 met the requirements and, therefore, were approved for
 9 closure. Those findings are documented in RAT Acta
 10 Number 52, Approval Actas 1 through 19, and the Final Acta
 11 of September 1998.
 12 Q. Now I would like to move to a different topic, and
 13 that has to do with the timing of the HBT Report in
 14 relation to the Remedial Action Plan. There was some
 15 discussion yesterday, and I want to make sure that the
 16 record is clear on the sequence of events.
 17 When was the HBT Report done in relation to or in
 18 comparison to the Remedial Action Plan?
 19 A. The HBT Report was issued at least two years prior
 20 to the time that the Parties agreed on the Remedial Action
 21 Plan, and that information informed the basis for that
 22 plan.
 23 Q. And so, yesterday, when you were shown a number of
 24 documents by Mr. Ewing from the HBT Report that identified
 25 various findings about pits and impacts to streams, were

02:18 1 A. Yes, they were aware of those conditions. That
 2 was the purpose of the audit conducted by HBT Agra.
 3 Ms. Renfro, I would like to clarify for the
 4 record that my use of the term "in the RAP" or "not in the
 5 RAP" may be somewhat unclear. When I've said something is
 6 in the RAP, it either means that it was a RAP site or it
 7 was a pit that was designated for remediation. There are
 8 also pits in the RAP that were not designated for
 9 remediation. And I just want to be clear when I say it's a
 10 RAP pit, it means that it was a pit assigned for
 11 remediation.
 12 Sorry for the interruption.
 13 Q. No, I appreciate that.
 14 So, then for example, when you were asked about
 15 Shushufindi 4 and a particular condition or feature at that
 16 site, do you know, sir, if that was a RAP feature or a
 17 non-RAP feature? And if you don't know off the top of your
 18 head, can you tell us by looking in the Remedial Action
 19 Plan tables?
 20 A. My recollection is that it was not required for
 21 remediation by TexPet, and I can revisit those tables, if
 22 you wish.
 23 Q. And so, that would be a non-RAP feature?
 24 A. Yes, by my nomenclature.
 25 Q. And the site that you were also asked about

02:16 1 those things known to the Parties before the Remedial
 2 Action Plan was agreed?
 3 A. Yes. Both the Parties participated in audits such
 4 as I have conducted on a number of these facilities, to
 5 identify the environmental issues that remained after the
 6 termination of the TexPet period of operations. Those
 7 issues that were identified were then further addressed in
 8 the scope of the Settlement Agreement and in the RAP, and
 9 they were duly resolved in the portion of the work that was
 10 assigned to TexPet and subsequently approved.
 11 Q. And, Mr. Connor, do you remember yesterday being
 12 asked by Mr. Ewing about a number of areas, so, for
 13 example, at Shushufindi 55 and at Shushufindi 34 and at
 14 Sacha 94, he asked you about a number of sites and a number
 15 of areas that you said were not included within the RAP.
 16 Do you recall those questions over a number of hours?
 17 A. Yes.
 18 Q. Okay. So, can you explain, just to be clear--I
 19 think this is clear to the Tribunal, but it's important
 20 that we are clear and that you are clear--is it your
 21 understanding based on the HBT Report that the Parties were
 22 aware of conditions, such as impacts to streams, where they
 23 were noted in the HBT Report and certain pits, that they
 24 were aware of those conditions before deciding in the
 25 Remedial Action Plan what would be assigned to TexPet?

02:19 1 yesterday, Auca 1, which was identified or shown to you by
 2 Mr. Ewing, there was a condition identified in the HBT
 3 Report about Auca 1, was that a RAP feature, to your
 4 knowledge, or a non-RAP feature?
 5 A. You know, I don't recall that particular episode,
 6 but I could look that up if you wish.
 7 Q. And can you tell the Tribunal how you're going to
 8 go about doing that.
 9 And really, the point of my question is: Could
 10 you help explain to the Tribunal, if we want to know if a
 11 particular feature is a RAP feature, can you walk us
 12 through that process. Where do we go to find that out?
 13 A. The RAP features and non-features are specifically
 14 identified in the exhibit that's called Connor-7, which you
 15 may still have at hand.
 16 Q. And that's the Remedial Action Plan, or the RAP?
 17 A. And there are a number of tables that are attached
 18 here, and the tables of particular relevance to pit
 19 closures begin on what would be Page 17 of the document
 20 right after Page 16, it's Table 3.1.
 21 The table is inserted between Pages 16 and 17.
 22 Q. And--go ahead.
 23 A. What we see here on the screen is the first page
 24 of that table. The table is divided into several
 25 subsections. The first list is "Pits Closed-No Action."

02:21 1 Those are pits that were primarily closed after
 2 June 30, 1990, and, therefore, required no action under the
 3 RAP. You will see that designation on the far right-hand
 4 corner of the remarks of the Remedial Action Plan. There
 5 are other reasons why they are designated for "no action,"
 6 but those are the principle reasons in that case.
 7 Two other pits that appear at the bottom of that
 8 page correspond to the category of pits closed before
 9 June 30, 1990, but with evidence of oil seepage at the
 10 surface. You see those on the bottom of that page,
 11 Sacha 51, Pit 4, and Sacha 65, Pit 1. Those are pits that
 12 were understood to have been closed prior to June 30, 1990,
 13 during the period of TexPet operations, and you see here it
 14 says "Cleanup of Oil Seeps."
 15 So, those were--the Parties were cognizant that
 16 there were such pits and they incorporated them as
 17 specified in the Scope of Work if those pits were
 18 discovered during the course of the RAP implementation.
 19 On the next page, if we turn the page, on
 20 Table 3.1, you will see another list of pits called "Pits
 21 With Oil-No Action". Again, there's a list of sites, a
 22 list of pit numbers, and a number of comments or remarks
 23 under Remedial Action Plan which explain the reason why
 24 there's no action required at those pits.
 25 Continuing to turn the pages, you will arrive at

02:25 1 for other reasons. So, the table serves as the roadmap to
 2 what was and wasn't included and to some degree what you
 3 will and will not find in the field today. Pits that were
 4 not included sometimes still remain today, although
 5 Petroecuador's undertaken a program to remediate these
 6 remaining pits.
 7 Q. Have you, or did you create a table that
 8 summarizes these remedial action items in your
 9 September 2010 Report?
 10 A. Yes.
 11 Q. And can you tell us where that table is and what
 12 it does for us?
 13 A. There are a number of tables that serve to
 14 summarize the Remedial Action Plan. The most comprehensive
 15 of those is provided as Attachment B of the--my 2010
 16 Report, and there is an image of it here.
 17 In this table, I have identified every site and
 18 every feature of that site as it was identified in the
 19 various Anexos to the Settlement Agreement.
 20 PRESIDENT VEEDER: Can you help us where we'd find
 21 it in Attachment B? I thought we saw it before, but I
 22 can't find it.
 23 ARBITRATOR GRIGERA NAÓN: It's at Table 2-B.
 24 THE WITNESS: Attachment B is the at end of that
 25 report.

02:23 1 the largest section of the table, which is "Pits With
 2 Oil-Closure." These are the pits that are specifically
 3 assigned to TexPet to be remediated via the eight-step
 4 process.
 5 Have I gotten too far ahead of you?
 6 Okay. You'll see a long list there.
 7 Going back to Ms. Renfroe's initial question, how
 8 would you know if Auca 1--is that the correct--
 9 Q. Yes. I asked you about Shushufindi 4 and Auca 1
 10 as just two examples from yesterday's questions.
 11 A. Okay. If you want to know if a specific pit at a
 12 specific site was assigned to TexPet for remediation, you
 13 would look at this particular section of the table.
 14 Looking at the top row there, for example, we see that the
 15 Aguarico 1 well site, Pit Number 1 is assigned for
 16 remediation. Going down that same column on that same
 17 page, you will see that the only sites in the Auca oilfield
 18 that are assigned to TexPet are Auca 5, Auca 7, and
 19 Auca 17, with specific pits at those locations. Auca 1 is
 20 not on this list and, therefore, not included in their work
 21 program. You will come to the same conclusion with regard
 22 to Shushufindi 4 well site, which is also not on the list
 23 of pits to be remediated.
 24 There are other pages to this document, to this
 25 table, that identify other pits that don't require closure

02:26 1 PRESIDENT VEEDER: Oh, at the end.
 2 THE WITNESS: Excuse me if I misstated that.
 3 MS. RENFROE: Attachment B to the 2010 Report.
 4 PRESIDENT VEEDER: Yeah.
 5 MS. RENFROE: Are you not finding it?
 6 PRESIDENT VEEDER: No. Come on. Find it.
 7 (Laughter.)
 8 (Comments off microphone.)
 9 PRESIDENT VEEDER: Oh. Ah, you might have told us
 10 that. Okay. Thank you very much. That's okay, don't
 11 worry. We will find it.
 12 MS. RENFROE: Apologies, Mr. President.
 13 PRESIDENT VEEDER: That's okay.
 14 MS. RENFROE: We will make sure you have it. It's
 15 a very useful table.
 16 BY MS. RENFROE:
 17 Q. All right. I would like to move to a different
 18 topic now that I think will be very quick and brief. And I
 19 would ask if our technical assistant can pull up C-1108 and
 20 distribute copies.
 21 Mr. Connor, you were asked a few questions a
 22 little while ago about the Pre-Inspection process, and you
 23 explained it. C-1108 is another pleading from the Lago
 24 Case, and this one submitted by Mr. Adolfo Callejas, who
 25 you had described earlier as counsel for Chevron in the

02:28 1 Lago Case.
 2 A. Correct.
 3 Q. All right. Now, if you look to the second page of
 4 C-1108, we see the application that Mr. Callejas has made
 5 to the Court regarding a Judicial Inspection for
 6 Shushufindi refinery.
 7 Do you see that, sir?
 8 A. Yes.
 9 Q. And do you also see that in the second paragraph
 10 Mr. Callejas is asking the Court to communicate with
 11 Petroindustrial to allow access to the refinery?
 12 A. Yes.
 13 Q. Do you see that, sir?
 14 A. Yes.
 15 Q. Let's see if we can highlight that. Yes, that
 16 paragraph, "in order that." Right. Let's highlight
 17 that--that paragraph.
 18 And then the next couple of paragraphs concerned
 19 the appointments of a Judicial Expert and a setting of the
 20 date for a Judicial Inspection.
 21 And then, if we move on to the next paragraph that
 22 starts "As requested", can you read that paragraph, please.
 23 A. "As requested, I ask that Petroindustrial in the
 24 person of its Vice President be served with an official
 25 letter at his offices located at calle Alpallana and

02:31 1 Q. And so, this exhibit we're looking at right now,
 2 C-1108, is an example of a request to the Court for that
 3 permission to do a Pre-Inspection?
 4 A. Yes.
 5 Q. All right. Now, I think I've got one last topic,
 6 and that is the issue of migration that was discussed--that
 7 you and Mr. Ewing covered yesterday in some detail. And I
 8 would like to ask our technical colleague if he can bring
 9 up Connor 2 and ask if you can turn to Tab 11 in the
 10 Respondent's binders--Tab 11, if you have that--which is
 11 the HBT Report.
 12 And specifically, we want to go to Page 8-25.
 13 A. Just give me a minute. These are--I need to
 14 shuffle binders here.
 15 Q. Of course.
 16 And for the convenience of the Tribunal, and you,
 17 Mr. Connor, we will hand out an excerpt of the HBT Report.
 18 It may be more convenient. But for those of you looking
 19 for it in the binder, it's Respondent's Tab 11.
 20 PRESIDENT VEEDER: Just for good order's sake,
 21 this is from the Defendant's Exhibit 310.
 22 MS. RENFROE: This is actually Connor 2. Both the
 23 Claimants and Respondents have this document in the record.
 24 You already have it in Respondent's Tab 11, but it is also
 25 C-13.

02:30 1 Avenida 6 de Diciembre in the City of Quito so that the
 2 necessary facilities might be provided, both to perform the
 3 judicial proceeding and so that the Parties may enter this
 4 petroleum facilities on days before the ones scheduled for
 5 the proceedings in order to do a Pre-Inspection, which is
 6 extremely important to our defense in this case."
 7 Q. So, this is an example of a--that you had
 8 mentioned earlier of requests to the Court for permission
 9 to do Pre-Inspections?
 10 A. Yes.
 11 Q. And, of course, these facilities were being
 12 operated and still are being operated by Petroecuador;
 13 correct?
 14 A. Correct. At that time they were being operated by
 15 Petroecuador.
 16 Q. And so, did you as a Judicial Inspection Expert,
 17 for example, did you have the right or the ability to
 18 access these facilities without approval and access being
 19 provided to you from representatives of Petroecuador?
 20 A. My understanding is that we needed permission to
 21 enter the properties. And when we arrived at a property,
 22 many of which are enclosed by fencing with a security
 23 representative, we would ask for permission. And there was
 24 usually a communication to either the Court or Petroecuador
 25 to allow us to enter the properties.

02:33 1 PRESIDENT VEEDER: C-13?
 2 MS. RENFROE: Yes, sir.
 3 BY MS. RENFROE:
 4 Q. And I'm directing you to Page 8-25.
 5 You recall--Mr. Connor, are you there?
 6 A. I am here.
 7 Q. Okay.
 8 (Laughter.)
 9 Q. You remember yesterday--
 10 A. Oh, you mean on the page? Oh. Sorry about that.
 11 Q. We're nearly done.
 12 You recall the discussion yesterday about the
 13 question of migration of material from pits?
 14 A. Yes.
 15 Q. And you explained to us, you spoke to us about the
 16 role of clayey soils and how it bears on migration of
 17 material from pits; you recall that discussion?
 18 A. Yes.
 19 Q. And you were asked to look at certain portions of
 20 the HBT Report, but I don't think you were asked to look at
 21 this provision, and so I would like to draw your attention
 22 now to--the language actually begins on Page 8-22, and it's
 23 Section 8.6, summary of impacts to the subsurface. And I
 24 think Mr. Ewing asked you about some of that, but now I
 25 want to take you to the provision he did not show you, and

02:35 1 that's on Page 8-25, starting with the paragraph "based on
 2 the results of our investigation."
 3 Do you see that, sir?
 4 A. Yes.
 5 Q. Okay. Can you tell us, can you--without
 6 necessarily reading every single sentence here, read the
 7 salient portions about what HBT had concluded, based on its
 8 investigation, its audit, of these facilities and based on
 9 the data that it had collected. Can you tell us what
 10 conclusion HBT drew about of migration of materials from
 11 the pits?
 12 A. Yes. And this was the text to which I referred in
 13 my discussion with Mr. Ewing yesterday, that the conclusion
 14 drawn by HBT based on the entirety of their investigation
 15 were that there was no significant evidence of subsurface
 16 contamination, or spreading away from the pits. And I will
 17 draw your attention to that first paragraph that says
 18 "based on the results of our investigation, we have found
 19 little evidence of significant subsurface contaminant
 20 migration beyond the boundaries of the production stations
 21 and well sites. At most sites, there was little evidence
 22 of contamination migrating beyond the margins of the 'high
 23 risk' features such as mud pits," and to go on to give more
 24 specific examples. At the end of that paragraph, they
 25 noted even at those cases where they had discovered oil on

02:38 1 they were unusual in my experience as well.
 2 The sum finding by HBT, by Fugro-McClelland, by
 3 all the work that was conducted in the JI and since is
 4 that, in fact, there is no significant migration from these
 5 pits, and the data are inconsistent in that regard.
 6 Q. Now I want to draw your attention to one last
 7 document, and--but to do that, let's return to your
 8 September 2010 Report, and specifically let's go to the
 9 section you wrote about the Fiscalía General's
 10 investigation, and I believe that begins--or at least the
 11 portion that I would like to take you to--is Page 76 of
 12 your 2010 Report.
 13 And I would also ask if we can distribute to the
 14 Witness and to the Tribunal C-591.
 15 And while that document is being handed out, can
 16 you explain to the Tribunal just very briefly the--you're
 17 talking here in this section of your Report about your
 18 evaluation of certain Environmental Experts' analyses of
 19 the Remedial Action Plan and how it was performed.
 20 A. That's correct.
 21 Q. Right. And I want to draw your attention
 22 specifically to the--to your comments and discussion about
 23 the report of Señor Narváez and Señor García, which you
 24 talk about at Page 76.
 25 Do you see that?

02:36 1 the surface of the water table, they found that that
 2 contamination diminished within few tenths of meters.
 3 This is an important observation, and that is
 4 consistent with our own findings, and it also speaks to the
 5 calculation of the Exxon Valdez impacts. I believe that
 6 Ecuador Experts have expressed a concern that oil has
 7 radiated out--is it's moved out radially from these pits.
 8 The observations that are reported here and in all of the
 9 reports and all the data collected since indicate that that
 10 is either--that that does not occur.
 11 There is also a statement in that second--in the
 12 next paragraph that vertical and lateral migration of these
 13 contaminants in the subsurface generally was found to be
 14 limited by the low to moderate hydraulic conductivity in
 15 the upper water table aquifers, the low permeability of the
 16 clays commonly encountered throughout the study area, and
 17 by the relatively low mobility of crude oil through the
 18 area's subsurface. They do note that minor movement can
 19 occur through fractures and root channels--we talked about
 20 that yesterday--but that is not a significant migration
 21 pathway on a larger scale.
 22 And then they noticed that there were some sites
 23 where there were permeable sand lenses present, and those
 24 were the most significant. But as indicated by their
 25 findings here, those are relatively unusual conditions and

02:40 1 A. Yes.
 2 Q. All right. And just to set the context for
 3 this--and I hope by now everybody's got a copy of C-591.
 4 Do you have it, sir? C-591?
 5 A. Yes, I do. Oh, C-591. Yes.
 6 Q. Right. All right. Let's make sure everybody's
 7 with us.
 8 So, very briefly, there was an investigation by
 9 the Office of the Attorney General of Ecuador into the
 10 performance of the Remedial Action Plan; is that correct?
 11 A. Yes.
 12 Q. And a number of different Environmental Experts
 13 were engaged by the Attorney General's Office to evaluate
 14 sites that had been remediated pursuant to the Remedial
 15 Action Plan?
 16 A. That's right. Several different persons over the
 17 course of several years.
 18 Q. And you discussed those, their reports, in your
 19 September 2010 Report.
 20 A. Correct.
 21 Q. And now specifically, let's look at the findings
 22 of one, actually two of those individual experts.
 23 And so, just for the record, we have on the screen
 24 C-591. And can you tell us what this is, please.
 25 MR. EWING: And actually, real quick, do you have

02:41 1 the Spanish for this?
 2 MS. RENFROE: I don't know.
 3 MR. EWING: I think there may be a mistranslation
 4 of the--which office of Ecuador is doing this, whether it's
 5 the Attorney General or the Prosecutor General, which, as
 6 we know, is--they are different.
 7 PRESIDENT VEEDER: We had this before, but does it
 8 matter for your question?
 9 MS. RENFROE: It does not matter for my question.
 10 MR. EWING: Thank you.
 11 BY MS. RENFROE:
 12 Q. So, my question to you, Mr. Connor: First, let's
 13 see if we can identify who these individuals are who have
 14 prepared this Report, that is C-591.
 15 A. Yes. This is an English translation of the report
 16 that I reviewed by Señor Narváez and Señor García which was
 17 issued in 2005, which documents their response to the
 18 request for investigation by the Controller General's
 19 office.
 20 Q. Of...
 21 A. Of Ecuador.
 22 Q. Okay. Now, you have reviewed their work and you
 23 now have their conclusions and--their Report and their
 24 conclusions in front of you.
 25 Can you turn to Page 10, the conclusions section

02:44 1 So the pits that they found that weren't
 2 remediated did correspond to the rationale for their
 3 exclusion in the RAP document. And at those sites where
 4 they observed hydrocarbons to be present, regardless of
 5 whether that was a RAP or a non-RAP feature, they found
 6 that the impermeability of the soil prevented any spreading
 7 or environmental impact associated with that hydrocarbon
 8 presence. Again, that's consistent with my own
 9 observations and those of the other experts involved in
 10 this case.
 11 Q. And I should have drawn your attention to
 12 Section 6.2 of their conclusions regarding the role of the
 13 clay.
 14 A. Yes.
 15 It's an interesting statement. That the--I will
 16 just read that--"that the only environmental parameter
 17 capable of providing an historical view of what happened is
 18 the subsoil quality, which having been confined by the
 19 clayey soils, has remained practically unchanged at the
 20 bottom of the former pits."
 21 What they mean by that is that the soils are the
 22 same as they always have been, and the material that's in
 23 the soil--in the pits--has not moved.
 24 Q. And then finally, their conclusion, 6.7, my
 25 question to you, sir, is: Is this consistent with your own

02:42 1 of their Report.
 2 A. Yes.
 3 Q. And before we review these conclusions, can you
 4 tell us briefly your understanding of what they did to
 5 investigate the efficacy of the remedial action work done
 6 by TexPet.
 7 A. Mr. Narváez and Mr. García investigated 130
 8 different well sites to compare their observations to the
 9 specifications of the RAP to determine if the site
 10 conditions were consistent with faithful completion of the
 11 RAP, and their findings were that was the case. They also
 12 took samples from those pits and found that they were
 13 consistent with the criteria of the RAP. So, it was a very
 14 thorough investigation that they conducted.
 15 Q. So, on the question of clay and migration from the
 16 pits and the efficacy of the remediation work done by
 17 TexPet, can you look at conclusions 6.6 and 6.7 and tell us
 18 what these two Environmental Experts concluded?
 19 A. In 6.6, they found that 81 pits observed at the
 20 site were--corresponded to those that were excluded from
 21 remediation requirements in the TexPet RAP. Those pits
 22 that were excluded were given designations of NFA, meaning
 23 no further action, or COC, meaning change of condition.
 24 The significance of those is explained in the RAP, but I
 25 won't repeat that.

02:45 1 conclusions, and can you explain that?
 2 A. Yes. I will read it for the benefit of the
 3 record. It states: "At the sites where the presence of
 4 hydrocarbons was detected, the impact to the subsoil is
 5 localized, permanent and irreversible. However, due to the
 6 impermeability of the clay, said impact is confined and
 7 does not affect underground water quality or the wildlife
 8 in the surrounding area." That again confirms the
 9 appropriate remediation of the sites and--that were
 10 assigned to TexPet, and even for those sites that were not
 11 assigned to TexPet, these gentlemen conclude, consistent
 12 with my own conclusion, that the remnants of the
 13 hydrocarbon do not pose a threat to underground water or to
 14 wildlife in that area.
 15 Q. Now, is it your understanding that these findings
 16 were made by these Environmental Experts on behalf of the
 17 Controller General's office of Ecuador before the Judgment
 18 was issued?
 19 A. Yes. This Report, if I remember correctly, was
 20 issued in 2005.
 21 Q. Right.
 22 MS. RENFROE: Thank you, Mr. Connor. I have no
 23 further questions.
 24 THE WITNESS: Thank you.
 25 PRESIDENT VEEDER: Thank you very much,

02:47 1 Mr. Connor. We have come to the end of your testimony. We
2 thank you for coming here to assist the Tribunal. You may
3 leave the table.
4 THE WITNESS: Thank you very much, and thank you
5 to the representatives of Ecuador as well.
6 (Witness steps down.)
7 MR. EWING: If we could have just a short break to
8 change seats.
9 PRESIDENT VEEDER: Just wait a second. We may
10 need a longer break, for reasons I'll explain.
11 MR. EWING: Okay.
12 PRESIDENT VEEDER: Five minutes? Ten minutes?
13 MR. EWING: Five or ten minutes?
14 PRESIDENT VEEDER: Five minutes.
15 MR. WHITE: Mr. Veeder, before we do that, there
16 is one issue, if I may, I would just like to raise on the
17 logistical front, and it has to do with the forensic
18 expert, Mr. Lynch.
19 PRESIDENT VEEDER: Yes.
20 MR. WHITE: At the conclusion of his testimony, I
21 think he was given an indication that he might be needed
22 again, and I believe that Ms. Owen has left.
23 Mr. Lynch is happy to stay as long as he's needed
24 or to leave and be available to come back. It's just if he
25 leaves, he would need a little bit of notice to get back

02:48 1 because he would have to travel.
2 PRESIDENT VEEDER: Excuse me. I didn't mean that
3 he should stay, and I'm sorry if he stayed unnecessarily--
4 MR. WHITE: No, no, no. We asked him to stay as
5 long as Ms. Owen was here.
6 PRESIDENT VEEDER: No, he can leave. It's just
7 that we have a potential proposal to make, but we're far
8 from making it. Where in the future we may want to see him
9 again, but not for now.
10 MR. WHITE: Understood. Thank you.
11 PRESIDENT VEEDER: Thank you for raising it. Five
12 minutes.
13 (Brief recess.)
14 GREGORY S. DOUGLAS, CLAIMANTS' WITNESS, CALLED
15 MR. BISHOP: Mr. President, my partner, Carol Wood
16 in our Environmental Group is going to put on the next
17 witness.
18 PRESIDENT VEEDER: Thank you very much.
19 We'll just have the Witness sworn.
20 Mr. Douglas, if you could state your full name and
21 if you're willing, read out the words of the Declaration on
22 the piece of paper which you're holding.
23 THE WITNESS: My name is Gregory Scott Douglas,
24 and I solemnly declare upon my honor and conscience that I
25 shall speak the truth, the whole truth, and nothing but the

03:07 1 truth, and that my statement will be in accordance with my
2 sincere belief.
3 PRESIDENT VEEDER: Thank you very much.
4 You've probably heard this before if you were
5 sitting in the back of the room, but everything you say is
6 being transcribed, so it's important not to speak too
7 quickly, but even more so in this case because everything
8 is being translated into Spanish and then transcribed, so
9 we need to leave a gap between the question and the answer.
10 THE WITNESS: And the additional problem is I'm
11 from New England, we park our cars, so when I say pattern,
12 I'm probably saying patent for the translator. I say
13 pattern all the time instead of patent.
14 PRESIDENT VEEDER: On the other hands, New
15 Englanders are very taciturn.
16 MS. WOOD: Thank you very much, Mr. President,
17 Members of the Tribunal. I just have a few questions for
18 Dr. Douglas, and then he is going to present his direct
19 testimony in a presentation to the Tribunal.
20 DIRECT EXAMINATION
21 BY MS. WOOD:
22 Q. Good afternoon, Dr. Douglas.
23 A. Good afternoon.
24 Q. How many reports have you authored for this BIT
25 proceeding?

03:08 1 A. I've authored three reports.
2 Q. Okay. And the dates of those are September 3rd,
3 2010; June 1, 2013; and January 14, 2015; is that correct?
4 A. Yes.
5 Q. And I believe you have those in front of you?
6 A. Yes, I do.
7 Q. Okay. Do you have any corrections to make to
8 those Reports?
9 A. No, I do not.
10 Q. Just very briefly, if you would describe to the
11 Tribunal what the general subject matter is of your direct
12 testimony today?
13 A. Of course. Today I will be discussing petroleum
14 analytical issues as they relate to the collection,
15 interpretation, and analysis of environmental data in the
16 Oriente.
17 MS. WOOD: With your permission, Mr. President,
18 Dr. Douglas would proceed with his presentation.
19 PRESIDENT VEEDER: Certainly.
20 MS. WOOD: Thank you.
21 THE WITNESS: Thank you.
22 My name is, of course, Gregory Douglas, and I'm a
23 partner at New Fields Environmental Forensics Practice. I
24 have more than 30 years of experience in environmental
25 chemistry, and focusing on petroleum analytical chemistry

03:09 1 and petroleum biodegradation in the environment.
 2 I'm a hands-on person. I have hands-on experience
 3 working in and managing petroleum analytical laboratories
 4 over the past 30 years, so I'm very familiar with the
 5 analytical methods that I'll be talking to you about today.
 6 I've worked on more than 20 oil spills worldwide
 7 from the Exxon Valdez to the current Deepwater Horizon in
 8 the Gulf of Mexico, where I'm a forensics expert for the
 9 National Oceanographic and Atmospheric Administration.
 10 I've testified at the United Nations regarding
 11 petroleum chemistry for the largest oil spill in history.
 12 I'm also working for the United States Environmental
 13 Protection Agency on the Kalamazoo River oil spill in
 14 Michigan.
 15 I routinely publish my work, and I have over 40
 16 peer-reviewed publications and book chapters on petroleum
 17 analytical chemistry.
 18 And in addition, the work that I've done in the
 19 Oriente with regards to biodegradation has also been
 20 published in the peer-reviewed literature as well, for your
 21 review.
 22 I'm not new to this project. I have been working
 23 on this project since 2004, and during the course of that
 24 period I have produced and generated a number of research
 25 papers and technical papers, and these are just a few here,

03:12 1 biodegrade a lot and some will not, so the purpose of that
 2 laboratory study was to determine the biodegradation
 3 potential.
 4 The second study was where we collected river
 5 water from Ecuador and simply mixed it with produced water
 6 under natural conditions and to see how the hydrocarbons
 7 within the produced water would degrade, and they degraded
 8 relatively rapidly, so that's another study that I
 9 performed with produced water.
 10 And finally, we performed more than 40 JI studies
 11 where I examined field samples that were collected under
 12 ambient conditions and evaluated how degraded they were
 13 from the field, which is actually the best way to evaluate
 14 how much biodegradation has occurred in the environment.
 15 In addition to these biodegradation studies, I've examined
 16 degraded crude oil and compared it to asphaltic materials,
 17 which is the end product of the biodegradation process.
 18 I've also worked extensively on evaluating the impact of
 19 plant matter and its effect on the various analytical
 20 methods that we're talking about today.
 21 The next slide is a summary of my key opinions,
 22 many of which I will discuss today in the course of my
 23 presentation. I'm not going to focus on these, so I can
 24 spend most of my time on specific analytical key issues
 25 relating to chemistry of Oriente crude oil. In order to do

03:11 1 but some of the important ones include the measurement of
 2 the chemical compounds that are present in Oriente crude
 3 oil.
 4 In addition, I have done a lot of work on
 5 measuring biodegradation and oil-impacted soils and
 6 sediments at over 40 JI sites and in produced water using
 7 Ecuadorian conditions.
 8 Just a minute if I could to talk to you about
 9 biodegradation.
 10 First of all, biodegradation doesn't occur
 11 overnight. It takes time, it can take months and years in
 12 order to occur, so I just want to make sure that we don't
 13 think that biodegradation is such a rapid process. But it
 14 does occur, and it occurs constantly.
 15 I performed three types of biodegradation studies
 16 for this program. The first biodegradation study was a
 17 laboratory study, and what we did is we mixed crude oil,
 18 Ecuadorian crude oil, with nutrients and bacteria that was
 19 cultured from Ecuadorian soils, and then monitored this
 20 biodegradation at 30 degrees centigrade.
 21 And the purpose of this study, this laboratory
 22 study, was simply to determine the biodegradation potential
 23 of the oil. So, for example, what's the maximum
 24 biodegradation I could get in this particular oil because
 25 oils vary, depending on their composition. Some oils will

03:14 1 that, the first thing we need to understand is what is
 2 crude oil? It sounds like a very simple question, but it's
 3 more complex than you might think. In fact, we're still
 4 studying crude oil today.
 5 Now, crude oil is a complex mixture, okay? It's
 6 derived from natural material from plants and animal
 7 remains. Now, what happens is the crude oil is not just
 8 plant and animal material. What it is, is when these
 9 plants and animals die, they deposit into anoxic basins or
 10 basins in the ocean, and then over time, temperature and
 11 pressure, these plant materials change and are altered into
 12 what we call hydrocarbons, and those are molecules which
 13 contain a carbon molecule and a hydrogen molecule, so
 14 they're called hydrocarbons.
 15 Now, it is a natural product and, therefore, as a
 16 natural product, it will biodegrade in the environment or
 17 break down, which is a good thing with respect--as compared
 18 to synthetic chemicals that maybe never break down in the
 19 environment. So, crude oil is one of those products that
 20 can actually break down naturally within the environment.
 21 When we talk about crude oil, we break it down
 22 into four distinct chemical groups, and I'm going to
 23 discuss those here.
 24 This is a barrel of crude oil Oriente. I measured
 25 nine different production oils, and this represents an

03:15 1 average value, and what I want to walk you through is the
2 composition of this.
3 What we have here is about 80 percent of a barrel
4 of crude oil. It's composed of saturate and aromatic
5 hydrocarbons, and within those saturate and aromatic
6 hydrocarbons called petroleum hydrocarbons, we measure
7 different ranges, and you've heard many of those ranges
8 discussed today. One of those ranges that you're familiar
9 with is probably the GRO range, and this represents those
10 light hydrocarbons that are present in the petroleum like
11 gasoline range organics. That's where you measure the BTEX
12 compounds, and the range is generally a carbon range from
13 C6 to C10.
14 Now, what does C6 to C10 really mean? That means
15 we've got six carbon molecules attached to each other
16 that's C6. And for C10 you might have ten carbon molecules
17 attached to each other. So, the ones with the six are
18 lighter and more volatile. The ones with the ten are
19 heavier and less volatile. And generally as you increase
20 the number of carbons, the degradation of those materials
21 becomes more difficult.
22 In addition to the GRO, analysis, we have a
23 DRO-range material from which you find Polycyclic Aromatic
24 Hydrocarbons, which are those toxic compounds that have
25 been identified by the United States Environmental

03:17 1 Protection Agency as compounds of concern. We measure a
2 number of other petroleum compounds as well called alkanes
3 and biomarkers, which I'll talk to you about later, but
4 they are compounds useful for forensics analysis.
5 Now, within the DRO, you've heard many different
6 ranges discussed, and I just want to walk you through
7 those. And whenever you talk about TPH and measurements or
8 TPH measurements, you need to know what method we're
9 referring to, because the results that you get are highly
10 method-dependent.
11 So, in this case for DRO, there is the C10 to C28
12 carbon range, and that's the carbon range that was
13 specified in the Lago Agrio Court audit and analytical
14 plan. There is C10 to C35 carbon range, which is something
15 like a method called Texas 1006 or EPH methodology, and
16 that is a method that was used on this program by Chevron
17 as well. And then there is the C10 to C44 carbon range,
18 which are a much broader range which I used in my
19 biodegradation studies.
20 So, that represents pretty much an overview of
21 what hydrocarbons are and the ranges that we're working
22 with.
23 In addition to the hydrocarbons in a barrel of
24 oil, you have a group of compounds called resins and
25 asphaltene. Now, these are asphaltic materials, and

03:18 1 they're not total petroleum hydrocarbons. And, in fact,
2 these very heavy materials are what we use to make
3 highways, so they're fairly--they're not very mobile,
4 they're very viscous. In fact, asphaltene are actually
5 solids, and they're not considered to be an important
6 environmental contaminant.
7 Now, what happens to oil? The next question is
8 what happens to the oil once it's released into the
9 environment? And that's an important issue here. With
10 regard to fresh crude oil, what I have in front of you is
11 what's called a GC/FID chromatogram. And what this
12 chromatogram represents is a fingerprint of the
13 hydrocarbons that are present in any particular sample.
14 Okay? So, on the left you see the yellow range. That's
15 represents what's called the GRO range. In the middle in
16 the green, it represents the DRO range, C10 to C28 in that
17 case, and then in the blue range, that represents the C28
18 plus range.
19 So, you can see basically, number one, what kind
20 of material you have and how weathered or degraded it is.
21 Now, below that, what you have is just an example
22 of biodegraded crude oil, and on the left again you can see
23 the GRO range is very depleted, the DRO range is heavily
24 biodegraded, and what happens is that you see an
25 apparent--it's not an increase. What it is, what it

03:20 1 represents is what's left. It's not like you're increasing
2 the C28-plus components, but those are the components that
3 are most residual to degradation. So, they're what's left
4 after you degrade the GRO and the DRO range components.
5 Now, biodegradation is a very important part of
6 oil spill remediation. And, in general, biodegradation
7 decreases TPH concentrations, toxicity, and mobility, and
8 what you end up with a successful biodegradation program is
9 material the residual of which is viscous and immobile.
10 Next, I'll talk to you about what analytical
11 methods most accurately measure crude oil or TPH in the
12 environment. I want to point out that there's a big
13 difference between TPH and total oil. As I discussed back
14 here, total oil represents the complete barrel. It
15 includes the saturate and aromatic hydrocarbons as well as
16 the resins and asphaltene. TPH includes only the Total
17 Petroleum Hydrocarbons. Now, several methods have been
18 used with regards to the Oriente program, and I'm going to
19 walk you through those methods and talk to you about some
20 of the applications and limitations of those methods in
21 terms of their reliability and usefulness to interpret
22 environmental data. We start with the bulk screening
23 methods, and these are called, like total extractible
24 material. Now, what is a TEM analysis? A TEM analysis is
25 an analysis where you take a fairly aggressive solvent,

03:22 1 like it's called methylene chloride. It's very commonly
 2 used in this field, and you extract the soil or sediment,
 3 and you pull all the carbon molecules that are in that
 4 sample into your extract. You then evaporate that extract
 5 to a very small volume and weigh that residue that you get
 6 with a gravimetric method, and then you get a number.
 7 But the problem is you can't confirm the contents.
 8 You don't know what you have, especially in the Oriente
 9 where those carbon molecules could include not only
 10 petroleum, but lots of plant material, humic acids, fulvic
 11 acids, sulfur compounds--I can go on--the list is endless,
 12 so you need to be able to use a chemical method that you
 13 can identify what's in that sample in order for it to be
 14 accurate and reliable.
 15 So the TEM method also extracts asphaltenes and
 16 resins, and it's prone to substantial interferences with
 17 naturally occurring plant matter, which is a big problem in
 18 the Oriente because we have lots of plant material here.
 19 So, basically, the reason I'm bringing this issue up is
 20 that Ecuador's experts say that the TEM measurement itself
 21 is the best method to provide results for Total Petroleum
 22 Hydrocarbons, but, in fact, that method measures not only
 23 the petroleum hydrocarbons, but the resins, the
 24 asphaltenes, and as you will see later, more important, the
 25 plant material that's present in many of these sediments

03:25 1 carbon ranges for which to measure for this program, in
 2 this case the hydrocarbon range from six to 12 as the GRO
 3 component and the hydrocarbons from C-12 to 28 as the DRO
 4 component. And these are the methods that Chevron relied
 5 on for doing their JI studies. And basically they're
 6 illustrated here in the remaining pyramid. As we move down
 7 the pyramid to EPA Method 8015, that method is used to
 8 identify carbon ranges. That method provides us with a TPH
 9 value and it represents the results of a GC/FID analysis
 10 after an extraction. So you extract, again, using an
 11 aggressive solvent and then analyze your sample on an
 12 instrument that provides a fingerprint of your sample, like
 13 the fingerprint I showed you earlier for those crude oils
 14 and degraded oils.
 15 Now, the real advantage of the GC/FID method,
 16 which is basically the work horse of oilfield studies is
 17 that you can actually confirm the contents of your sample,
 18 so, that way if you have interferences, you have plant
 19 material, you have petroleum, or you have weathered
 20 petroleum, you can simply look at those fingerprints and
 21 identify it, and incorporate that into the interpretation
 22 of the data that you'll end up--because you're going to use
 23 this information.
 24 As we move further down to a more even refined
 25 methodology, we have what's called EPH methods and Texas

03:23 1 and soil samples.
 2 The next bulk-screening method I will talk to you
 3 about is EPA Method 418.1, and this is another method where
 4 you use a solvent to extract your material, hydrocarbons,
 5 plant material, whatever else is extractable by the
 6 solvent, and then concentrate it down and analyze it by
 7 infrared. Again, all you get is a value. It's a number.
 8 You don't know what it is. You can't confirm the contents.
 9 It extracts non-petroleum hydrocarbons and it's also
 10 subject to plant matter interferences. In fact, I
 11 published a paper on these problems and applications and
 12 limitations exactly what I'm saying today back in 1992, so
 13 we knew--this was a commonly observed problem with this
 14 particular method.
 15 Now, what does the Lago Agrio Court ordered
 16 analytical plan say about EPA Method 418.1? What the plan
 17 says is that Method 418.1 is also likely to obtain false
 18 positive detections for non-petroleum sources likely to be
 19 present in the Oriente Region. And this is totally
 20 consistent with the literature, and there are many, many
 21 publications which document this problem and the problem of
 22 false positives.
 23 In contrast, Method 8015 has been shown to provide
 24 reliable and reproducible results. Now, not only does it
 25 recommend the 8015 method but it provides us with the

03:26 1 1006 methods. Now, what this method does is it takes the
 2 results similar to 8015 and then fractionates the
 3 hydrocarbons into two separate groups, those aromatic
 4 fractions which are considered to be more toxic in the
 5 environment and the aliphatic fractions which are also of
 6 potential concern.
 7 And then carbon ranges can be determined from each
 8 one of those fractions, and they're run by GC, so you
 9 actually get two fingerprints for your analysis which gives
 10 you even more information in terms of what's in your
 11 sample, therefore you can confirm the contents of the
 12 analysis that you performed.
 13 And as I mentioned, you refine the carbon ranges
 14 into saturate hydrocarbons and aromatic hydrocarbons, this
 15 information can be used by regulators to calculate
 16 risk-based screening levels at petroleum sites. And
 17 because of the cleanup step, it captures the least amount
 18 of plant materials.
 19 Finally, and, of course, this is my favorite
 20 method, individual compound analysis. We've got EPA Method
 21 8260 which is a GC/MS method, which is a superior detector
 22 system in that not only can you quantify a specific
 23 compound, but you can actually identify that compound as
 24 well. 8260 is for volatile components such as
 25 BTEX--benzene, toluene. These methods are very useful

03:28 1 especially when you're working in petroleum because
 2 petroleum is a complex mixture and you need a very specific
 3 detector in order to identify that peak without a problem.
 4 We also have an 8270 method which is used as a
 5 GC/MS method, and that's used for the identification of
 6 Polycyclic Aromatic Hydrocarbons, such as the 16 priority
 7 pollutant PAHs that have been identified as compounds of
 8 concern.
 9 Wow. Okay, so here we get into the interesting
 10 stuff. Now that we understand the analytical methods.
 11 Well, what do we do with these results? Do we just put
 12 them in a report? At the back of an appendix? Do we use
 13 them? What I do is interpret data, and that's pretty much
 14 what I do full time.
 15 Now, when you look at this chromatogram, as you
 16 know on the left, this is a GC chromatogram, and it
 17 provides you with a fingerprint of the hydrocarbons that
 18 are in your sample. So, the left one is a fingerprint of a
 19 crude oil, and you can tell that by characteristic features
 20 such as the hump that you see here--this is called the
 21 unresolved complex mixture, and the envelope of normal
 22 alkanes and isoalkanes that are present.
 23 Now, what happens is when the oil degrades in the
 24 environment, these compounds degrade first, so they will be
 25 removed and all you will see is the hump.

03:29 1 Now, in addition, plant matter has a similar
 2 fingerprint, not like crude oil, but it has its own
 3 characteristic fingerprint. This is the typical
 4 distribution of plant matter, and what it shows you is that
 5 when you see this fingerprint, you should be able to tell
 6 yourselves we've got plant matter in this sample.
 7 Now, what you're seeing there, those peaks,
 8 represent plant waxes such as--and plants tend to produce
 9 not just the homologous group of waxes, like an envelope,
 10 plants like to produce odd-chained alkanes as well, so they
 11 like to produce C-27, 29, 31, 33. So that's how we
 12 identify plant waxes from petroleum because there isn't
 13 that kind of discrimination in petroleum.
 14 Another point is that the GC/FID is not capable of
 15 detecting all of the plant matter that's in a sample, and
 16 I'm going to show you that later. It's been claimed that
 17 all of the plant matter present in this sample is, in fact,
 18 detected by a GC, but that's proven time and time again in
 19 the literature as well as my own reports, where this only
 20 reflects a small fraction of the plant matter that's
 21 present in your sample.
 22 So, what this does is it's an indicator of plant
 23 matter.
 24 How do we know that? Let's look at an example.
 25 Shushufindi 55, SE-009, in that case, total

03:31 1 extractable material--now, that's everything--is
 2 23,000-milligrams per kilogram. TPH, for that analysis,
 3 using the Ecuador's laboratories full range DRO analysis or
 4 full range TPH analysis.
 5 The TPH result is 9700-milligrams per kilogram.
 6 It's about half of what you're seeing in the TEM, and
 7 that's reasonable with regards to the way the GC/FID system
 8 works, so it's from a chemical reasonableness perspective,
 9 it makes sense that you would have about half or so of the
 10 material detected by GC for crude oil.
 11 Now, to confirm that that's a crude oil, we use a
 12 group of compounds called biomarkers. Biomarkers are these
 13 compounds that are characteristic of the oil itself, so
 14 when the oil is in a--and they vary from oil to oil and
 15 where the oil is produced, but they're very useful for
 16 biodegradation studies but also to identify that when you
 17 find biomarkers you find oil, so a good way to identify the
 18 presence of oil is with the biomarkers. Now, they don't
 19 tell you how much oil is in that sample. They only tell
 20 you that oil is present. So it's quite possible to have
 21 biomarkers with only 1 percent oil in a sample in a TEM
 22 result or even much more.
 23 Now, with the plant material, we have
 24 Shushufindi 13, SE-002, the TEM is equivalent to that of
 25 that crude oil sample. Now, the TPH for that sample is

03:33 1 only 23-milligrams per kilogram, it's very low, and is not
 2 a reasonable result for a TPH measurement. If that was
 3 truly 26,000-milligrams per kilogram, you would expect much
 4 greater values of TPH by GC/FID. So then what you do is
 5 you can then compare the biomarkers in that sample, and as
 6 you can see there are no biomarkers; therefore, there is no
 7 oil. And the point being here is that all of this TEM is
 8 in fact plant matter, and that the 23 only represents a
 9 very small fraction, it's the small fraction of that plant
 10 matter.
 11 How do we know there was plant matter in these
 12 samples? Well, the laboratory prepares preparation
 13 records, and in those records they include observations.
 14 So, for example, in many of these sediment and soil
 15 samples, we see that comments like these samples had too
 16 many fine roots to remove or in the case of the sample I
 17 just showed you, Shushufindi 13, SE-002, this is defined as
 18 a liquidy brown solid with vegetation. So, we have
 19 confirmation there was vegetation in those samples, and we
 20 can identify it using the GC/FID approach.
 21 Here are some examples of samples, so this isn't
 22 just an isolated situation. These represent a variety of
 23 samples, you can see a range of TEM results here and a
 24 range of TPH concentrations as reported by the full TPH
 25 range recorded by Chevron's laboratory. And you can see

03:34 1 the percent of TPHe to TEM. And what this indicates is
 2 that this is not 100 percent crude oil, these samples.
 3 There may be some in here, but it's certainly not
 4 100 percent. And that's why it's important to look at
 5 those biomarker compounds.
 6 Ecuador's Experts argue that if you find
 7 biomarkers in your sample, then the TEM represents
 8 100 percent TPH, and I can tell you quite honestly that is
 9 just contrary to prior work that I have done and contrary
 10 to the data that we see here.
 11 Okay, so that's the problem with plant matter
 12 because the methods they are using are impacted with plant
 13 matter to a degree that require additional interpretation
 14 whenever you try to use a TPH number, and it's particularly
 15 a problem here in the Oriente just because of the biomass
 16 that's present in these samples.
 17 So the next issue is--are called blank samples,
 18 and I'm going to talk to you about blank samples and why
 19 blank samples are important when interpreting analytical
 20 data.
 21 First of all, how many people know what a blank
 22 is? Blank samples are known clean samples, they are used
 23 as quality control measures by laboratories. Okay? So,
 24 for example there's two blank samples I will talk about
 25 today, there's a blank called the field blank, and a field

03:37 1 generated with those analytical results.
 2 The next question is, well, what do you do with
 3 the blank? Well, we stick it in the back of the Report and
 4 ignore it. No. What you do with the blank is you then
 5 evaluate the blank relative to your field samples. Okay?
 6 The idea is that you want to determine if the blank is a
 7 major contributor of the contamination that you're finding
 8 in the field samples.
 9 How do we do that? We have standard methods for
 10 doing this. It's called the 5X Rule, and it says that
 11 sample results must be greater than five times, and in some
 12 instances ten times, the compound found in the blank for
 13 the sample to be reliable and reported as a positive
 14 finding.
 15 Now, is this some new technique or some new
 16 approach? No, this is standard practice, been using it for
 17 decades. It's defined in USEPA National Functional
 18 Guidelines for Organic Data Review. It's also identified
 19 within LBG's own validator report, and it's also identified
 20 in LBG's own laboratory's standard operating procedures.
 21 So there's no question that using this approach is a
 22 reasonable approach to compare blanks.
 23 But as a chemist, I always start off with the raw
 24 data, so the first thing I do is I take the results that
 25 were interpreted--for example, this sample was identified

03:36 1 blank means that you take your clean material--could be
 2 clean sand, it could be clean water like distilled water,
 3 and you take it out into the field, and you handle it in
 4 the same way you handle your analytical samples, your field
 5 samples. So you have a blank, and you collect it, and you
 6 would handle it, and you would bring it back to the lab,
 7 and it reflects any contaminants that you may introduce as
 8 a part of the collection process, and that's called a field
 9 blank.
 10 We also have laboratory blanks, and a laboratory
 11 blank is when you have a clean sample--in this case
 12 distilled water--and you process it with all the field
 13 samples that you have collected, and it will pick up any
 14 contaminants that are introduced by the laboratory. Now,
 15 laboratories run many kinds of samples through all this
 16 glassware and equipment and all sorts of things that they
 17 have to do. I mean, it could be--the sample could be
 18 touched 50 times when you process a sample.
 19 So, there's many places in the solvents, syringes
 20 and handling where you could introduce some low level
 21 contamination.
 22 So, what happens is the blank is passed through
 23 the laboratory and analyzed for the targets of concern, in
 24 this case I will be talking about the Polycyclic Aromatic
 25 Hydrocarbons. And then it's analyzed, and a report is

03:39 1 as containing a low level petroleum contamination, and I
 2 want to make that point perfectly clear. We're talking
 3 about problems with low levels of petroleum contamination
 4 here that have been interpreted to indicate that petroleum
 5 is present when maybe it isn't. Maybe it is. But in this
 6 case, what you can see is the concentration of those--I'm
 7 sorry--the concentration of those contaminants within that
 8 sample Shushufindi SW-008 versus PAH concentration at
 9 nanograms per liter. Nanograms per liter is parts per
 10 trillion. It's very small. And these bars represent the
 11 relative concentrations of those target compounds, those
 12 target PAHs.
 13 So, the next step, once you have this result, you
 14 compare it to your blank, and that's called your laboratory
 15 blank. Now, the blue bars represent the laboratory blank,
 16 and you can see in this case up here, the laboratory blank
 17 actually exceeds the concentration that's present in your
 18 sample. The only conclusion you can make is that certainly
 19 there is a blank issue with regards to that target compound
 20 because the laboratory blank is actually the same as your
 21 field sample. In some cases they're almost identical. If
 22 you look at the C4 phenanthrenes you will see they're
 23 one-to-one.
 24 Now what about laboratory blanks that are only a
 25 fraction of your sample? Well, that's why we use the five

03:40 1 times rule, and let me show you how that works.
 2 The five times rule means that the field sample
 3 must be five times greater than the blank concentration in
 4 order to be used or be deemed reliable. So, you wouldn't
 5 want to interpret data that failed the five times rule
 6 because it would be unreliable and untrustworthy. So, what
 7 you happens is, you can see here, the 5X represents the
 8 range for the five times rule for that particular blank,
 9 and that sample would have to be reported at 14 nanograms
 10 per liter in order to be considered even reliable for use
 11 in any interpretive purposes.
 12 Next, we look at the field blanks, and in this
 13 case you can see, in some cases the--oops, I'm sorry--the
 14 field blanks exceed the method--the laboratory blanks, but
 15 generally the field blanks follow the laboratory blanks.
 16 And that's because the biggest source of contamination in
 17 these samples is the laboratory itself, so the laboratory
 18 blanks are the primary blanks of concern here.
 19 Now, with water samples, it's very simple to
 20 compare the various samples with the laboratory blanks.
 21 For example, waters are analyzed generally at one liter
 22 volumes. So, in order to make a comparison between blanks
 23 and samples, you have to have the same volumes for that
 24 comparison. The same weights, too, but that's another
 25 story. But here it's very simple to do. You can do it

03:43 1 a soil sample, LA-16 SL002, and this was interpreted by
 2 Chevron's experts as indicating low levels of petroleum
 3 contamination. When they did that, they didn't normalize
 4 the blank for that purpose. And you've got on the left
 5 scale the PAH concentration and nanograms--micrograms per
 6 kilogram, and then you've got the same list of PAHs on the
 7 bottom scale.
 8 Now, I'm using PAHs because PAHs are probably the
 9 primary tool that we use to identify petroleum at low
 10 concentrations because the methods are just so sensitive.
 11 If done properly, you can actually use these to fingerprint
 12 your sample, and they're very reliable and it's pretty much
 13 a standard approach. And this is the approach that was
 14 used by Ecuador's Experts.
 15 But what you can see, now that you understand the
 16 relationship between the red bar, which is the field
 17 sample, and the laboratory blank, that more than 90 percent
 18 of these compounds fail the five times rule.
 19 Most laboratories would reject the sample if it,
 20 in fact, only had a couple of compounds that failed the
 21 criteria, two or three compounds. In this case, we've got
 22 90 percent or more of the compounds failing the 5X rule.
 23 Therefore, this soil sample is not a petroleum impacted
 24 field sample when compared to the laboratory blank.
 25 Indeed, the TPH value is not detect. And then the next

03:42 1 graphically and you can do it through the data validation
 2 process as well.
 3 But you can see that this sample is totally
 4 rejected as being a valid result, and is totally
 5 untrustworthy for any kind of interpretive usage. And, in
 6 fact, it should have been re-extracted and reanalyzed under
 7 clean conditions.
 8 Now, soils are a little different. In some cases,
 9 soils are measured at different weights. So, we have a
 10 sample that is a--one weight and different from the blank
 11 weight, and under the national functional guidelines,
 12 blanks may not involve the same weights, volumes, or
 13 dilution factors, and this must be taken into consideration
 14 when applying the 5X or 10X criteria.
 15 So, they must be basically normalized. If you do
 16 not normalize your blank, you basically would be diluting
 17 your blank, and you would always pass the five times rule
 18 because you'd be diluting the blank from the laboratory.
 19 So, for example, the laboratory releases so much
 20 contamination into both samples and in one sample you're
 21 dividing by one gram and in another sample you divide it by
 22 ten. So, you're basically diluting your blank for
 23 comparison. So, they have to be normalized for direct
 24 comparison.
 25 Now, why is this important? Here is an example of

03:45 1 question is well, what is the TEM? I believe that's plant
 2 matter.
 3 This isn't a new problem. This problem was
 4 identified by the laboratory that performed the work back
 5 in 2013. They recognized that they had a chronic petroleum
 6 contamination issue that was moving through the whole
 7 laboratory. And despite cleaning activities and following
 8 standard operating procedures, the laboratory blanks
 9 remained elevated. So, they had a chronic petroleum
 10 contamination problem they needed to deal with. And we see
 11 that in the blanks when we look at the data,
 12 for--especially for surface water data--when we look at
 13 that data we find those problems.
 14 Now, why is--why are blanks important? Blanks are
 15 important because you need to consider those blanks before
 16 you interpret the data. Now, in addition to doing their
 17 own validation at the laboratory, Ecuador's Experts had a
 18 data validator review the laboratory data as well, and
 19 these are the results in blue--I'm sorry--of the results
 20 that you would get prior to validation.
 21 Now, the red bar--the yellow bar, I'm sorry--for
 22 those who are color blind, those are red--the red bars
 23 represent the PAH distribution that is, in fact, validated
 24 and is a reliable value, okay? And what you see here is,
 25 instead of petroleum, you see a combustion material, and

03:46 1 it's creosote-like material. It's not petroleum at all.
 2 This is, from my experience, this is absolutely not
 3 petroleum. These PAH distributions of naphthalene,
 4 acenaphthalene, phenanthrene, as well as fluoranthene and
 5 pyrene ratios indicate that this is a creosote-like
 6 material that's present in this sample. But you couldn't
 7 see it because the blank basically made it more difficult.
 8 And until you removed the rejected blank compounds, you
 9 could then identify it.

10 Now, for this sample, the Ecuador Expert uses this
 11 non-petroleum sample to calculate health risk.

12 Now, not only do you have to look at the
 13 validator's results, but you also have to examine what the
 14 validators are doing, okay? You have to review the
 15 validator. So, the validator needs to be validated. Under
 16 their--in their work plan or in their report, they claim
 17 that they used the national functional guidelines 2008
 18 criteria for reviewing the data. And that's an important
 19 point, and I will make that in a minute.

20 This is a report from the Chevron's--not
 21 Chevron--from the Ecuador's laboratory for a sample of
 22 Shushufindi 43 groundwater 002, and I'm just going walk you
 23 through what some of this information means. And this is
 24 basically the compound you're look at, naphthalene. Over
 25 here we have a concentration that was detected.

03:47 1 Now, the laboratory is kind enough, in the process
 2 of doing their work, to flag the data so it tells the
 3 person who is going to interpret the results that the data
 4 is good, there might be problem, you want to look out for
 5 it. In this case, a B stands for blank. That means that
 6 there is a blank. Your blank has this compound present in
 7 it. Whereas the J represents an estimated value.
 8 Generally, it means that the concentration of that compound
 9 is below what's called a quantitation limit, which is a
 10 limit below the laboratory has defined as being an
 11 estimated result. It's below its lowest calibration.

12 Now, the value of a U means that it's not
 13 detected.

14 Now, carcinogenic risk was calculated by Ecuador's
 15 Expert using a range of PAH compounds such as you see here.
 16 These are the compounds that were used for the calculation.
 17 And when you look at these, you will find that four of
 18 those compounds are not detected, okay?

19 Now, under the national functional guidelines,
 20 it's a very strict rule that when you have a compound that
 21 has a blank present in it, and it's below the quantitation
 22 limit, you must report it as a not detect. And that was
 23 not done by the data validators for some reason. And when
 24 you look at the data and you correctly correct and follow
 25 the guideline, what you find is that all of the analytes

03:49 1 that were used for estimating carcinogenic risk were, in
 2 fact, not detected. The Ecuador Expert used non-detect
 3 data in their risk assessment.

4 And that's why blanks--this is why--the point I'm
 5 trying to make is blanks are very important. They need to
 6 be examined carefully and they need to be evaluated
 7 relative to your field sample before you perform any
 8 interpretive analysis.

9 Is this just a single issue? No. What I have
 10 here are drinking water samples for these drinking waters
 11 here, the number of compounds that Dr. Strauss used in
 12 terms of her calculation of carcinogenic risk, the number
 13 of PAH compounds that were actually flagged as a BJ and the
 14 true detections of PAH compounds in these samples. Again,
 15 calculation of carcinogenic risk based on not detects.

16 Again, is this problem with blanks just a single
 17 issue? What I have here is just an example of a number of
 18 samples that were used for interpretive purposes, and they
 19 were evaluated by the--Ecuador's validator, and this number
 20 here represents the number of target compounds that were
 21 rejected just by their own validator.

22 Now, again, it's standard laboratory practice, and
 23 it's written in many SOPs, including the SOP that's in the
 24 record from me, that if you have more than two compounds,
 25 three compounds, greater than three times your method

03:51 1 detection limit or so, you've got to re-extract the sample
 2 and reanalyze it or reject it. This has, in some cases,
 3 anywhere from 80 percent to 50-something percent which
 4 could translate into ten compounds or 20 compounds. This
 5 indicates a substantial and chronic blank problem. This
 6 has to be addressed when you're interpreting information.

7 Now, when you add the BJ problem where these
 8 values should have been reported as ND, you get as much as
 9 100 percent of the target compounds rejected, using
 10 standard national functional guidelines, 2008 vintage.

11 So, it's a real issue. It just needs to be
 12 examined very carefully whenever you interpret data,
 13 particularly, again, in the low level range. This is where
 14 the problem lies. And the problem's here because what's
 15 happening is the laboratory is pushing the envelope of its
 16 instrumentation. They're going below. They're going lower
 17 in detection, down in the low part per trillion range,
 18 which they can't do because their blank level is much
 19 higher than that, and that's why you see this extraordinary
 20 number of rejected values.

21 Finally, I'm going to talk to you about some wipe
 22 samples that were analyzed by Ecuador's Expert. Now,
 23 what's a wipe? You've got to think of a wipe like a
 24 handkerchief. A clean handkerchief. And it's very clean,
 25 okay? And then you have--what you do is you wipe a solid

03:52 1 in a certain area, and you wipe the solid and you remove
2 any contaminants that are on that solid. You then take
3 that now-contaminated handkerchief and you send it to the
4 laboratory with the blank handkerchief. It's called a
5 field blank, okay? You send it to the laboratory, and then
6 they analyze the sample and they report the results. And
7 I'm going to show you those results.

8 Ecuador's Experts took three wipe samples from
9 Lago Agrio 2 residences which they represent as ongoing
10 contamination. Am I okay? None of these three wipe
11 samples match the fingerprint of Oriente crude oil, and
12 none of these three wipe samples match the fingerprint of
13 the soil or sediment samples collected at Lago Agrio 2.

14 And let me show you how I came to that conclusion.
15 These are results from Chevron's--from Ecuador's
16 laboratory, and these represent the biomarker profiles for
17 the various samples. This represents Lago Agrio crude oil,
18 and you can see the biomarker pattern, and these are very
19 resistant to weathering and they're useful for
20 fingerprinting samples. So, you don't have to worry as
21 much that they will be altered as the oil is altered in the
22 environment, okay? And they're relatively small in
23 concentration in the oil. We use them routinely for this
24 purpose.

25 Comparison of the Lago Agrio oil to the wipe

03:55 1 the same laboratory, and we then plot the floor wipe
2 samples and the toy wipe samples. And the point here is
3 that we don't need sophisticated statistics to see that the
4 wipe samples are very different from those of the Lago
5 Agrio 2 oil-impacted soils and sediments and the Oriente
6 crude oil samples.

7 So, basically, what I want to--what I'm saying
8 here is that first, critical samples that were relied on by
9 Ecuador's Experts contained plant matter and laboratory
10 contamination rendering the analytical data unreliable.
11 And again, this mainly impacts surface water samples at low
12 concentrations. So, in fact, more than 50 percent of the
13 surface water samples have this problem.

14 Second, methods 8015 and EPH--not TEM--are the
15 most reliable methods for measuring TPH in the Oriente.
16 And again, I want to remind everybody, when someone says
17 TPH, the first thing you say is, what range? How did you
18 do it? What methodology?

19 And, finally, biodegradation has and continues to
20 occur in the Oriente, and the net product of biodegradation
21 over time is to reduce the TPH concentrations in the soils
22 and the toxicity and mobility of the residual oil.

23 Thank you very much.

24 PRESIDENT VEEDER: Thank you very much.

25 Any more questions?

03:54 1 sample, you can see particularly the proportion of these
2 compounds, T4 to T9, is very different than you can see in
3 the Lago Agrio oil, and same thing with the wipe sample
4 two.

5 And what this indicates is that these samples are
6 not related chemically. They're different. And when we
7 look at the--excuse me, when we look at the--there was a
8 third wipe sample which I think was taken from a toy wipe,
9 a toy sample--and when you compare the third wipe sample
10 for the biomarker pattern to its field blank you can see
11 that the field blank is also contaminated with similar
12 materials as well.

13 So, this wipe sample is heavily impacted by the
14 field blank itself.

15 Now, we also performed a second analysis to
16 confirm our first analysis to see if we--if it in fact made
17 sense. To do that, we performed what's called a
18 source-ratio analysis. And this is a standard methodology
19 within the forensics--petroleum forensics area. And what
20 we do is we perform--we generate a ratio of two classes of
21 PAHs, here on the "Y" axis and a ratio on the "X" axis,
22 which are characteristic of petroleum.

23 We then plot all of the information here, all of
24 the Lago Agrio 2 oil impacted soils and sediments, we
25 plotted the Oriente crude oils that were also analyzed by

03:56 1 MS. WOOD: Mr. President, I just have a couple of
2 clarification questions.

3 BY MS. WOOD:

4 Q. Dr. Douglas, would you go back to Slide 30.

5 MR. GARCÍA REPRESA: Mr. President, I just want to
6 put a marker on the record as to timing. I am--as you see,
7 I did not interrupt the Witness. And I just want to put a
8 marker. We went about 48 minutes-and-a-half. You set it
9 for 45. I'll ask the same indulgence when Ecuador's
10 Experts are presenting.

11 PRESIDENT VEEDER: Very well.

12 MR. GARCÍA REPRESA: And I think that this time,
13 if the Witness is going to present on direct, should be
14 added to that.

15 PRESIDENT VEEDER: Let's see how long it is.

16 MS. WOOD: Mr. President, we just had a
17 clarification, and then there was another question that I
18 thought would be helpful for the Tribunal, tying back
19 questions that were asked of Mr. Connor about weathering
20 versus biodegradation. I thought that it would be helpful
21 for the Tribunal as well as opposing counsel when he goes
22 to cross-examine Dr. Douglas that it will be clear on the
23 record.

24 PRESIDENT VEEDER: Please go ahead, but realize
25 that we may be adding the time to the Respondent's expert

03:58 1 re-examination.
 2 MS. WOOD: Certainly. Certainly.
 3 BY MS. WOOD:
 4 Q. Slide 30--just a clarification here,
 5 Dr. Douglas--you said that Chevron's Experts relied on this
 6 data, interpreted as low level contamination. Did you mean
 7 Chevron?
 8 A. No, I said that--I said--I meant Ecuador's
 9 Experts. I'm sorry.
 10 Q. Okay. Thank you.
 11 Just very briefly, we did hear during Mr. Connor's
 12 presentation the concept of weathering.
 13 A. Yes.
 14 Q. Can you just very briefly describe to the Tribunal
 15 how weathering relates to biodegradation.
 16 A. Sure.
 17 There are three processes that are involved with
 18 the loss of petroleum hydrocarbons when they are released
 19 to the environment. Weathering represents the physical
 20 processes of evaporation and solubilization.
 21 Biodegradation is the next step after that. So, it's
 22 basically the three processes.
 23 Q. Thank you, Dr. Douglas.
 24 MS. WOOD: No further questions now,
 25 Mr. President.

03:59 1 PRESIDENT VEEDER: Thank you. Just one moment.
 2 Break. How long do you need?
 3 Let's take a 15-minute break. So, we will come
 4 back at quarter past 4:00.
 5 And again, we're not pressing you in any way, but
 6 just give us some idea of how long you might be in
 7 cross-examination?
 8 MR. GARCÍA REPRESA: I think I can safely say that
 9 we will not be done today.
 10 PRESIDENT VEEDER: Fine. Okay. Fair enough.
 11 (Brief recess.)
 12 PRESIDENT VEEDER: Let's resume.
 13 MR. GARCÍA REPRESA: Thank you, Mr. President.
 14 CROSS-EXAMINATION
 15 BY MR. GARCÍA REPRESA:
 16 Q. Mr. Douglas, good afternoon.
 17 A. (Off microphone) It's Doctor.
 18 Q. That was going to be my next question, but then I
 19 think you've answered it already. How should I address
 20 you, and I understand it's as a Doctor?
 21 A. Okay, as a doctor.
 22 Q. Now, my name is José Manuel García Represa, and I
 23 am, as you might have guessed, counsel for the Republic of
 24 Ecuador in these proceedings. I will be asking you some
 25 questions today and tomorrow, I believe.

04:15 1 Now, I have prepared a bundle of documents that I
 2 will be distributing it, for now two volumes. I hope it
 3 stays two volumes, but we may have more, and it's being
 4 handed to you at the moment, and I will be calling the
 5 documents in that bundle by a tab number.
 6 I will try to keep my questions as short and
 7 precise as possible, and I would appreciate if you could do
 8 the same with your answers.
 9 Now, if at any time you need clarification, by all
 10 means please ask for it. And as you would have seen, all
 11 of this is being recorded and transcribed, and therefore we
 12 will need to speak slowly and try not to talk over each
 13 other. So, please wait until I finish my question, and
 14 I'll try to do so also with your answers. Is that all
 15 okay?
 16 A. Yes.
 17 Q. Now, first of all, you told us a moment ago that
 18 you're a partner at NewFields; is that correct?
 19 A. Yes.
 20 Q. And I understand that you have an ownership
 21 interest in NewFields; correct?
 22 A. Yes.
 23 Q. Now, you have been retained by King & Spalding and
 24 Chevron in this arbitration; correct?
 25 A. Yes.

04:16 1 Q. And you were first retained in relation with the
 2 contamination in the Concession Area sometime in 2004, I
 3 believe you said in your direct; is that correct?
 4 A. Yes.
 5 Q. And 2004 was about the same time that you began
 6 working at NewFields; correct?
 7 A. I think we started at NewFields in February 2004.
 8 Q. And were you retained--was NewFields retained
 9 before or after February 2004?
 10 A. I don't recall for sure. It was earlier in 2004,
 11 yes. I wasn't--I wasn't working on the project until,
 12 like, November or December.
 13 Q. Okay. So, you have basically been involved with
 14 this dispute for a bit over ten years by now; correct?
 15 A. Yes.
 16 Q. Have you ever been to Lago Agrio, sir?
 17 A. No.
 18 Q. Have you ever been to Ecuador?
 19 A. No.
 20 Q. Okay. And I notice that in the First Expert
 21 Report that you submitted in these proceedings you
 22 indicated that your work for Chevron over the past five
 23 years--and that was in the Year 2010 Report--represented
 24 less than 5 percent of the gross income of NewFields, but
 25 you did not make similar statements in your two following

04:18 1 reports of 2013 and 2015.
 2 MS. WOOD: Objection, counsel. Would you mind
 3 referring him to a page in his First Report that you are
 4 talking about.
 5 MR. GARCÍA REPRESA: We could represent that it's
 6 at Paragraph 5 of the First Report. We don't need to go
 7 through that, because my question is about the Second and
 8 Third Reports.
 9 MS. WOOD: But if you're asking him to compare the
 10 two, then would it be helpful for him--
 11 PRESIDENT VEEDER: Show him the first passage.
 12 BY MR. GARCÍA REPRESA:
 13 Q. You can go to your First report at Paragraph 5,
 14 sir, and confirm that there you make a note that NewFields'
 15 revenues derived from your work over the last five years
 16 have been less than 5 percent of the gross income of
 17 NewFields.
 18 Do you confirm that?
 19 A. Oh, yes.
 20 Q. Do you confirm that you do not make a similar
 21 statement in your 2013 and 2015 Reports?
 22 A. I don't know. I don't know if I made the
 23 statement or not.
 24 Q. Well, I will represent that to you, and if I'm
 25 wrong, I'm sure my colleagues will point that out on

04:19 1 redirect.
 2 Now, let me ask you the question. What percentage
 3 of NewFields' gross revenues over the last five years is
 4 associated with you or anyone else's work, anyone else's at
 5 NewFields' work for Chevron both in this dispute and in
 6 other disputes?
 7 A. I'd be guessing at 5 percent.
 8 Q. And do you have a dollar figure for that?
 9 A. No.
 10 Q. So, how do you--what's your guess based on?
 11 A. Just on the amount of work that we do.
 12 Q. Before 2004, had you done any work for Chevron?
 13 A. I think--I think I had had years earlier. Yes.
 14 Q. When, more or less? Do you know?
 15 A. In the Nineties, I think I did some work for
 16 Chevron.
 17 Q. Was that as an employee of Chevron, as a
 18 consultant of Chevron?
 19 A. As a consultant.
 20 Q. And who did you work with at Chevron before 2004?
 21 A. I'm trying to remember his name. I'll have to
 22 think about that. I'll get back to you. I forgot his
 23 name. It's been so long.
 24 Q. Okay. Was it anyone involved in this dispute?
 25 A. No.

04:20 1 Q. Now, I understand that you are aware at least a
 2 member of something called the Petroleum Environmental
 3 Research Forum, or the PERF; correct?
 4 A. Yes. Yes.
 5 Q. And you actually mention in your Reports that
 6 you're part or you were part of a working group within PERF
 7 called the Total Petroleum Hydrocarbons Working Group;
 8 correct?
 9 A. I did participate in that, yes.
 10 Q. Now, the PERF, as I understand, is a research and
 11 development joint venture whose members are corporations
 12 engaged in the petroleum industry; correct?
 13 A. I didn't know--I don't recall if they were
 14 corporations and Government agencies.
 15 Q. Well, I just read what's on the Web, so we can all
 16 confirm that.
 17 Now, do you recall whether the following companies
 18 are members of PERF:
 19 British Petroleum?
 20 A. Yes.
 21 Q. Chevron?
 22 A. Yes.
 23 Q. ConocoPhillips?
 24 A. Yes.
 25 Q. ExxonMobil?

04:22 1 A. Yes.
 2 Q. But you never mentioned in your Reports when you
 3 referred to the PERF that this is an industry organization,
 4 do you?
 5 A. No.
 6 Q. And actually the PERF was presided or chaired by a
 7 Chevron employee by the name of Sara McMillen between 1997
 8 and 2008; correct?
 9 A. I don't know for sure on the dates, but that's--I
 10 believe that's true.
 11 Q. And can you tell us what Ms. McMillen's position
 12 is at Chevron?
 13 A. Senior Technical Adviser.
 14 Q. And I understand that you know Ms. McMillen;
 15 right?
 16 A. Yes.
 17 Q. How long have you known her?
 18 A. I would say since the Nineties.
 19 Q. Early Nineties, late Nineties?
 20 A. Early to mid-Nineties.
 21 Q. And I understand that you worked professionally
 22 with Ms. McMillen for over 20 years by now; correct?
 23 A. On some projects, yes, as a consultant.
 24 Q. But you also co-authored certain articles with
 25 Ms. McMillen; correct?

04:23 1 A. That is correct.
 2 Q. How many would you say?
 3 A. A couple.
 4 Q. Well, I've counted three in your CV. Do you want
 5 to take my word for it or--
 6 A. I'll take your word for it. That sounds about
 7 right.
 8 Q. Now, you also published two books with
 9 Ms. McMillen, either with her as editor or as co-author;
 10 correct?
 11 A. Yes.
 12 Q. And those books were published in 1995 and in
 13 2001; right?
 14 A. I'll have to take your word for it. I don't
 15 remember the exact dates of those books.
 16 Q. Okay. Now, I understand that you also know
 17 Ms. Elizabeth Harvey; correct?
 18 A. Yes.
 19 Q. She's also a scientist at Chevron, isn't she?
 20 A. I don't think she is--I think she retired.
 21 Q. She was a scientist at Chevron?
 22 A. I believe so, yes.
 23 Q. Was she at Chevron when you worked with her?
 24 A. I believe so, yes.
 25 Q. How long have you known her?

04:24 1 A. We worked on a paper that we presented at a
 2 meeting at one time, so whatever the date of that paper
 3 was, probably I'd have to say in the Nineties.
 4 Q. Okay. And actually, if it may help, on the basis
 5 of your CV that's attached to your Report, we see that in
 6 2002 you published an article with Ms. Harvey and
 7 Ms. McMillen titled "Total Petroleum Hydrocarbons Detected
 8 in Naturally Occurring Materials."
 9 Is that the article you had in mind or was there
 10 another one?
 11 A. No, that's the one I was thinking about.
 12 Q. Now, in addition to this dispute, do you have any
 13 other experience working in disputes for Chevron?
 14 A. I believe I have a--I'm working on a gas station
 15 site for Chevron.
 16 Q. At the moment?
 17 A. It's been delayed, but it's ongoing, yes.
 18 Q. But that's not mentioned in your January 2015
 19 Report, is it?
 20 A. I don't think so.
 21 Q. Now, in addition to this dispute, do you have any
 22 other experience working with, for example, Dr. Connor of
 23 GSI?
 24 A. I worked with Dr. Connor once on a project in
 25 Yemen.

04:26 1 Q. And that was it?
 2 A. This project. There may be others. I don't
 3 remember.
 4 Q. Do you remember by any chance the arbitration
 5 between Burlington and Ecuador?
 6 A. I heard about it, but I think we may have done
 7 some analysis for Mr. Connor.
 8 Q. Do you recall authoring a sheen sample evaluation
 9 report for GSI in the context of the Burlington versus
 10 Ecuador arbitration?
 11 A. I wasn't sure about--when you say Burlington, I
 12 wasn't sure what you meant. I know that it was a report,
 13 and I believe we did do a sheen analysis, yes.
 14 Q. Now, Burlington is Burlington Resources--
 15 A. Okay.
 16 Q. --Inc., which is a subsidiary or an affiliate of
 17 ConocoPhillips. Does that refresh your recollection?
 18 A. No, no. It was just a sheen sample that came
 19 through our lab--I mean, we had it analyzed, and then we
 20 wrote a report about it. That's about the extent of it.
 21 Q. And you authored that report, did you not?
 22 A. I believe so.
 23 Q. And you authored the same or a similar report
 24 because in that respect the cases are similar in the case
 25 by Perenco against Ecuador, did you not?

04:27 1 A. I'd have to see a copy of that. I don't recall
 2 that.
 3 Q. Okay. And in addition to this dispute, have you
 4 worked in any other--do you have any other experience with
 5 the law firm of King & Spalding?
 6 A. No.
 7 Q. Are you aware of any other individuals within
 8 NewFields that would have worked in other disputes for
 9 Chevron, GSI, or King & Spalding?
 10 A. I believe one of our folks, Shahrokh Rouhani, had
 11 done some work for King & Spalding.
 12 Q. And that was in the Burlington v. Ecuador Case,
 13 was it not?
 14 A. I didn't know exactly what case it was.
 15 Q. Now, before we move on to the more technical
 16 topics, I'd like to confirm a few things about your area of
 17 expertise, and I will try to move on quickly because you
 18 probably recall that you were deposed, and I think we can
 19 streamline the process if you can confirm for me a few
 20 things.
 21 First of all, I understand that you do not
 22 consider yourself to be an expert in ecological or natural
 23 resource impacts from petroleum operations; correct?
 24 A. That's correct.
 25 Q. And you're also not an expert on impacts from

04:29 1 petroleum operations on particular species; correct?
 2 A. Yes, that's correct.
 3 Q. Nor on human or animal health impacts from
 4 petroleum operations; correct?
 5 A. That's correct.
 6 Q. You're also not an expert on human or animal
 7 toxicology, are you?
 8 A. No, that's correct.
 9 Q. You're also not an expert in risk assessment, are
 10 you?
 11 A. That's correct.
 12 Q. And you're also not an expert in what we know as
 13 the TCLP method of analysis, are you?
 14 A. No.
 15 Q. And to be clear, the TCLP is a method that's
 16 designed to determine the mobility of organic and inorganic
 17 analytes present, for example, in liquids and soil;
 18 correct?
 19 A. Correct.
 20 Q. So, you're not purporting to be expressing any
 21 opinion on the efficacy of the TCLP method as it relates to
 22 this case, are you?
 23 A. No.
 24 Q. Are you an expert in physical chemistry?
 25 A. Only as it applies to my own work to some degree.

04:30 1 Q. Okay. And part of your work in these proceedings
 2 was to analyze, you said in your direct, various types of
 3 Ecuadorian crude; right?
 4 A. That is correct, yes.
 5 Q. Now, would any of those Ecuadorian Oriente Crude
 6 possibly lead to a dissolution of more than a thousand
 7 milligrams per liter of crude oil in water?
 8 A. Under what conditions?
 9 Q. Let's say under standard temperature and standard
 10 pressure.
 11 A. So, basically, you would float the Ecuadorian
 12 crude on a liter of water, and you'd say--
 13 Q. What would be the maximum dissolution, the maximum
 14 mass that would dissolve into one liter.
 15 A. Okay. I haven't done that analysis. Are you
 16 asking me to guess?
 17 Q. I'm not asking you to guess.
 18 A. Okay.
 19 Q. If at any point you think that I'm asking you to
 20 guess, just raise the flag because that's not what we are
 21 here for. Okay. This is not a memory test.
 22 A. Right.
 23 (Pause.)
 24 Q. I was asking you or rather clarifying that I will
 25 not be asking you to guess at any point, and if you think

04:32 1 that, this is what I'm asking you to do, just raise a flag.
 2 A. Okay.
 3 Q. My question was, rather: Given your analysis of
 4 fresh crude oils from the Oriente Region in Ecuador whether
 5 you know what is the maximum mass of crude oil that will
 6 dissolve in a liter of water.
 7 A. The Oriente Crude?
 8 Q. Yes.
 9 A. I haven't done that study, so I don't know a
 10 value.
 11 Q. And you do not know what the range of values could
 12 be, what would be the maximum, I guess the minimum will be
 13 zero, but the maximum?
 14 A. I couldn't tell you the maximum. It's in the
 15 parts per million range. I mean, that's about what I can
 16 tell you without doing the actual water solubility study to
 17 measure it.
 18 Q. Okay. Now, in your last report--and again, you
 19 are most welcome to look at your Reports if you want that
 20 I'm talking about, the one from January 2015--you described
 21 the scope of your work as being to evaluate the
 22 environmental chemistry expert opinion by Dr. Jeffrey Short
 23 in his November 7, 2014 Report, and to review the integrity
 24 and validity of environmental data collected by Ecuador's
 25 Environmental Experts of LBG during their 2013 and 2014

04:33 1 field investigations.
 2 Do you see that?
 3 A. Yes.
 4 Q. Is that an accurate statement?
 5 A. Yes.
 6 Q. You represented in your Reports having performed
 7 an independent third party peer review of Dr. Short's and
 8 LBG's reports; correct?
 9 A. I'm sorry, where is that?
 10 Q. Well, let me ask in the affirmative. Are you--
 11 PRESIDENT VEEDER: I think if you're reading, for
 12 our sake, you've got to give the reference.
 13 MR. GARCÍA REPRESA: Right. And I was not
 14 reading. This is why I'm going to put it in the--
 15 PRESIDENT VEEDER: You were earlier and you didn't
 16 give us the reference.
 17 MR. GARCÍA REPRESA: Yes, and you're absolutely
 18 right, Mr. President. The reference was at Page 1.
 19 PRESIDENT VEEDER: We found it, but for the
 20 Transcript, we'd like you to say it.
 21 MR. GARCÍA REPRESA: Yes, I will give you the
 22 references as we go along.
 23 BY MR. GARCÍA REPRESA:
 24 Q. Are you sitting here today representing to this
 25 Tribunal having performed an independent third-party peer

04:34 1 review of Dr. Short's and LBG's reports, are you not?
 2 A. I have examined the data, yes.
 3 Q. That was not my question, but I will repeat it.
 4 Are you representing to this Tribunal, having
 5 performed an independent third-party peer review of
 6 Dr. Short's and LBG's reports? Yes or no?
 7 A. I'm not quite sure I understand the question. I
 8 mean, I reviewed the data. And from that data, I derived
 9 this Report.
 10 Q. Did you do an independent review of the data?
 11 A. I'm kind of confused about your term
 12 "independent."
 13 Q. Well, as an expert, testifying Expert--
 14 A. Right.
 15 Q. --I having read your Reports--
 16 A. Right.
 17 Q. --I would have assumed that you viewed your
 18 Mission as that of an independent expert, but I may be
 19 wrong, but this is what I'm trying to clarify.
 20 Do you consider yourself an independent expert in
 21 these proceedings? Yes or no.
 22 A. Yes, of course.
 23 Q. Now, if you could please take a look at Page 6 of
 24 your 2013 report, so we are changing the Report now. We're
 25 going to your Second Report.

04:35 1 MR. GARCÍA REPRESA: If it's convenient to the
 2 Tribunal, you will find it at Tab 2 of the bundle.
 3 BY MR. GARCÍA REPRESA:
 4 Q. Are you with me, sir?
 5 A. Yes.
 6 Oh, I have my Expert report here.
 7 Q. Thank you.
 8 Now, you indicate at Page 6, and I'm looking here
 9 at the very first paragraph below Title 3, second sentence.
 10 It says: "Having worked at other oil field sites, I can
 11 say without exception that the Chevron environmental data
 12 program is the most detailed and extensive environmental
 13 chemistry program performed to date both with regards to
 14 the number of sites tested and the chemical analyses
 15 performed."
 16 Do you see that?
 17 A. Yes.
 18 Q. Should I understand that you are referring to the
 19 Chevron program performed for the Lago Agrio Litigation?
 20 Is that what you're saying?
 21 A. Yes.
 22 Q. So, your Statement here is limited to that
 23 litigation. You're not purporting to say, are you, that
 24 what Chevron did is the most detailed and extensive program
 25 that you have seen in your practice, is it?

04:37 1 A. It's certainly the most extensive that I've seen.
 2 The number of sites that we performed biodegradation
 3 studies on was extensive. The tools that were used were
 4 cutting edge. I thought it was--yes, it was extensive.
 5 Q. Okay. And you go on to say in the next paragraph
 6 that, and I quote: "Chevron went to great lengths to
 7 ensure the quality and transparency of all of the
 8 laboratory analyses."
 9 Do you see that?
 10 A. Yes.
 11 Q. Are you aware, sir, of the Pre-Inspections
 12 performed by Chevron?
 13 A. I wasn't aware of those, no.
 14 Q. So, when you made this statement, you were not
 15 aware that there were Pre-Inspections, were you?
 16 A. I became aware of the Pre-Inspections after my
 17 deposition or before my deposition and reading LBG Reports.
 18 Q. That was after this Report of June 2013?
 19 A. I don't know the date.
 20 Q. Your deposition was September 2013.
 21 A. Okay. So, I learned about the PI--the
 22 preliminary--
 23 Q. Pre-Inspection.
 24 A. --Pre-Inspections from the LBG Reports. I wasn't
 25 aware of those.

04:13 1 Q. So, when you made this statement you were not
 2 aware; correct?
 3 A. Yeah--well, let's look at the date.
 4 September 3rd, 2010, and my deposition was what date?
 5 Q. We will get to it. It's in your binder.
 6 A. It was in preparation for Dr. Short's deposition
 7 that I found that information.
 8 Q. Okay. Fair enough.
 9 Now, the first reason that you gave in your 2013
 10 Report for the comments that we just read is, as we can see
 11 at Title 3.1, your Statement that Chevron performed the
 12 standard analytical methods that were defined in the
 13 jointly prepared and Court-ordered Analysis Plan.
 14 Do you see that?
 15 A. Yes, I do.
 16 Q. And you go on to explain in the first paragraph
 17 below, that the analytical methods defined in the AP
 18 (Analysis Plan) are consistent with methods recommended by
 19 the American Petroleum Institute (API), and the TPH
 20 Criteria Working Group (TPHCWG) and others for petroleum
 21 impacted Exploration and Production E&P sites.
 22 Do you see that?
 23 A. Yes.
 24 Q. Now, I would like to look now so that it's clear
 25 where we're going at each of the sources that you cite

04:40 1 there.
 2 Now, the first one is the American Petroleum
 3 Institute, API, and we can see there is a footnote called
 4 Footnote 15 that takes us to a 2001 document, Exhibit 2 to
 5 your Report.
 6 Do you see that?
 7 A. Yes.
 8 Q. And we will take a look at that document.
 9 Before we do that, the API is a trade association
 10 of the oil-and-gas industry in the U.S.; correct?
 11 A. That is correct.
 12 Q. And Chevron and Ms. McMillen, among others,
 13 contributed to this source that you cite in here,
 14 Footnote 15; correct?
 15 A. Yes.
 16 Q. Now, that is nowhere mentioned in your Reports, is
 17 it, neither in this one nor in any other of your Reports
 18 where you cite to the API; correct?
 19 A. I don't believe so.
 20 Q. You believe it is explained or you believe it is
 21 not explained in your Report?
 22 A. No, I mean it's not cited in my Reports.
 23 Q. You do not think that would have been relevant to
 24 this Tribunal to know that you're citing to a paper that
 25 was actually prepared with the assistance of Chevron and

04:41 1 Ms. McMillen?
 2 A. I didn't see the relevance, no.
 3 Q. Okay. And we can go to Tab Number 9 of Volume 1
 4 where we can see that paper.
 5 Now, if you can please count with me because the
 6 pages--or we can--actually the pages are numbered. We can
 7 go to the Roman numeral five at very beginning, it begins
 8 with "ACKNOWLEDGMENTS" at the top.
 9 A. I don't have a Roman numeral five.
 10 Q. Are you at Tab Number 9, sir?
 11 A. Tab Number 9, yes.
 12 Q. And within Tab Number 9, this is the article that
 13 you cite at Footnote 15.
 14 PRESIDENT VEEDER: Forgive me, there are two
 15 fives, that's the problem.
 16 MR. GARCÍA REPRESA: Roman numeral five. You have
 17 two? It's true, you have two. It's the first--
 18 PRESIDENT VEEDER: Let's go to the first--
 19 MR. GARCÍA REPRESA: It's the first Roman numeral
 20 five, it gets complicated but you should have the word
 21 "ACKNOWLEDGMENTS" in capital bold.
 22 BY MR. GARCÍA REPRESA:
 23 Q. Are you on that page, sir?
 24 A. Which page?
 25 Q. Count with me from the very beginning, you will

04:42 1 turn one, two, and three pages.
 2 A. Yes.
 3 Q. And you will see a page that says
 4 "ACKNOWLEDGMENTS" at top; right?
 5 A. Oh, yes.
 6 Q. So, here we have the acknowledgments. I
 7 understand this is who contributed to this document;
 8 correct?
 9 A. Yes.
 10 Q. And if we look at it from the top down, the second
 11 block it says: "The API Production Waste Issue Group is
 12 acknowledged for providing funding for this manual."
 13 Correct?
 14 A. Yes.
 15 Q. Now, that issue group was actually chaired by
 16 someone at Chevron, wasn't it?
 17 A. It says at the bottom, yes, Sara McMillen,
 18 Chairperson and Evan Sedlock, Chairperson.
 19 Q. Exactly. We'll look at the line at the very
 20 bottom of this, we can see that Evan Sedlock, Chairperson
 21 of PWIG, which is that Production Waste Issue Group,
 22 actually Chair of that group, and with someone at Chevron.
 23 Is this someone with whom you have worked in the past, sir?
 24 A. No.
 25 Q. Now, we go back now to the top part. We also see

04:43 1 that the "API would like to thank the companies that
 2 participated in the Petroleum Environmental Research Forum,
 3 PERF Project 97-08 for their permission to publish this
 4 manual."
 5 Do you see that?
 6 A. Yes.
 7 Q. And that PERF was chaired by someone at Chevron;
 8 correct?
 9 A. I know this document was chaired by--
 10 Q. Well, if you go to the very bottom, right above
 11 the name we were looking at, Evan Sedlock, you will find
 12 the name of Ms. Sara McMillen, Chairperson PERF 97-08.
 13 (Overlapping speakers.)
 14 PRESIDENT VEEDER: That's Rule Number 2. We can't
 15 have people overtalking each other. Question, pause,
 16 answer, pause.
 17 MR. GARCÍA REPRESA: Apologies.
 18 BY MR. GARCÍA REPRESA:
 19 Q. So, let's try to go a bit slower. The PERF was
 20 chaired by Ms. McMillen who was affiliated with Chevron;
 21 correct?
 22 A. Yes.
 23 Q. Now, you can look at the rest of the document, but
 24 I put to you that, in addition to those two persons that we
 25 just saw from Chevron, there were another two employees of

04:45 1 Chevron who contributed to this manual. And we have their
2 names further below, Renae Magaw, and someone by the
3 name--rather someone from Texaco, Skip Dees.
4 Do you see those names?
5 A. Yes.
6 Q. Now, this was, and we can go back to your Report
7 where we were looking at, which was at Page 6 of your 2013
8 Report. This is the first source that you cited for the
9 proposition that the analytical methods defined in the
10 Analysis Plan were consistent with recommended methods, so
11 this is the first entity that recommended a method. And to
12 confirm, this method here is being recommended in 2001, the
13 paper that we're looking at, excuse me, was a 2001 paper;
14 correct?
15 A. Yes.
16 Q. Now, the second source that you cite to in that
17 paragraph at Page 6 of your 2013 Report is the TPH Criteria
18 Working Group, TPHCWG.
19 Do you see that?
20 A. Yes.
21 Q. Now, that group, as we saw before, is part of the
22 PERF; correct?
23 A. Yes.
24 Q. Now, if you look at the first footnote there,
25 Footnote 16, you're referring to a 1993--excuse me, to the

04:48 1 Q. And if you turn the pages until you reach a page
2 that's number--Roman numeral 11 at the bottom, you
3 will--you should be finding acknowledgments on the very
4 top.
5 Do you see that?
6 A. Acknowledgments, yes.
7 Q. Okay. And we can see at the very top the
8 paragraph that begins "with a special thanks to BP Oil for
9 their strong support." Correct?
10 A. Yes.
11 Q. And we can see in the second paragraph that it
12 says "additionally, the following persons and organizations
13 contributed significantly"--excuse me--"significant amounts
14 of in-kind support towards the completion of this
15 document," and the third person that's mentioned is
16 Ms. Harvey of Chevron; correct?
17 A. Yes.
18 Q. But you never specify in your Reports that you're
19 signing to documents where Chevron participated?
20 A. I really didn't see that it was necessary. I
21 provided the documents and the references and the
22 acknowledgments are in the documents.
23 Q. Okay. And if we go back to your Report, 2013,
24 where we were--you know how the exercise is working, I
25 think the next one is going to be an easy one. Let's look

04:46 1 fact that the group was formed in 1993, and you are
2 referring to Exhibit 5; correct?
3 A. Exhibit 5, yes.
4 Q. And you will find Exhibit 5 to your 2013 Report at
5 Tab Number 10 of the bundle I just gave you, which should
6 be the next tab.
7 A. Yes.
8 Q. The organization that published this paper was
9 sponsored by Chevron; correct?
10 A. Among others, yes.
11 Q. And you will see that, if you turn the page once,
12 we have the organization that sponsored or contributed to
13 this document, the first of which is the API, American
14 Petroleum Institute; correct?
15 A. Yes.
16 Q. You have two associations, and then you have
17 British Petroleum, Chevron, Exxon, Retec, Shell, the U.S.
18 Air Force and the University of Massachusetts; correct?
19 A. That's correct.
20 Q. Now, you do not mention anywhere in your Reports
21 that this source had a contribution by Chevron, do you?
22 A. No, I referenced the document, and the document
23 contains the information if it's so needed.
24 Q. This was a 1998 paper; correct?
25 A. Yes.

04:50 1 at the second footnote that you have right after the words
2 "TPH Criteria Working Group."
3 A. I can't see that.
4 Q. You should have it on paper in any event.
5 A. What tab is the Report, then? I will go to that.
6 Q. Tab 2, but I think you have the--
7 A. Now it's back, it's back.
8 Q. As you wish.
9 So, in that Page 6 at the bottom, you see at
10 Footnote 17, which is the third source that you've cited in
11 that paragraph that we were reading from.
12 A. Yes.
13 Q. McMillen, that's an employee of Chevron; correct?
14 A. Yes.
15 Q. S. Magaw, that's an employee of Chevron; correct?
16 A. Yes.
17 Q. And someone else.
18 A. Yes.
19 Q. This is at Exhibit 6 of your Report. Again, you
20 do not mention anywhere in your Reports, that the two
21 persons we just saw, the first two persons we just saw were
22 employees of Chevron, do you?
23 A. No. These are the references that I relied on, so
24 I just reported the references.
25 Q. Okay. And we keep reading the paragraph at the

04:51 1 bottom of Page 6 of your 2013 Report, after API and TPHCWG
 2 you refer to others, and we have a footnote, Footnote 18,
 3 that takes us to a document from the Canadian Council of
 4 Ministers of 2008; correct?
 5 A. Yes.
 6 Q. And the title is "Canada-Wide Standards for
 7 Petroleum Hydrocarbons in soil."
 8 Do you see that?
 9 A. Yes, I do.
 10 Q. Now, do you agree that these standards apply in
 11 Canada?
 12 A. No, they had to do with the analytical methods
 13 that they were using and the GC/FID approach was defined in
 14 there.
 15 Q. So, these standards do not apply in Canada?
 16 A. Oh, I believe so, yes.
 17 Q. Because that was my question.
 18 A. It says "Canada-Wide Methods for Petroleum
 19 Hydrocarbons in soil."
 20 Q. And do you agree that these standards only apply
 21 to soil?
 22 A. I'd have to review the paper, it's been many
 23 years.
 24 Q. Fair enough. You will have it at Tab Number 13,
 25 and you will see at the bottom right corner, you have the

04:52 1 page numbering. If you go to Page Number 2 you will see in
 2 the second paragraph that the PHC-CWS, and I represent, and
 3 represent and it's defined right above that the PHC is
 4 Petroleum Hydrocarbons, and CWS is Canadian-Wide Standards.
 5 So the second paragraph says, the Petroleum Hydrocarbons
 6 Canadian-Wide Standards is a remedial standard for
 7 contaminated soil and subsoil occurring in four land-use
 8 categories.
 9 Does this refresh your recollection as to the
 10 scope of these standards?
 11 A. Well, it refreshes my recollection on why I
 12 referenced it, and I referenced it because of the
 13 methodologies that they were using as an example of
 14 methodologies that were consistent with those used in the
 15 Oriente.
 16 Q. You agree that these standards do not apply to
 17 matrices other than soil and subsoil, do you not?
 18 A. I'm not an expert in whether they're risk
 19 assessment standards. I mainly focused on the
 20 methodologies. That's pretty much what I looked at.
 21 Q. Okay. And do you agree that the methodologies
 22 that--before we go there--that these standards, what they
 23 describe here expressly exclude from the scope of
 24 application known carcinogens such as benzene, toluene,
 25 ethylbenzene, and xylenes, otherwise known as BTEX? Do you

04:54 1 agree?
 2 A. I need to spend a minute looking at this.
 3 Q. You will find that at Page 3, it's the very next
 4 page, top paragraph, "definitions," and you will see
 5 fourth line down, I will read for the record: PHC
 6 exclude--for purposes of this standard--known carcinogens
 7 such as benzene, benzoapyrene, which are addressed as
 8 target compounds. "Because of the relatively long history
 9 of managing toluene, ethylbenzene and xylenes (TEX)."
 10 A. Yes, and this would be consistent with the methods
 11 I was referencing.
 12 Q. Now, if you go back to--you should keep this open,
 13 by the way, and take the spiral-bound volume you have in
 14 front of you which has your three Reports.
 15 A. This?
 16 Q. No, right. In front of that black binder, you
 17 have another volume.
 18 A. Oh, this one.
 19 Q. Exactly, that has your Reports. You can go to
 20 Page 6 of your 2013 Report, is what we were looking at, and
 21 I was focusing on the very last paragraph where you are
 22 justifying the analytical methods that were defined in the
 23 Analysis Plan, and we looked at the sources that you signed
 24 for your opinion, and now let's look at the method that was
 25 referred to in the Analysis Plan.

04:56 1 You said the Analysis Plan target compound list
 2 focused on the USEPA SW846 Method 8270 priority pollutant
 3 Polycyclic Aromatic Hydrocarbon (PAH) compounds.
 4 Do you see that?
 5 A. Yes.
 6 Q. You cited, and we were looking at the Canada-Wide
 7 Standards, you cited these standards for support for the
 8 method we just read, USEPA SW846 Method 8270; correct?
 9 A. No, mainly I cited them for the GC/FID
 10 methodologies that are included in those methods, and I
 11 believe some of them do have the 8270 present in them as
 12 well.
 13 Q. Now, I put it to you--and I will be happy to be
 14 corrected--that the Canada-Wide Standards do not mention
 15 anywhere Method 8270.
 16 Let me complete that for the question.
 17 Can you point me to anywhere in the Canada-Wide
 18 Standards where I will find a reference to Method 8270?
 19 A. No, I was referencing the Canada-Wide Standards
 20 for the GC/FID analysis that they use.
 21 Q. And that GC/FID analysis, what you are telling us
 22 in your 2013 Report, is that it focused on the priority
 23 pollutant Polycyclic Aromatic Hydrocarbon compounds;
 24 correct?
 25 A. What page is that? Yes, that's right.

04:58 1 USEPA SW846.
 2 Q. Yes, that, to be clear, is 16 PAH compounds;
 3 correct?
 4 A. That is correct.
 5 Q. And generally, PAHs, as I think you said on
 6 direct, are the most persistently toxic class of
 7 hydrocarbons in crude oil; correct?
 8 MS. WOOD: Objection. I believe you've
 9 mischaracterized his testimony.
 10 MR. GARCÍA REPRESA: Well I don't think so, but I
 11 can ask the question directly. No problem.
 12 BY MR. GARCÍA REPRESA
 13 Q. Are PAHs the most persistently toxic class of
 14 hydrocarbons in crude oil?
 15 MS. WOOD: I will also just object because I
 16 believe--I know toxicology, as you established earlier when
 17 you were cross-examining him, Dr. Douglas is not an expert
 18 in toxicology, so I believe that this is an inappropriate
 19 question for this Witness. There is a toxicologist who
 20 will be testifying after Dr. Douglas.
 21 PRESIDENT VEEDER: With this Witness, let's move
 22 on.
 23 MR. GARCÍA REPRESA: I will just point out for the
 24 record that I heard this Expert speak about the toxic
 25 nature of PAHs, and he does that in his direct and he does

05:01 1 Is this a document that relates to the Kalamazoo
 2 River oil spill you were referring to during your direct?
 3 A. No.
 4 Q. And excuse me, you're absolutely right. I should
 5 have said Delaware River, as it is said on the first page.
 6 PRESIDENT VEEDER: Go ahead.
 7 BY MR. GARCÍA REPRESA:
 8 Q. Let's take a step back. You are one of the
 9 Authors of this document, are you not?
 10 A. Yes, I am.
 11 Q. This is a 2005 paper evaluating the composition
 12 and potential environmental fate and toxicity of heavy
 13 Venezuelan crude oil released in the Delaware River;
 14 correct?
 15 A. This is a technical report prepared for industrial
 16 economics, and there are three separate Authors with three
 17 different areas of expertise.
 18 Q. Correct.
 19 If you can please turn the page until you reach
 20 Page 13, and you will see the numbers at the top right
 21 corner. If you're on the same page, you should be seeing a
 22 title 4.2.2, Polycyclic Aromatic Hydrocarbons, otherwise
 23 known as PAHs; correct?
 24 A. Yes.
 25 Q. And if we read from the first paragraph, "overall,

04:59 1 that in his Report. So, there is some limited and he can
 2 always say that he doesn't know if that's his answer.
 3 PRESIDENT VEEDER: You disqualified him as a
 4 toxicology Expert. It's a little difficult now for you to
 5 cross-examine him.
 6 BY MR. GARCÍA REPRESA:
 7 Q. I would like you to go to Tab 19. You mentioned
 8 in your direct--
 9 PRESIDENT VEEDER: Stop, stop, stop. We've got to
 10 change bundles. What Tab is it?
 11 MR. GARCÍA REPRESA: 19.
 12 PRESIDENT VEEDER: Tab 19 relates to the Delaware
 13 River M/T ATHOS I Oil Spill.
 14 MR. GARCÍA REPRESA: I know it as the Kalamazoo
 15 River spill. This is why I was a bit confused. And let me
 16 establish that my understanding is correct.
 17 BY MR. GARCÍA REPRESA:
 18 Q. Dr. Douglas, you mentioned in your direct that you
 19 were doing work in relation to the Kalamazoo River spill?
 20 A. That's correct.
 21 Q. Is that correct?
 22 A. That's correct.
 23 Q. And my indication was just wait until I complete
 24 the question, give a two second pause, otherwise we will
 25 hear David.

05:03 1 in our view," I understand this is a collective view, it's
 2 the view of the Authors?
 3 A. Yes, it is a collective--no, it's not a collective
 4 view. I was on a Commission to evaluate the chemistry of
 5 the oil, and I provided that data to the international--to
 6 the group.
 7 Q. Okay. So what we see here is the view of all
 8 Authors but you; is that correct?
 9 A. My understanding was that each person contributed
 10 to this individually.
 11 Q. Okay. Fair enough.
 12 So, overall, in our view--this is what this
 13 Article says: "PAHs are of potential concern with respect
 14 to short-term water column impacts and short- and long-term
 15 effects on sediment dwelling biota."
 16 Do you see that?
 17 A. Yes.
 18 Q. If we can skip the next sentence, in the interest
 19 of time, the third sentence reads: "Further, PAHs can
 20 persist in the environment for months/years. While their
 21 bioavailability can vary, in our view there is still a
 22 toxicity risk associated with this class of compounds."
 23 I understand that you're not an Expert, and I'm
 24 not asking for an Expert Opinion on it--do you generally
 25 agree with this statement?

05:04 1 MS. WOOD: Objection, Your Honor. I
 2 think--objection, Mr. President. I believe we've already
 3 gone through this, and you've ruled he's not an Expert and
 4 should not be giving a layperson's opinion on toxicology
 5 either.
 6 PRESIDENT VEEDER: You got what you wanted some
 7 time ago, he's not an Expert on toxicology, and what he
 8 says about toxicology is not as an Expert. So, I'd move
 9 on. We don't need to do this.
 10 MR. GARCÍA REPRESA: Mr. President, I think there
 11 is a point where I'm getting to with this document which I
 12 believe falls within this Witness' expertise.
 13 PRESIDENT VEEDER: Come to it quickly because this
 14 is going to be objected to again and again.
 15 MR. GARCÍA REPRESA: I know.
 16 BY MR. GARCÍA REPRESA:
 17 Q. Can you please turn to Page 15. If you look at
 18 the top paragraph, beginning with the third line,
 19 "methyl-substituted PAHs tend to be much more mutagenic
 20 than the parent compound," and if you keep reading down, it
 21 says--it refers to the effects.
 22 Now, I want to ask you about methyl-substituted
 23 PAHs.
 24 Is it right to say that they are the same--they
 25 can be referred to as also the alkyl PAHs--alkylated PAHs?

05:06 1 A. Methyl-substituted PAHs? Yes.
 2 Q. And actually the alkylation process is adding a
 3 carbon atom to a PAH; correct?
 4 A. That is correct, yes.
 5 Q. And that is within your field of expertise, is it
 6 not?
 7 A. From a chemistry perspective, yes.
 8 Q. Now, the method we were looking at that you cited
 9 in your Report, Method 8270, the one that was provided in
 10 the Analysis Plan, it does not test for
 11 methyl-substituted--also known as alkyl--PAHs; correct?
 12 A. No. It can.
 13 Q. It can, if it's modified to do so; correct?
 14 A. Depending on the concentration of the oil or, you
 15 know, yes, you could do it both ways, whether it be
 16 modified or not modified.
 17 Q. Now, the standard Method 8270 as provided in the
 18 Analysis Plan does not target alkyl- or methyl-substituted
 19 PAHs, does it?
 20 A. No, it does not.
 21 Q. And to be clear about the concepts, the 16 PAHs
 22 that are targeted by that method are often referred to as
 23 the parent PAHs; correct?
 24 A. The priority pollutant PAHs.
 25 Q. And I will try to ask the question again with a

05:08 1 better pronunciation.
 2 A. Okay. Okay.
 3 Q. It's my fault. I meant, they are called parent
 4 PAHs?
 5 A. They can be, yes.
 6 Q. By contrast with alkylated PAHs, which are as I
 7 understand, and please correct me if I'm wrong, the parent
 8 PAH with an added carbon atom; correct?
 9 A. Yes.
 10 Q. And alkylated PAHs are actually more abundant in
 11 crude oil than the parent PAHs; correct?
 12 A. Well, it's a relative term. There's a lot of--the
 13 answer is yes, basically, but the quantitation of those
 14 alkylated PAHs is questionable.
 15 Q. Right. And we may want--we may go to Tab 27, now
 16 that we're in this volume--this is an article that you
 17 authored; correct?
 18 A. Yes.
 19 Q. And it's actually Exhibit 11 to your June 2013
 20 Report.
 21 Can you please go to Page--and you will find the
 22 numbers at the bottom left--2337.
 23 We have a series of graphs on the right column.
 24 And let me see if I understand how these charts work.
 25 At the bottom left, we have a chart that refers to

05:10 1 Exxon Valdez crude.
 2 Do you see that?
 3 A. Yes.
 4 Q. And on the vertical axis we have the PAH
 5 concentration by milligrams per kilogram of oil weight;
 6 correct?
 7 A. Yes.
 8 Q. And on the horizontal axis, we have the Polycyclic
 9 Aromatic Hydrocarbons (PAHs); correct?
 10 A. Yes.
 11 Q. And what we see, if you look at the letters, is
 12 that we have the parent compounds--for example, the one
 13 that begins with N on the very left--and the alkylated PAHs
 14 N1, N2, N3, N4.
 15 Do you see that?
 16 A. Yes.
 17 Q. And if you look at the relative concentrations in
 18 the Exxon Valdez Crude, you can see that the bar for N is
 19 lower than the concentrations of N1, N2, N3, and N4;
 20 correct?
 21 A. That's correct.
 22 Q. And if you look at the F--I understand that's
 23 phenanthrene; correct?
 24 A. I'm sorry, which one?
 25 Q. F--phenanthrene?

05:11 1 A. Fluorine.
 2 Q. Fluorine. Excuse me. My bad. F-1, F-2, F-3, are
 3 also higher concentrations; correct?
 4 A. Yes.
 5 Q. And the same happens with the P and with the D and
 6 with the C; correct?
 7 A. Yes, that's correct.
 8 Q. So, do you agree--and this is, to be clear, Exxon
 9 Valdez Crude, but you have analyzed the Ecuadorian
 10 crude--do you agree that generally alkyl PAHs are more
 11 abundant in crude oil, not their parents' PAHs?
 12 MS. WOOD: Objection. I just want to object to
 13 the vagueness of the general term.
 14 MR. GARCÍA REPRESA: You can strike generally.
 15 BY MR. GARCÍA REPRESA:
 16 Q. On the basis of your work here in the Exxon Valdez
 17 and your work in--on the basis of the Oriente crude oils,
 18 in those two cases were alkyl PAHs found in more
 19 concentration, in higher concentrations, than their parent
 20 compounds? Yes or no.
 21 A. Yes, in this document. The problem is that it's
 22 the way you quantify the compounds, where the parents
 23 actually have unique standards that are appropriate for the
 24 parent compounds for quantification, where the alkylated
 25 PAHs are quantified using the parent response factors.

05:15 1 of physical, chemical, and biological changes. Water
 2 washing of the spilled product will fractionate the light
 3 end soluble aromatics into the water. The solubility of
 4 alkylated PAH is inversely proportional to the number of
 5 rings and extent of alkylation."
 6 Do you see that?
 7 A. Yes.
 8 Q. Which I understand to mean that that the
 9 solubility will be lower with the higher alkylation;
 10 correct?
 11 A. That's--yes, that's generally true.
 12 Q. If you go now to the next paragraph,
 13 "biodegradation rates of hydrocarbons are dependent on the
 14 type of bacteria, presence of limiting nutrients,
 15 temperature, and types of hydrocarbons."
 16 You can skip the next sentence if you wish.
 17 It goes on to say: "Within a PAH homologous
 18 series, bacteria degradation rates generally are inversely
 19 proportional to the degree of alkylation."
 20 Do you see that?
 21 A. Yes.
 22 Q. So, I understand that the parent PAH will be
 23 degraded by bacteria quicker than the alkylated PAHs;
 24 correct?
 25 A. That's the generally accepted, yes, rule.

05:13 1 So, these concentrations are semi-quantitative at
 2 best, and they're used for forensics purposes for
 3 fingerprinting.
 4 Q. Correct. And we will get to that point. I
 5 appreciate--I think it's an interesting point.
 6 Now, before we do that, I understand--and please
 7 let me know if that's not the case--that alkyl PAHs, they
 8 generally weather in the environment at a slower rate than
 9 the parent PAHs; correct?
 10 A. Yes.
 11 Q. And you actually wrote about that in an article
 12 that we will find at Tab 17--and apologies we have to
 13 switch binders--last tab.
 14 Now, I understand--and if you're--are you with me
 15 yet? Tab 17?
 16 A. Yes.
 17 Q. This is Exhibit 28 to your June 2013 Report, and I
 18 believe that this is the 1992 article that you referred to
 19 during your direct examination; is that the case?
 20 A. Yes.
 21 Q. If you can please turn to Page 15--to the right on
 22 Page 15, actually--we can see in the second full paragraph
 23 below the graph that begins "petroleum distillate
 24 products," it says, "petroleum distillate products released
 25 into the environment are immediately subject to a variety

05:17 1 Q. Now, do you agree that EPA Method 8270, the one we
 2 have been discussing thus far, often lacks the sensitivity
 3 and is deficient in petroleum analyte selectivity to
 4 determine the fate and transport of petroleum in
 5 environmental samples?
 6 A. Can you repeat that question?
 7 Q. Sure.
 8 Do you agree that the method we were looking at,
 9 8270, often lacks sensitivity and is deficient in petroleum
 10 analyte selectivity to reliably determine the fate and
 11 transport of petroleum in environmental samples?
 12 A. It depends how it's applied.
 13 Q. The standard Method 8270. Unless I specify, I'm
 14 referring to the standard Method 8270 applied here. If you
 15 want, I can repeat the question adding "standard." Would
 16 that be better?
 17 A. No, I understand.
 18 Q. So, if we're talking about the standard method, do
 19 you agree that it lacks sensitivity and is deficient in
 20 analyte selectivity to reliably determine the fate and
 21 transport of petroleum in the environment?
 22 A. For forensics projects, yes.
 23 Q. And this method--and again, the standard
 24 method--does not measure the alkylated PAHs that we have
 25 been discussing; correct?

05:19 1 A. Generally not, but it can.
 2 Q. Okay. Let's go to Tab 16, if you will. This is
 3 Exhibit 16 to your 2013 Report, and it's an article that
 4 you wrote, I understand, in 1993; correct?
 5 A. Yes.
 6 Q. You will find the numbers at the bottom right-hand
 7 corner, and I would like you to go to Page 50, five-zero.
 8 Now, the discussion on Method 8270 begins at the
 9 bottom left with a title that begins with Number 3: EPA
 10 GC/MS methods, 625 and 8270.
 11 Do you see that?
 12 A. I'm sorry?
 13 Q. To the very left--there are three columns on this
 14 page. It's the left column at the very bottom.
 15 A. Objective?
 16 Q. Right above that, we see that there is a Number 3.
 17 A. Yes.
 18 Q. And I understand that that Number 3 is a title
 19 discussing what comes next in the article.
 20 Is that a fair representation?
 21 A. I don't know if it's a typo. I would have to read
 22 the discussion before that.
 23 Q. Well, if you go to the column to the very right,
 24 you will see that about 15 lines from the bottom we have
 25 another title, four: Gasoline range organics, GRO; diesel

05:20 1 range organics, DRO, and the discussion that follows
 2 relates to GRO and DRO.
 3 Do you see that?
 4 A. I'm looking for the four.
 5 I mean, when you say "typo four" do you mean it's
 6 a mistake?
 7 Q. Title. Title.
 8 A. Oh, I see.
 9 (Laughter.)
 10 Q. I knew we were going to get to that.
 11 A. I thought you said typo, and I couldn't figure it
 12 out. I'm sorry. It's all right. So, title. All right.
 13 So, let's get back on track here.
 14 GC/MS Method 625 and 8270. Okay. Three. And
 15 then four, gasoline range organics, diesel range organics.
 16 Yes.
 17 Q. Okay. What we have in between is a discussion of
 18 Methods 625 and 8270; correct?
 19 A. Correct.
 20 Q. And after the objective in the second column, we
 21 find the limitations, a description of the limitations of
 22 this method, and I will read it, and I would like you to
 23 confirm whether that's your opinion or not. You say, "in
 24 their standard form--" and this is why I was discussing
 25 with you the standard method--"these methods often lack the

05:21 1 sensitivity and always are deficient in petroleum analyte
 2 selectivity to reliably determine the fate and transport of
 3 petroleum in environmental samples."
 4 Is that your opinion?
 5 A. As it regards to forensics studies, yes.
 6 Q. And you go on to say: "The only petroleum-related
 7 compounds detected by these standard methods are 16
 8 priority pollutant PAHs."
 9 Do you see that?
 10 A. No, actually--I'm lost here.
 11 Q. It was--I just--I continued reading.
 12 A. Oh, 16--most of the 16--you said the first middle
 13 column?
 14 Q. Yes.
 15 A. Most of the 16 priority pollutant PAH target
 16 compounds--
 17 I'm sorry. It's just the quotations. Hold on. I
 18 can find it.
 19 Oh, it's higher. It's up at the top, then.
 20 Q. Yes.
 21 A. Oh, I'm sorry. Okay. So, what is the question?
 22 Q. You wrote: "The only petroleum-related compounds
 23 detected by these standard methods are the 16 priority
 24 pollutant PAHs."
 25 That is still your opinion?

05:23 1 A. Yes.
 2 Q. And if we keep reading down, now we go past that
 3 citation. We see that you express the view that most
 4 importantly, that PAH in petroleum often is denominated by
 5 the C1 to C4 alkylated homologous of a parent PAH, none of
 6 which are measured by the standard technique.
 7 Is that your opinion?
 8 A. That's correct, with regard to forensics analysis,
 9 being able to identify a spilled oil in a complex
 10 environment.
 11 Q. And you go on to say in the next section--and I
 12 refer to the section because there is a subtitle
 13 modification that begins there--that says that "the
 14 standard full scan GC/MS EPA 8270 method can be modified to
 15 provide semi-quantitative data for the alkylated PAH
 16 compounds."
 17 Do you see that?
 18 A. Yes.
 19 Q. And that is a modification that could be done to
 20 the method in order to semi-quantitatively assess alkylated
 21 PAHs; correct?
 22 A. Yes.
 23 Q. And just to confirm with you that my understanding
 24 is correct, if you go back a couple of pages in your
 25 article, Table 1 is a list of PAHs, and the 16 that are

05:24 1 covered by standard Method 8270 are the ones that have a
2 little A at the end of their name; correct?
3 A. Yes.
4 Q. And without modification to the method, do you
5 agree that it is not appropriate to determine the fate and
6 transport of petroleum in environmental samples?
7 A. I would say that the modified methods are better.
8 Q. And my question was about the standard method.
9 The standard method is not appropriate, is it, to reliably
10 determine the fate and transport of petroleum in
11 environmental samples; correct?
12 A. It depends on what you're looking for. If you're
13 looking for the 16 priority pollutant PAHs, it's an
14 appropriate method. If you're looking for forensic PAHs
15 such as the alkylated PAHs, it wouldn't provide those.
16 Q. Okay. Can we now turn--go back to your article at
17 Tab 17.
18 And I'm mindful of the time, and we're almost done
19 with this line. If you can go to Page 2 in this article,
20 towards the bottom of the page you will see the last
21 paragraph beginning with "other EPA methods are used."
22 A. Yes.
23 Q. And if you count with me one, two, three, four,
24 five lines down in that paragraph, you see a sentence that
25 begins, "semi-volatile organic methods such as EPA GC/MS

05:26 1 Method 8270 and 625 often are required at petroleum spill
2 sites, but they lack the sensitivity as well as the
3 petroleum analyte selectivity to reliably determine the
4 fate and transport of petroleum in environmental samples."
5 Is that still your opinion?
6 A. Yes. With regards to forensics analyses, yes.
7 Q. And if you go on to the next page--excuse me, it's
8 the same page in paper, but it's Page Number 3 in the
9 layout that we have before us, and actually begins on the
10 prior, at the very bottom, prior page--it says, "the
11 ability to identify and track the transport and fate of
12 the--WSF is the water-soluble fractions of PAHs--of PAHs
13 in the water-soluble fraction, rather--so, "the ability to
14 identify and track" those--the transport of those is
15 "greatly enhanced when the petroleum-specific methods are
16 used because of the increased number of measured analytes
17 and a reporting limit three orders of magnitude lower."
18 Do you see that?
19 A. No.
20 MS. WOOD: I apologize, counsel. I'm not sure
21 what page you're on. If you wouldn't mind telling me that
22 again.
23 MR. GARCÍA REPRESA: Of course. It's Page Number
24 2, second line from the bottom, begins "the ability to
25 identify and track the transport and fate of the WSFs--"

05:28 1 MS. WOOD: Thank you.
2 MR. GARCÍA REPRESA: "--is greatly enhanced when
3 the petroleum-specific methods are used because of the
4 increased number of measured analytes and a reporting limit
5 three orders of magnitude lower."
6 THE WITNESS: Yes, and again, from the forensics
7 perspective, it's true, yes.
8 BY MR. GARCÍA REPRESA:
9 Q. And if you can just turn now the page physically,
10 and we go to Page Number 5, we have a graphic on the right,
11 Figures 1.3 and Figure 1.4, where we can see the
12 difference. And I put it to you that the top graph shows
13 the results measured under EPA Method 8270 and the bottom
14 one using GC/MS method; correct?
15 A. Yes.
16 Q. And actually the explanation of Figure 1.3 says
17 that Method 8270 has "limited utility for oil spill
18 assessment owing to the relatively high reporting limits
19 and lack of petroleum-specific alkylated PAH homologues."
20 Correct?
21 A. Again, with that sentence I'm referring to the
22 forensics analyses that we do, yes.
23 Q. Okay. And that forensics analysis was done in
24 this case only for biodegradation studies, was it not?
25 A. Yes, because we knew where the oil was coming from

05:29 1 in terms of we knew it was all Oriente crude oil, so we
2 didn't view this as a forensics study, more of a--as a
3 health risk study.
4 Q. And you confirm that for the health risk study
5 purposes you did not test for the alkylated PAH--excuse
6 me--the Experts on behalf of Chevron doing the analysis did
7 not test for alkylated PAHs, did they?
8 A. My understanding that it was the 16 priority
9 pollutant PAHs that were identified by the U.S. EPA as
10 potential problems. That's the extent of my understanding.
11 Q. So, I will put the question again.
12 Do you confirm that for the health risk study
13 purposes--for health risk study purposes--in this case,
14 Chevron did not test for alkylated PAHs?
15 A. I believe they followed what was required in the
16 analytical plan and the Ecuadorian regulations.
17 Q. And did they test for alkylated PAHs? Yes or no?
18 A. No, not for that purpose.
19 Q. And actually, only a subgroup of the samples that
20 were collected during the Judicial Inspections was subject
21 to petroleum biodegradation analysis; correct?
22 A. Yes. My understanding that the high-level samples
23 that had oil visibly present were analyzed for the
24 additional analytes so that they could identify the
25 relationship between the production oil and the field

05:31 1 samples.
 2 Q. The rest of the samples were not tested for
 3 alkylated PAHs; correct?
 4 A. I don't believe so, no.
 5 Q. Now, would you say that increasing the sensitivity
 6 of an analysis to capture the alkylated PAHs allows for
 7 petroleum to be detected and measured more accurately at a
 8 distance from the source?
 9 A. I think that has to do with the regulations and
 10 the requirements of the regulations, what the
 11 concentrations are.
 12 Q. Okay. Now I'm asking for your opinion as an
 13 expert.
 14 Do you agree that, by increasing the sensitivity
 15 of an analysis so as to capture the alkylated PAHs that
 16 allows for petroleum to be detected and measured more
 17 accurately at a distance from the source?
 18 MS. WOOD: Objection. Mr. President, clearly
 19 counsel is reading from a document, and I don't think it's
 20 fair to read excerpts out of a document to this Witness
 21 without referring him to the document that he is citing.
 22 PRESIDENT VEEDER: Difficult also for the Tribunal
 23 to follow. Are you reading from the document?
 24 MR. GARCÍA REPRESA: I will-yes, I'm going to
 25 that, and I was trying to cut it short, but I will go

CERTIFICATE OF REPORTER

I, David A. Kasdan, RDR-CRR, Court Reporter, do hereby certify that the foregoing proceedings were stenographically recorded by me and thereafter reduced to typewritten form by computer-assisted transcription under my direction and supervision; and that the foregoing transcript is a true and accurate record of the proceedings.

I further certify that I am neither counsel for, related to, nor employed by any of the parties to this action in this proceeding, nor financially or otherwise interested in the outcome of this litigation.


 DAVID A. KASDAN

05:33 1 through the document.
 2 PRESIDENT VEEDER: Let's stop, because it's after
 3 5:30. We wanted to stop at 5:30, but we gave you latitude
 4 to come to the end of this topic.
 5 Let's stop now, and I think you can reconsider
 6 what you want to ask this Witness tomorrow.
 7 MR. GARCÍA REPRESA: Yes. I was wondering, I
 8 think I had about five or ten minutes more, but tomorrow.
 9 Okay.
 10 PRESIDENT VEEDER: No. No.
 11 So, let's stop now tonight. We resume here at
 12 11:15 tomorrow. And we ask you not to discuss your
 13 testimony or this case with anyone until you come back
 14 before the Tribunal.
 15 THE WITNESS: Of course.
 16 PRESIDENT VEEDER: Thank you very much.
 17 (Whereupon, at 5:33 p.m., the Hearing was
 18 adjourned until 11:15 a.m. the following day.)
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