

**BRITISH COLUMBIA UTILITIES COMMISSION**  
**IN THE MATTER OF THE UTILITIES COMMISSION ACT**  
**R.S.B.C. 1996, CHAPTER 473**

**And**

**Re: FortisBC Energy Inc.**  
**Application for a Certificate of Public Convenience and**  
**Necessity for the Advanced Metering Infrastructure Project**

**Kelowna, B.C.**  
**March 7, 2013**

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**PROCEEDINGS**

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**BEFORE:**

<b>L. Kelsey,</b>	<b>Commission Chair / Panel Chair</b>
<b>N. MacMurchy,</b>	<b>Panel Member</b>
<b>D. Morton,</b>	<b>Panel Member</b>

**VOLUME 5**

## APPEARANCES

G.A. FULTON, Q.C.	Commission Counsel
G.K. MACINTOSH, Q.C. and L.. HERBST	FortisBC Inc.
I. WEBB and C. FOLKESTAD	British Columbia Hydro and Power Authority
C. WEAVER	British Columbia Municipal Electric Utilities and Commercial Energy Consumers Association of British Columbia
E. KUNG and T. BRAITHWAITE	B.C. Pensioner and Senior's Organization, BC Coalition of People with Disabilities, Counsel of Senior Citizens' Organizations and the Tenant Resource and Advisory Centre
W. ANDREWS	B.C. Sustainable Energy Association and Sierra Club of British Columbia
D.M. AARON	Citizens for Safe Technology
C. BENNETT	West Kootenay Concerned Citizens
A. ATAMENENKO	Riding of B.C. Southern Interior
A. SHADRACK	Electoral Area D, Regional District, Central Kootenay
J. FLYNN	On his own Behalf
K. MILES	On his own Behalf

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**TIM SWANSON, Affirmed:**

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**CAARS**

**KELOWNA, B.C.**

**MARCH 7, 2013**

**(PROCEEDINGS RESUMED AT 9:00 A.M.)**

THE CHAIRPERSON: Please be seated.

**FORTIS PANEL 2 - HEALTH AND ENVIRONMENT**

**TOM LOSKI, Resumed:**

**MARK RICHARD WARREN, Resumed:**

**WILLIAM HAYES BAILEY, Resumed:**

**YAKOV SHKOLNIKOV, Resumed:**

THE CHAIRPERSON: Well, good morning, everyone. Mr.

Fulton, you have some matters to cover this morning?

MR. FULTON: Yes, I do, Mr. Chairman, I have two matters,  
thank you.

The first is a matter that you raised with us at the end of the day yesterday, and that relates to schedule going forward. For the FortisBC panel 2, on present estimates, I estimate that we will finish on Monday. Mr. Aaron estimates that he will need the balance of today to complete his cross and then the other estimates total approximately nine hours, including time for my questions. That nine hours, though, does not include time for Commission Panel questions and re-examination, so I think that pretty much takes us through most of Monday.

In terms of next week, then, the plan would

1 be to finish Fortis panel 2 on Monday and if there is  
2 some time left in the day, we can always deal with the  
5 subject matter of the outstanding IRs that relate to  
4 the written phase of the hearing, and that are the  
5 subject of Exhibit A-40.

6 Then, moving to Tuesday, the proposed  
7 schedule of witnesses is as follows. Beginning  
8 Tuesday at 1:00 p.m., Dr. Jamieson. Wednesday at 9:00  
9 a.m., Dr. Blank. Wednesday at 1:00 p.m., Dr. Sears.  
10 Thursday at 1:00 p.m., Dr. Maisch. And Friday at 9:00  
11 a.m., Dr. Carpenter. With the exception of Dr. Maisch  
12 who is in Australia, the -- and Dr. Jamieson, who is  
13 in the U.K., the other witnesses are in the eastern  
14 time zone.

15 MR. AARON: Sorry. Would you please repeat that  
16 schedule? Because there might have been a variation,  
17 and I don't want my friends to be under any  
18 misapprehension for the purpose of their preparation.

19 MR. FULTON: All right. Tuesday at 1:00 p.m. is Dr.  
20 Jamieson. Wednesday at 9:00 a.m., Dr. Blank.  
21 Wednesday at 1:00 p.m., Dr. Sears. Thursday at 1:00  
22 p.m., Dr. Maisch. And Friday at 9:00 a.m., Dr.  
23 Carpenter.

24 MR. AARON: That is how I've got it set up, with one  
25 exception. There has been a switch as between the  
26 Tuesday and the Thursday, as between Don Maisch and

1 Isaac Jamieson. So that I've got it so that the first  
2 witness will be Don Maisch at 1:00 p.m. on Tuesday.  
3  
4 And then as you said, Wednesday, Martin Blank in the  
5 morning, Meg Sears in the afternoon.

6 MR. FULTON: Yes.

7 MR. AARON: Thursday is open for Isaac Jamieson, although  
8 I have yet to confirm with him.

9 MR. FULTON: Well --

10 MR. AARON: But it -- so he could be at any time on  
11 Thursday. And then Friday I have it as you've stated,  
12 David Carpenter at 9:00 a.m.

13 MR. FULTON: Thank you for that change, then, Mr. Aaron.  
14 My preference, Mr. Chairman, would be then to have Dr.  
15 Jamieson start at 9:00 a.m. on Thursday, subject to  
16 what I'm going to say in terms of start times.

17 **Proceeding Time 9:04 a.m. T2**

18 The schedule that I've outlined to the  
19 Panel contemplates the usual brief direct examination  
20 of witness panels, so no more than 10 to 15 minutes;  
21 that there would be no issue on witness qualifications  
22 in the sense that the witnesses who will be tendered  
23 as expert evidence are being tendered on the basis  
24 that the parties presently understand that they are  
25 being tendered; that the cross-examination will be  
26 limited to parties adverse or opposed in interest. So  
that means that the cross-examinations will be

1 conducted by Fortis, by CEC, BCPSO, B.C. Hydro, and  
2 BCSEA to the extent that they have opposing views.  
5 There will also be the opportunity for Commission  
4 Staff to cross-examine if they decide to do so, and of  
5 course questions by Commission Panel.

6 Where there is some risk that we will run  
7 out of time for a witness where the witnesses are --  
8 where we have two witnesses on one day is if a witness  
9 who is scheduled for 9:00 a.m. on that day goes  
10 longer. And in that respect, in my view there are two  
11 options and this could be a combination. One is that  
12 for the days that we were scheduled to start at 9:00  
13 we start at 8:00, and that to the extent that people  
14 are longer in the cross-examination than they  
15 presently anticipate they will be, the second witness  
16 of the day will basically be on call until we get  
17 finished and we have an appropriate break for lunch  
18 and then come to the afternoon witness. So, while  
19 we'll give the 1:00 time for the second witness, that  
20 time may be somewhat fluid.

21 The 8:00 start is probably not going to  
22 affect the people in the east as much as it will us  
23 here in the sense that there is a time change this  
24 weekend, so it will mean that those of us who are  
25 early risers will be getting up even earlier, and  
26 those of us who are later risers it will be even more

1           difficult, but I think the 8:00 time commencement does  
2           allow for not only completing in time to get to the  
3           1:00 witness on days where we have two witnesses, but  
4           also it allows for any technical glitches that may be  
5           experienced in the course of the video conferencing.

6                         This is the first time that, in my  
7           involvement with the Commission over a period of in  
8           excess of 20 years that we have done video  
9           conferencing of witnesses. The technology really  
10          wasn't there early on. So there may be some technical  
11          glitches. In terms of the cross-examination -- I may  
12          have timed out. I see that the clock has fallen off  
13          the wall, so --

14 THE CHAIRPERSON:    That would be the technology that  
15                         you're probably more familiar with, too.

16 MR. FULTON:         Yes indeed, Mr. Chairman.

17                         So that in terms of the technology, this is  
18           going to be evidence by video conference, and there  
19           was an issue this morning on a test run about the  
20           individual's image not appearing. So it will be left  
21           with Mr. Aaron to ensure that his witnesses have the  
22           capabilities to deliver visual images as the video  
23           conferencing of the examination suggests.

24                         In terms of the cross-examination by video,  
25           I also understand that there are some challenges when  
26           it comes to the use of documents. So that if parties

1 are planning to use documents that are not in the  
2 record or that the witness at the other end of the  
5 link may not have, they are going to have to provide  
4 those documents the day -- at least the day before so  
5 that the Hearing Officer can make sure that the  
6 individual at the other end has them, or counsel who  
7 is going to be conducting a cross-examination should  
8 indicate to Mr. Aaron what documents that they believe  
9 that the witness will need, so that the witness has  
10 those documents during the cross-examination.

11 **Proceeding Time 9:09 a.m. T03**

12 In terms of test runs of these witnesses,  
13 in my view these test runs need to be completed by the  
14 end of the week this week, so that we're not going  
15 through glitches on Tuesday morning for the  
16 examinations by video conference. I will say as well  
17 that the Hearing Officers are not available on the  
18 weekend, so really this needs to be a task that's  
19 finished tomorrow.

20 And that is probably all I have to say at  
21 this point on this issue, Mr. Chairman, save and  
22 except to receive some indication from the Panel as to  
23 whether on the days when there are two witnesses, you  
24 want to have an 8:00 a.m. start and on the date when -  
25 - on Friday, you want to have an 8:00 a.m. start, and  
26 that we would be going until we concluded the first

1 witness on each day, in terms that we would -- if the  
2 time for the first witness extended beyond the 12:00  
5 or into the 1:00 time frame, that that first witness  
4 would be finished before we went to the second  
5 witness.

6 THE CHAIRPERSON: Yes. I have a few comments I'd like to  
7 make on the video conferencing stage. And firstly in  
8 terms of extending our hours, I think we should plan  
9 on an 8:00 start on the days that we are doing cross-  
10 examination by video conference. We may find, after  
11 we do that, the first time, and you have an  
12 opportunity, Mr. Fulton, to continue to canvass the  
13 requirements of the individuals who want to cross-  
14 examine, we may find that we can shrink that time  
15 frame down a little bit. But let's plan on starting  
16 at 8:00 in the morning.

17 On the matter of video conferencing, I'd  
18 just like to confirm the expectations of the  
19 Commission. Now, the Commission accommodated CSTS's  
20 request to have its expert witnesses cross-examined by  
21 video conference. This was done for a couple of  
22 reasons. One was, frankly, it made economic sense,  
23 and I think that's a benefit to everyone, including  
24 FortisBC's ratepayers. But also because certain  
25 experts were unable to travel, and so to accommodate  
26 that request, we also agreed to video conferencing.



1 to limit the ability of interveners to fully cross-  
2 examine the morning witness, you know, which is the  
5 case, which would be the case if we had witness panels  
4 in the hearing room. So we will plan on the second  
5 witness of the day to be available at 1:00, but we may  
6 have to postpone that if the morning witness requires  
7 additional time.

8 Are those issues clear, Mr. Aaron?

9 MR. AARON: Yes, Mr. Chair. Thank you to the Panel for  
10 accommodating this, especially it being unique.

11 With respect to the morning start time, the  
12 current arrangements as made between Mr. Fulton and  
13 myself and the three morning witnesses have them set  
14 at 9:00 a.m. on Wednesday, Thursday and Friday. Is it  
15 your wish, Mr. Chair, that I seek to reschedule them  
16 for 8:00 a.m.? Is that what I was to understand? Or  
17 was it that Mr. Fulton was putting to you that we  
18 might have to switch to an 8:00 a.m. start in the  
19 event that an afternoon witness was running overtime?

20 THE CHAIRPERSON: Well, I, just hearing the amount of  
21 time that I anticipate will be required for cross-  
22 examination and the number of interveners who appear  
23 to want to engage in cross-examination, I'm concerned  
24 that we can do that effectively in a sense -- well,  
25 not in a sense, in reality in a three-hour time period  
26 from 9:00 till noon. I think it's reasonable to have

1 a break at noon for perhaps not a full hour but the  
2 good part of an hour. Three hours seems to me to be  
3 cutting things a little short. I would rather start  
4 at 8:00 if you can adjust with your witnesses, I would  
5 rather start at 8:00 and run out of questions rather  
6 than run out of time.

7 MR. AARON: All right, I will -- sorry, I've switched  
8 mikes. I will then now issue a request to Blank,  
9 Jamieson and Carpenter with respect to Wednesday,  
10 Thursday, Friday morning respectively to start one  
11 hour earlier.

12 THE CHAIRPERSON: Thank you.

13 MR. AARON: And so I have -- I should say that the  
14 contingency around Isaac Jamieson on Thursday has been  
15 resolved. I have since been e-mailing with him and so  
16 I can confirm this schedule and I'll do it. The first  
17 CST witness will be Don Maisch on Tuesday 1:00. Then  
18 Wednesday we will have Martin Blank at 9:00 unless I  
19 can get him to agree to come at 8:00, and Meg Sears at  
20 1:00 on Wednesday. On Thursday Isaac Jamieson at 9:00  
21 unless I can agree to get him to come at 8:00. And  
22 then David Carpenter at the morning of Friday. And I  
23 think the witnesses understand there has to be some  
24 flexibility on time. They've already been juggled  
25 around at least half a dozen times each as we've tried  
26 to anticipate when to schedule them. And I have put



1           about, that we should know that well in advance.

2 MR. AARON:    I am just now sending an e-mail to them with  
5           that request.

4 THE CHAIRPERSON:   Yes. My request, or the request of the  
5           panel, would be that they be available for the morning  
6           session at 8:00 a.m.

7 MR. FULTON:    Thank you. The second matter that I have,  
8           Mr. Chairman, relates to a request to appear. The  
9           Commission Secretary received a request from an  
10          individual who had -- whose name was familiar to me in  
11          the sense that I thought she may have appeared at the  
12          Kelowna input, community input session. I asked  
13          Commission -- the Commission Secretary to follow up  
14          and follow-up did take place, and the person confirmed  
15          that they were at the Kelowna community input session  
16          and did make a presentation there. They also filed a  
17          letter of comment which is E-31.

18                       According to A-25, which is the procedural  
19                       letter, the Commission Panel did not contemplate that  
20                       parties who had appeared at a community input session  
21                       would be allowed to appear again and make a submission  
22                       at this hearing. And you also referenced that in your  
23                       opening comments in the transcript, Volume 2, at page  
24                       122.

25                       The individual in their e-mail appears to  
26                       have some questions of Fortis that are -- or of B.C.

1 Hydro that haven't been asked in relation to her  
2 property. Those questions, I don't believe, are the  
5 subject of any Information Request process because she  
4 is not an intervener. And then she also is opposed to  
5 the application.

6 What I am seeking from you, Mr. Chairman,  
7 is confirmation that this individual can be advised  
8 that no, she will not be able to make a further  
9 submission at these proceedings, since she's made one  
10 at the community input session, and that if she wants  
11 to ask questions of the FortisBC panel, she will need  
12 to attend and seek leave to ask those questions.

13 THE CHAIRPERSON: I can confirm that.

14 MR. FULTON: All right. Thank you. Then I will see that  
15 the Commission Secretary is advised accordingly, and  
16 she can in turn advise this individual.

17 THE CHAIRPERSON: Thank you.

18 MR. FULTON: That concludes my preliminary matters, Mr.  
19 Chairman.

20 THE CHAIRPERSON: Thank you. Mr. Macintosh?

21 MR. MACINTOSH: Yes, Mr. Chair. Thanks. Just one other  
22 scheduling query, with respect to tomorrow, Friday.  
23 As the Commission knows, many people participating in  
24 the hearing are not from town here, not from Kelowna,  
25 and need to or hope to leave for part of the weekend.  
26 And given that this panel that's now being cross-

1 examined is spilling over to Monday, and Monday is  
2 open for this panel only, for the balance of that day,  
3 I was hoping that we might possibly rise tomorrow at 4  
4 p.m., and allow for departures.

5 THE CHAIRPERSON: Are there any objections to that  
6 suggestion?

7 MR. AARON: No objection, other than a specific  
8 endorsement.

9 THE CHAIRPERSON: Thank you. Mr. Fulton?

10 MR. FULTON: I'm not objecting, but I don't want to lose  
11 any time either, so I'm wondering whether we couldn't  
12 start at 8:00 tomorrow morning.

13 MR. MACINTOSH: It's a bargain with the devil, but I'll  
14 accept it.

15 THE CHAIRPERSON: I think, Mr. Fulton, that's a good  
16 suggestion. So I'll be in the gym at 5 o'clock  
17 tomorrow morning, not six.

18 MR. MACINTOSH: Or we can just stay up tonight.

19 THE CHAIRPERSON: That's right. Let's split the  
20 difference on that and start at 8:30 tomorrow morning.  
21 And I think that will help to make maximum use of the  
22 day, and we'll plan on wrapping up at 4:00.

23 Mr. Aaron?

24 **Proceeding Time 9:24 a.m. T6**

25 MR. AARON: The Panel might have noticed that Karl Maret  
26 has not been mentioned in the context of our

1 scheduling discussions. He's ill. He hasn't  
2 responded, he hasn't been able to respond to  
3 information requests, and he's not going to be  
4 available for cross-examination. So I put that on the  
5 record as a matter of transparency.

6 The implications of that, I don't intend to  
7 argue that now. I submit that's a matter of legal  
8 argument pertaining to what weight, if any, to be  
9 given to his expert report.

10 MR. MACINTOSH: Mr. Chair, I'll be brief for this moment,  
11 but my friend professes this to be a matter of  
12 transparency. I take some issue with that. It  
13 appears that my friend was fully aware yesterday when  
14 he was putting the Maret report to this panel  
15 repeatedly. There are dozens of pages of transcript  
16 asking this panel to refute what Dr. Maret said. My  
17 friend at that time apparently knew Dr. Maret wasn't  
18 going to be here to defend the report. And that means  
19 that the dispute that was being engaged in at the  
20 instance of my friend using the Maret has a foundation  
21 to it which is now lacking, and I will be asking that  
22 the Maret -- I will be dealing with what should be  
23 done with the Maret report later. I will certainly be  
24 asking my friend to refrain from putting to the panel  
25 opposite expert theses which he is not in a position  
26 to defend, particularly when he knows he can't defend

1           them when he puts them to the panel.

2 MR. AARON:    In my submission, in cross-examination I  
5           would be entitled to put to the witness --

4 THE CHAIRPERSON:   Mr. Aaron, I'm going to ask you and Mr.  
5           Macintosh to advance these arguments in your final  
6           submissions, and that will allow the Panel to then  
7           consider those arguments and decide what weight it  
8           will apply.

9 MR. AARON:    Only that the issue may arise if I again put  
10           the Maret report to the witness.

11 MR. MACINTOSH:   Mr. Chair, what I will endeavour to do  
12           while my friend is organizing his cross is formulate  
13           what I will submit is an appropriate process that  
14           minimizes the consumption of time on this Meret issue.  
15           So I'll consider this issue when I'm here, now. My  
16           friend can march ahead and I may have a practical  
17           proposal to make by the time he gets to it.

18 THE CHAIRPERSON:   Thank you.

19 MR. AARON:    I mean, in my submission it's just like any  
20           document that we would debate in cross-examination  
21           that is authored by a person who is not in this room,  
22           such as the Swerdlow document that Dr. Bailey brought  
23           out yesterday which we had much discussion of. And it  
24           was the topic of cross-examination. So Maret's  
25           unavailability for cross-examination I think goes to  
26           perhaps the admissibility and/or the weight of his

1 expert opinion, his evidence. However, it can be  
2 used, nevertheless, irrespective of your conclusions  
3 on that, as an aid to challenging the witness, for  
4 example I could say --

5 THE CHAIRPERSON: Mr. Aaron, I said we'd consider your  
6 arguments when they're made later. So I'd ask you to  
7 continue with your cross-examination at this stage.

8 MR. AARON: All right.

9 **CROSS-EXAMINATION BY MR. AARON (Continued):**

10 MR. AARON: Q: Well, on that note I will start then by  
11 asking Dr. Bailey to open up the Maret report then at  
12 page 22, please.

13 THE CHAIRPERSON: Mr. Aaron, I'm really getting anxious  
14 here. You know, I really expect you to be prepared  
15 and I -- thank you.

16 MR. AARON: I was just setting up at the podium to begin  
17 my cross.

18 THE CHAIRPERSON: Yes. Thank you.

19 MR. AARON: Q: Dr. Bailey, can I refer you to page 22  
20 of the Maret report?

21 **Proceeding Time 9:29 a.m. T07**

22 DR. BAILEY: A: Yes.

23 MR. AARON: Q: Under the heading "Long-term effects of  
24 microwave emissions", Maret writes,

25 "The majority of scientific studies have  
26 been done on short-term effects of

1           microwaves at various power density levels."

2           Can you agree with that statement?

5 DR. BAILEY:   A:   Yes, that's generally the case with  
4           most exposures that are investigated, and it also  
5           applies to radio frequency fields.

6 MR. AARON:    Q:   He goes on to say:

7                   "There is evidence of cumulative effects  
8                   with long-term irradiation."

9           And he goes on to cite Magras, 1997.  Is that a study  
10          you're familiar with?

11 DR. BAILEY:   A:   Yes, I am.

12 MR. AARON:    Q:   Is he accurate in describing it -- that  
13          mice exposed to low-intensity radio frequency  
14          radiation became less reproductive after five  
15          generations, and after five generations were sterile.

16 DR. BAILEY:   A:   The difficulty with this study is that,  
17          as I recall this particular study, it involved  
18          exposures under field conditions and not under  
19          controlled laboratory conditions.  And so the  
20          differences between the exposed and control  
21          populations with animals could be due to a variety of  
22          other factors that were not controlled.  And so one  
23          would look to controlled laboratory studies for  
24          drawing conclusions such as he would want to make.

25 MR. AARON:    Q:   All right.  And that's a criticism of  
26          Magras that -- is that your own criticism of Magras,

1 or is that something that appears in the literature?

2 DR. BAILEY: A: That's my criticism, sir.

5 MR. AARON: Q: Okay. And did you consider that study  
4 in the context of preparation of your report?

5 DR. BAILEY: A: Yes, I read it before I did the report.

6 MR. AARON: Q: All right. Mr. Warren, if I may draw  
7 your attention to the transcript from day 2 of these  
8 hearings, where at page 494 --

9 MR. WARREN: A: Sorry, 404 on Volume 3?

10 MR. AARON: Q: 494.

11 MR. WARREN: A: 494.

12 MR. AARON: Q: At line 12. Mr. Miles asked you,  
13 "Moving on, are you aware that the CPN  
14 proposal envisions -- and I think this is  
15 more towards -- I'm sure everyone is, but  
16 envisions a period of 20 years' RF exposure  
17 to residents and customers in their homes  
18 from two sources, and the smart meter  
19 operating 24/7.

20 MR. WARREN: A: Yes, and the Safety Code  
21 6 limits are intended to address those --  
22 that --

23 MR. MILES: Q: The 20 years of --

24 MR. WARREN: A: Yeah.

25 MR. MILES: Q: -- perpetual exposure.

26 MR. WARREN: A: Correct."



1           you see where Mr. Miles says,

2                   "Can you confirm that your report does  
5                   suggest the effects of RF exposure on humans  
4                   are cumulative over time?"

5           Line 6.

6 DR. BAILEY:    A:    Yes.

7 MR. AARON:    Q:    And your answer was something -- could  
8           you read your answer to me?  You said,

9                   "I think we have to be careful about using  
10                  the word "cumulative". ..."

11 DR. BAILEY:   A:    Yes.  "I think we have to be ..." This  
12           is starting at line 10.

13                   "I think we have to be careful about using  
14                   the word "cumulative".  The characteristic  
15                   of radio frequency fields in contradiction  
16                   to some chemicals, for instance, is that  
17                   when the exposure is turned off there is no  
18                   residual effect of -- there is no residual  
19                   exposure.  Whereas with some chemicals, you  
20                   can ingest them in your food and they can  
21                   persist in your body for many years, if not  
22                   decades."

23 MR. AARON:    Q:    So, you're not saying this, are you?  
24           You're not saying when exposure is turned off, it's as  
25           if there had been no exposure.

26 DR. BAILEY:   A:    Depending upon what the intensity of

1           that exposure was and the nature of the interaction,  
2           that would be the case. Or, as I describe later on,  
5           might not be the case.

4 MR. AARON:   Q:   Okay. So, there might be a residual  
5           effect, depending on the intensity and the factors you  
6           just cited.

7 DR. BAILEY:   A:   Right. So, example, if the exposure  
8           rate of a frequency field was strong enough to produce  
9           a burn, there would be a residual effect that would  
10          outlast the exposure.

11 MR. AARON:   Q:   All right. And -- but we're obviously  
12          talking about the possibility of an effect in the non-  
13          thermal -- at non-thermal levels. It's not your  
14          evidence that an exposure at non-thermal levels is  
15          irrelevant to a subsequent exposure at non-thermal  
16          levels. Necessarily.

17 DR. BAILEY:   A:   No.

18 MR. AARON:   Q:   Okay. Thank you. So, the fact that  
19          there was an exposure at non-thermal levels might have  
20          some relevance to the impact of a subsequent exposure  
21          at non-thermal levels.

22 DR. BAILEY:   A:   Potentially.

23 MR. AARON:   Q:   All right. Therein lies the possibility  
24          of cumulative effect.

25 DR. BAILEY:   A:   It would have to be determined  
26          scientifically whether or not such an effect -- that

1           there was evidence for it.

2 MR. AARON:   Q:   Okay. All right. I just wanted to  
5           clarify your answer to Mr. Miles. And at that same  
4           transcript, at page 499, at line 24, you say: There  
5           is in the biological response to radio frequency  
6           exposure -- sorry, radio frequency fields exposure.  
7           If that is continued at a sufficiently high level for  
8           a long period of time, there can be tissue heating,  
9           and that is not where that increase in temperature of  
10          the tissue is not sufficiently carried away by  
11          circulatory and disperse in the tissue. There can be  
12          an increase, in effect.

13                       Was that answer specific to thermal, or is  
14          the principle, the potential you identify in that  
15          answer applicable to both thermal and non-thermal  
16          levels?

17                                       **Proceeding Time 9:39 a.m. T9**

18 DR. BAILEY:   A:   This particular text that you read  
19           pertains to thermal.

20 MR. AARON:   Q:   And the principle identified therein,  
21           would it pertain to non-thermal as well?

22 DR. BAILEY:   A:   If there were a similar effect,  
23           potentially.

24 MR. AARON:   Q:   Okay. And in that same transcript at  
25           page 500, please, sir, you said

26                       "That you could have the result of an

1 exposure at, you know, one second, and then  
2 you have another exposure a second later.  
5 And the additive effect of exposures in --  
4 over a minute or several minutes could  
5 produce an effect that would not occur if  
6 that -- if you had exposure at, you know,  
7 separated by hours, to take an extreme  
8 case."

9 Does that sound like your evidence? Am I  
10 reading that correctly? Does the transcript properly  
11 reflect your --

12 DR. BAILEY: A: Yes, it does.

13 MR. AARON: Q: All right. So is my understanding of  
14 that correct in that you're saying if you had a second  
15 exposure, the fact that there was a previous exposure  
16 could produce an effect that would not have occurred  
17 if the previous exposure had been -- if the interval  
18 between the two exposures had been greater.

19 DR. BAILEY: A: Correct.

20 MR. AARON: Q: So the interval between exposures is  
21 also a relevant factor in the cumulative -- potential  
22 cumulative impact, in your supposition.

23 DR. BAILEY: A: Yes, in a --

24 MR. AARON: Q: Okay. I referred to Israeli standards  
25 yesterday that speak to cumulative effect, and you  
26 said you weren't familiar with them. I'm going to ask

1       you to -- I'm going to point them out to you and see  
2       if I can probe your insight into them. They're at  
5       Maret in his report at 53. The last paragraph -- I'll  
4       read the whole paragraph, he says:

5               "Nonetheless, the nature of cumulative RF  
6               exposure is controversial because few  
7               epidemiological studies have utilized long-  
8               term monitoring instrumentation directly on  
9               exposed subjects. These types of monitors  
10              are now available for these types of  
11              measurements. Long-term studies take time  
12              and are costly. Human exposure to low-level  
13              base radiation has shown long-term adverse  
14              health effects as described earlier. With  
15              the mounting number of epidemiological  
16              studies describing long-term effects of RF  
17              that now exists, it's my opinion that a  
18              precautionary approach is necessary rather  
19              than extrapolating the absence of risk as is  
20              currently being done with higher exposure  
21              guidelines promulgated by ICNIRP and Safety  
22              Code 6. Israel has adopted long-term  
23              exposure levels that are ten times lower  
24              than their short-term exposure guidelines.  
25              Russia and China have similarly set lower  
26              exposure standards based in part on long-

1 term exposure concerns."

2 So it's those last two facts that I ask you  
5 to confirm, Dr. Bailey, because in the E<sup>x</sup>ponent Report  
4 you refer to -- you use the language, and I quote you,  
5 "the applicable standard", or "relevant standards".

6 **Proceeding Time 9:43 a.m. T10**

7 DR. BAILEY: A: Mm-hmm.

8 MR. AARON: Q: You recall using that language?

9 DR. BAILEY: A: Yes.

10 MR. AARON: Q: And so would you be good enough to  
11 confirm or deny those two statements of fact? One,  
12 Israel has adopted long-term exposure levels that are  
13 ten times lower than the short-term exposure  
14 guidelines, and two, Russia and China have similarly  
15 set lower exposure standards based in part on long-  
16 term exposures.

17 DR. BAILEY: A: As I said, I have not read the Israel  
18 exposure documents, so I can't comment on the accuracy  
19 of the statement. But -- so I think the point would  
20 be that even if you took the safety code limits and  
21 dropped them by a factor of ten, the AMI smart meters  
22 would still comply.

23 MR. AARON: Q: With what?

24 DR. BAILEY: A: With a standard that's ten times lower  
25 than it currently is. So if you think --

26 MR. AARON: Q: I don't know if it's talking about --

1           you may be right about that. And I don't want to  
2           argue. And I think that point that you made is a  
5           point for argument, and I'm not taking any position on  
4           it, because I don't want to argue now.

5                       My query is whether the factor of  
6           cumulative exposure is hard-wired into a regulatory  
7           standard. Okay? Because it was clear from your  
8           evidence yesterday that Safety Code 6 doesn't have any  
9           limit on cumulative exposure. And so, I put it to you  
10          that Israel does have such a limit, and I'm wondering  
11          if it -- you would agree by way of undertaking or  
12          Information Request, because you're an expert on these  
13          standards, and you referred to these international  
14          standards, just to confirm that Israel has adopted  
15          long-term exposure levels that are ten times lower  
16          than their short-term exposure guidelines.

17 DR. BAILEY:    A:    Perhaps you could provide that to me.

18 MR. AARON:     Q:     Well, I'm not the expert in these  
19                  standards, and I haven't purported to have made  
20                  representations with respect to international  
21                  standards.

22                       I don't know what your position is on that  
23           request, Mr. Macintosh.

24 MR. MACINTOSH:   Well, I object to the witness being asked  
25                  to do homework for Mr. Aaron. And what I mean by  
26                  that, Mr. Chair, is this. The Maret report is not

1 going to be defended by Dr. Maret, so there is no  
2 evidence at present in front of the hearing on what  
5 the Israeli standards are or are not. I fully expect  
4 there is a full explanation which Dr. Bailey just  
5 touched on, which is the safety factors within Safety  
6 Code 6 would take it down to a comparable level  
7 anyway. But that's neither here nor there, for this.

8 The point is that Mr. Aaron is asking Dr.  
9 Bailey to go out and do some research for him. Dr.  
10 Bailey has not been presenting the Israeli standards,  
11 he has not expressed knowledge of the Israeli  
12 standards, and the only reference to them is in a  
13 report that is not going to be defended by the author  
14 of the report. So it's not for Dr. Bailey to be doing  
15 this.

16 And I can't help but observe that two days  
17 ago Mr. Aaron was insisting that the E<sup>x</sup>Ponent Report be  
18 struck out because one of the three authors was not  
19 present. He's now asking us to be drawing inferences  
20 on the Maret report when the only author is not  
21 present, and he still wants it to have legs. But I  
22 digress, I confess.

23 My point is, in my respectful submission,  
24 Dr. Bailey is not to be doing this homework for Mr.  
25 Aaron's thesis.

26 **Proceeding Time 9:48 a.m. T11**

1 THE CHAIRPERSON: I support that view or I agree with  
2 that view. I don't think your request is a  
5 reasonable.

4 MR. AARON: Might I make submissions on the --

5 THE CHAIRPERSON: Yes, you may, and I'm prepared to be  
6 persuaded.

7 MR. AARON: Okay. Thank you. The point in relation to  
8 which this objection rises is a point not of opinion  
9 of Karl Maret. I'm not asking, I'm not -- this is an  
10 opinion that is not going to be subject to defence by  
11 way of cross-examination. That's an important point  
12 that my friend is absolutely correct to be sensitive  
13 to the fact, and yes, I did attack the weight,  
14 admissibility, and the Panel ruled that the weight of  
15 the E<sup>x</sup>ponent Report may well be impugned on the basis  
16 of the fact that one of its authors is not available  
17 for cross-examination.

18 This point in relation to which the  
19 objection is risen rises with respect to not a  
20 question of opinion but a simple matter of fact, very  
21 basic fact of what is the standard that an  
22 international body has, and whether that standard  
23 incorporates consideration of cumulative impact, which  
24 we've heard Safety Code 6 doesn't.

25 The question is very much -- the question  
26 of fact is very much within the purview of Dr.

1 Bailey's expertise. He speaks at length in the  
2 E<sup>x</sup>ponent Report to international standards and he  
3 refers -- he uses language as "the applicable  
4 standard" and "international agencies have found this  
5 and that". And this is one international agency that  
6 he hasn't referred to in his report, and so I'm cross-  
7 examining him on it, and he is an expert, I admit, on  
8 international standards of regulating RF exposure.  
9 That is the core of his expertise and that's the core  
10 of the basis on which he professes an opinion in the  
11 E<sup>x</sup>ponent Report. So this is the bull's eye, this  
12 subject matter is the bull's eye of his report and  
13 therefore it's fair game for cross-examination.

14 The reason I can't get this expert evidence  
15 in is because Karl Maret is ill. This Panel has  
16 kindly accommodated and been sensitive to the human  
17 frailties of other witnesses in the context of this  
18 proceeding. It's a technical objection that is  
19 seeking to capitalize on a human frailty that has  
20 arisen in the course of my client's attempt to  
21 participate in these proceedings at, you know, some  
22 practical disadvantage to the applicant, and I request  
23 that there be some latitude in using the Maret report  
24 as a source of facts.

25 I didn't have to rely on the Maret report  
26 for those facts. I could have gotten those facts off

1 the internet and asked him to confirm them. The point  
2 is that those facts lie within the central domain of  
3 his expertise and his report, and I submit that the  
4 undertaking that I've asked him to provide could be  
5 fulfilled extremely easily, given his resources and  
6 his insight into the subject matter.

7 THE CHAIRPERSON: Thank you. The Panel has considered  
8 your submissions and the submissions of --

9 MR. MACINTOSH: I haven't made any. If the Panel is  
10 going to make a ruling that affects my side of things,  
11 please let me speak.

12 THE CHAIRPERSON: Please, Mr. Macintosh.

13 **Proceeding Time 9:53 a.m. T12**

14 MR. MACINTOSH: Thank you. Thank you, Mr. Chair.

15 On process here, there really is a point of  
16 principle. My friend has a piece of paper which is  
17 the Maret report, and it doesn't matter whether Dr.  
18 Maret was going to come here or not for this purpose.  
19 My friend has a thesis that brings the Israeli  
20 standards into play.

21 If my friend wants to cross-examine other  
22 people on those standards, or any other standards, my  
23 friend has a duty to get those standards, whether  
24 they're off the internet or from Dr. Maret, or from  
25 anywhere else, and put them to the witness, and say,  
26 "I am showing you the Israeli standard, it's X-Y-Z,

1 and I ask you this question or that question about  
2 it."

5 It is very important that Mr. Aaron not  
4 think that Dr. Bailey, who doesn't go down and play  
5 tiddly-winks, you know, during the breaks. He's got a  
6 lot of things that he has to do for this hearing --  
7 and my friend does not have these witnesses going  
8 down, reaching for standards from whatever country Mr.  
9 Aaron chooses to name. He could say, "I want the  
10 Swiss standards. Dr. Bailey, go find the Swiss  
11 standards at lunch, come back and tell me about the  
12 Swiss standards." He just happens to have picked the  
13 Israeli standards.

14 It's a very important point of principle,  
15 in my respectful submission, that witnesses not go out  
16 and do the bidding of a lawyer who should be finding  
17 something to put to a witness to cross-examine.  
18 That's my submission.

19 THE CHAIRPERSON: Thank you. The panel has considered  
20 the submissions. Frankly, not your final comments,  
21 Mr. Macintosh, but they certainly don't persuade us, I  
22 don't think, to change our view, and that is that this  
23 is an unreasonable request of Dr. Bailey. This  
24 information is information that you knew you were  
25 going to ask. You had prepared to ask. You have not  
26 just one expert, you have a number of experts that are

1 available to you. And I respect the fact that Maret  
2 is not well and not available. But this information  
5 is available to you if you had taken the time to go  
4 out and find it. And so I think it's incumbent on  
5 you, Mr. Aaron, to produce this document, just as you  
6 produced a document yesterday on short notice to  
7 question the qualifications of one of the authors of  
8 the report.

9 So, I'd ask you to continue and we'll not  
10 require Dr. Bailey to research this item on your  
11 behalf.

12 MR. AARON: All right, I'll just put in the request that  
13 my client produce that, and I'll return to this  
14 matter.

15 Q: All right. I would ask you, Dr. Bailey, to refer  
16 to the report of Don Maisch, at page 5. In the middle  
17 of the page, at the end of a paragraph, he says:

18 "Currently, there is no research data that I  
19 know of ..."

20 DR. BAILEY: A: Oh, yeah.

21 MR. AARON: Q: "... specific to possible biological  
22 effects from smart meter emissions." He is right,  
23 isn't he?

24 DR. BAILEY: A: I don't really know the basis upon  
25 which he makes that statement.

26 MR. AARON: Q: I don't know either. The question is,

1 is he right or is he wrong in saying that there is no  
2 research data that I know of specific to possible  
5 biological effects from smart meter emissions.

4 **Proceeding Time 9:58 a.m. T13**

5 And the statement is with respect to the  
6 existence of something. Specifically, the existence  
7 of research data that is specific to possible  
8 biological effects from smart meter emissions. So do  
9 you know of the existence of such research data  
10 specific to possible biological effects from smart  
11 meter emissions?

12 DR. BAILEY: A: That was the subject of an undertaking  
13 you requested me the other day with regard to studies  
14 of chronic exposure.

15 MR. AARON: Q: Okay. And what's the answer to that  
16 question with respect to your current knowledge, sir?  
17 Do you currently have any knowledge of research data  
18 specific to possible biological effects of smart meter  
19 emissions?

20 DR. BAILEY: A: Yes.

21 MR. AARON: Q: And can you please particularize the  
22 identity of that data?

23 DR. BAILEY: A: There are biological -- there are  
24 research studies that have looked at the exposures  
25 from apparatus in laboratory studies that is the same  
26 as would be produced by the Fortis smart meters. And

1 in addition there is a wealth of other similar types  
2 of exposures, but not as similar as the data that's  
5 produced by the Fortis AMI meters.

4 MR. AARON: Q: Okay, and how -- is there a citation  
5 that we can use when we discuss that data?

6 DR. BAILEY: A: The studies that are most similar to  
7 the -- that would have similar exposure  
8 characteristics to the Itron meters would be the GSM  
9 exposure studies --

10 MR. AARON: Q: Can you cite those --

11 DR. BAILEY: A: -- on GSM mobile phones.

12 MR. AARON: Q: Can you cite those studies? Usually you  
13 cite studies when you --

14 DR. BAILEY: A: Again --

15 MR. AARON: Q: You speak to the existence of them,  
16 right?

17 DR. BAILEY: A: Again, they will be contained in the  
18 undertaking. We'll have some very direct examples and  
19 there will be other, you know -- there are other  
20 studies in the literature that have also employed  
21 exposures to GSM mobile phones and looked at  
22 biological responses.

23 MR. AARON: Q: Okay, but according to your present  
24 knowledge, you cannot cite any study or any research  
25 data that you know of specific to possible biological  
26 effects from smart meter emissions.

1 DR. BAILEY: A: I would say that in any of the expert  
2 reviews that we cited, that in general those citations  
5 that identify exposures to GSM mobile phones would be  
4 in general very similar to that of the smart meters,  
5 and -- but that would have to be confirmed in specific  
6 instances because we have run across some cases where  
7 the investigator has not properly described the  
8 exposure. But there are many many studies in the  
9 literature that have applied GSM mobile phone  
10 exposures to animals and cells.

11 MR. AARON: Q: So your answer to the question is --  
12 I've asked if you could cite any study according to  
13 your present knowledge, and your answer to my question  
14 was to refer to the reviews, such as the ICNIRP  
15 review, that you refer to in your study, and you're  
16 saying that because that review would have reviewed a  
17 whole bunch of studies including the GSM study, then  
18 it would have reviewed -- you're saying it would have  
19 reviewed research data specific to the possible  
20 biological effects from smart meters? But you have --  
21 what I'm probing, Doctor, is whether in your current  
22 knowledge you are aware or you can cite a study -- and  
23 you haven't been able to do so in the last five  
24 minutes of cross-examination but I want to be fair to  
25 you. Can you cite a study containing research data  
26 specific to possible biological effects from smart

1 meter emissions? Because you have an opportunity now  
2 to impugn Don Maish's statement that there's no  
5 research data specific to possible biological effects  
4 from smart meter emissions.

5 So if there is, please tell us now. By way  
6 of citation --

7 **Proceeding Time 10:02 a.m. T14**

8 THE CHAIRPERSON: Mr. Aaron, please let him answer the  
9 question.

10 MR. AARON: Q: And that was the question, yeah.

11 DR. BAILEY: A: I think if you go to -- subject to  
12 check, I think in our report, the Mohler study,  
13 "Effect of everyday radio frequency, electromagnetic  
14 field exposure on sleep quality", I seem to recall  
15 that was a study that --

16 MR. AARON: Q: Sorry, can we follow you? Could you  
17 refer to the document that you're looking at?

18 DR. BAILEY: A: I'm looking at the E<sup>x</sup>Ponent Report on  
19 page 34.

20 MR. AARON: Q: Sorry, one sec, I'm just going to go  
21 there.

22 DR. BAILEY: A: I can just read off the reference, if  
23 you'd like.

24 MR. AARON: Q: Okay. Oh, 30 --

25 DR. BAILEY: A: Page 34.

26 MR. AARON: Q: Oh, okay, yes.

1 DR. BAILEY: A: My page 34. It's the reference list of  
2 the E<sup>x</sup>Ponent Report.

5 MR. AARON: Q: All right. Go ahead.

4 DR. BAILEY: A: And Mohler E., Frei P., Braun-  
5 Fahrlander C, Frohlich J, Neubauer G, Rösli M,  
6 "Effects of everyday radio frequency field exposure on  
7 sleep quality: a cross-sectional study". As you  
8 recall, I testified yesterday that the dominant mobile  
9 phone in Europe is the GSM mobile phone. So here is  
10 an example of a study that involved exposures of  
11 populations to GSM mobile phones.

12 And the Rösli study on the top of page 35

13 --

14 MR. AARON: Q: Sorry, can I question you on the first  
15 study, and then we'll go to the next study?

16 DR. BAILEY: A: Certainly.

17 MR. AARON: Q: So you're saying the Mohler study  
18 contains research data specific to possible biological  
19 effects from smart meter emissions? Or are you saying  
20 that it contains research data applicable to possible  
21 biological effects from smart meters? Because I'm not  
22 seeing that the exposure pattern would be the same.

23 DR. BAILEY: A: I'm not sure. If you could rephrase  
24 the question again. This is -- well, just rephrase  
25 the question so it's clear to me.

26 MR. AARON: Q: The question is whether there exists

1 research data specific to the possible biological  
2 effects from smart meter emissions. And so the  
3 question is to the existence of that data, and you say  
4 -- and whether you know of any. And you've cited the  
5 Mohler study. But that's a study that deals with GSM  
6 phone exposure.

7 DR. BAILEY: A: And I stated that GSM phone exposures  
8 is the type of exposure as you would get from a Itron  
9 smart meter.

10 MR. AARON: Q: In terms of the modulation that we  
11 discussed yesterday.

12 DR. BAILEY: A: Yes.

13 MR. AARON: Q: All right. So it's applicable, in that  
14 respect.

15 DR. BAILEY: A: That's correct.

16 MR. AARON: Q: But it's not congruent. The exposure  
17 isn't congruent in terms of being exposed eight hours  
18 a day every day of the week, every week of the year,  
19 at the same kind of exposure pattern. So, I mean, is  
20 it specific -- I guess the issue is whether it's  
21 specific to possible biological effects from smart  
22 meter emissions.

23 DR. BAILEY: A: It's potentially relevant.

24 MR. AARON: Q: Okay.

25 DR. BAILEY: A: And since you have the whole population  
26 of Europe using GSM mobile phones, and you have GSM

1 mobile stations that are, you know, communicating with  
2 their GSM subscribers then you have exposure of much  
3 of the European population to GSM signals, and so  
4 that's the relevance and that's why it's a type of  
5 information that should be considered.

6 **Proceeding Time 10:07 a.m. T15**

7 MR. AARON: Q: I suggest you're correct that it should  
8 be considered and that it's relevant, but I challenge  
9 you. It's not data specific to possible biological  
10 effects from smart meter emissions. I mean it depends  
11 how you interpret the word "specific", but I mean  
12 surely there are other factors with respect to the bio  
13 -- the risk assessment of RF emissions other than the  
14 modulation, such as duration.

15 DR. BAILEY: A: Those populations would be continuously  
16 exposed to radio frequency fields from the GSM mobile  
17 system, mobile phones, and base stations 24 hours a  
18 day every day of the year. So I don't see why that  
19 isn't relevant to the questions about exposures of  
20 populations to --

21 MR. AARON: Q: Oh no.

22 DR. BAILEY: A: -- Itron smart meters.

23 MR. AARON: Q: Oh, I've agreed that it's relevant.  
24 It's just not congruent. And you would agree with me  
25 that it's not congruent because I think -- you would  
26 agree with a statement that there are differences

1           between GSM mobile phone emissions and smart meter  
2           emissions that may be material to risk assessment of  
5           adverse biological effects.

4 DR. SHKOLNIKOV:   A:   Maybe I can --

5 MR. AARON:       Q:   And it's a health question.

6 DR. BAILEY:     A:   It's an exposure question, sir.

7 MR. AARON:     Q:   Yes. And exposure is a factor in  
8           bioeffects and there's different exposure.

9 DR. SHKOLNIKOV:   A:   I think here is where I would like  
10          to answer.

11 MR. AARON:     Q:   I mean I would just -- that's my  
12          question and I'd just like to re-pose it. There are  
13          differences -- just so I don't have to go back to it.  
14          It'll save us time.

15                       There are differences between GSM mobile  
16          phone exposure and smart meter exposure that are  
17          material to the health analysis. There's no  
18          congruency in that regard. Can you confirm or deny  
19          that?

20 DR. SHKOLNIKOV:   A:   Well, I think this is where the  
21          question becomes a definition of congruency. Are the  
22          devices labeled as smart meters? That could be an  
23          incongruency. But taking a step back and kind of  
24          looking at what the opposing or the intervener's  
25          experts have proposed and you have explored yesterday,  
26          the first question was the intensity of exposure, and

1 we have discussed that the intensity from GSM phones  
2 is greater than, in most cases sometimes equal to.  
5 Then there was a question of whether the transmissions  
4 are ongoing 24/7 hours a day, and the answer is GSM  
5 phones, whether you use them or not, continue to  
6 transmit signals throughout the day as part of their  
7 network maintenance.

8 Then you have asked if their bursting  
9 nature, meaning the amplitude they turn on and off.  
10 And from that perspective, most of the modern  
11 technology does that, including GSM phones.

12 And then you have asked if they use the  
13 same modulation, and we have -- in our undertaking  
14 we'll produce -- do they use the same modulation? And  
15 the answer is GSM phones do use the same modulation as  
16 the GSM phones. And then there was a question whether  
17 -- oh, sorry, as the Fortis AMI smart meters.

18 And then the question was are there any  
19 other characteristics who went a step farther and  
20 actually added the frequency hopping nature of the  
21 switch of the frequency as a function of time.

22 So the answer is yes, you can add  
23 additional, additional answers at the bottom -- at the  
24 end of the day, yes, you're going to find that yes, a  
25 label on the device is different, the manufacturer may  
26 be different, but from the perspective of the facts

1 that you have asked, GSM phones for containing all the  
2 aspects that you have asked, as well as contained in  
5 the intervener's expert's testimony, those effects are  
4 the same.

5 **Proceeding Time 10:12 a.m. T16**

6 And so the question is, if you were to  
7 define what specifically what incongruity between the  
8 two devices you have, we may be able to identify those  
9 are differences. But I pose to you that we have  
10 addressed and in our undertaking we'll have a detailed  
11 four-page explanation of how the devices are similar  
12 and if maybe based on that you can pose a question  
13 more specifically to find what the congruency you are  
14 looking for.

15 MR. AARON: Q: So, I appreciate that. So then your  
16 evidence is that there are some similarities and there  
17 are some differences. One of the differences you have  
18 identified just now, Dr. Bailey identified as exposure  
19 patterns. There is different exposure patterns. And  
20 another difference you've identified is intensity.  
21 You said that the GSM phones have a greater intensity  
22 than the AMI meters. Right?

23 DR. SHKOLNIKOV: A: So, in terms of patterns, I  
24 disagree. I think the GSM phone, which is in your  
25 house and is not used, has very similar if not  
26 identical exposure pattern to that of a smart meter.

1           In terms of intensity, it depends on how far off the  
2           phone is. If you're close to it, the exposure is  
3           higher. If it is, as you have mentioned yesterday,  
4           it's in a bedroom in a locked drawer, yes, it's going  
5           to be similar exposure level.

6 MR. AARON:    Q:    And there are some studies, would you  
7           agree, Dr. Bailey, that show that higher exposure  
8           intensities actually result in less penetration than  
9           lower exposure levels. Or, sorry, lower intensity  
10           levels. It's not necessarily true that the higher the  
11           exposure level, the more the biological effect. Some  
12           studies have shown an inverse relationship in that  
13           regard.

14 DR. BAILEY:   A:    I don't think studies have -- I don't  
15           think it was my testimony that the studies showed an  
16           inverse relationship. What is reported in the  
17           literature is that in some studies have reported  
18           inconsistent effects, sometimes the effects appearing  
19           at a low level and not at a high level. Or effects  
20           appearing at an intermediate level and not at a high  
21           level or a low level. But you know, from my reading  
22           of this literature, and the opinion of consensus  
23           panels, is that there is not sufficient reliable  
24           information to determine that that is a pattern that  
25           has been adequately supported and to be used in risk  
26           assessment.

1 MR. AARON: Q: Okay. So, I appreciate the discussion.  
2 I can certainly leave it at the point -- and you will  
5 agree that there be no studies that have dealt with  
4 smart meter emissions, actual -- you know, smart --  
5 there is no study that --

6 MR. MACINTOSH: I wonder if we could agree that the  
7 record is as good as it's going to get on that  
8 exchange and just move to another question, Mr. Chair.

9 THE CHAIRPERSON: I would agree with that. I think we've  
10 fully canvassed this item, and I think for you to pose  
11 the item again in your own words is simply going to  
12 invite further discussion.

13 MR. AARON: Okay.

14 THE CHAIRPERSON: So I think we've properly canvassed and  
15 fully canvassed that item.

16 MR. AARON: Q: Do you know if there are any studies  
17 planned on smart meter exposure? Exposure of RF from  
18 smart meters?

19 DR. BAILEY: A: I do not know of any studies that are  
20 planned on smart meter devices.

21 MR. AARON: Q: Okay. In your circle of people that you  
22 spend time with at the IEEE subcommittee, have you had  
23 any discussions about studies of exposure from AMI  
24 meters? The prospect of such studies?

25 DR. BAILEY: A: No, I have not.

26 MR. AARON: Q: Okay. At page 12 of Don Maisch's

1 report,

2 TRACK 17

5 **Proceeding Time 10:15 a.m. T17**

4 MR. AARON: Q: Okay. At page 12 of Don Maisch's  
5 report, he says under DM response number 9, second  
6 sentence:

7 "In order to determine if there is a  
8 particular feature of human exposure to  
9 smart meter emissions such as frequency of  
10 emissions, a replication of smart meter  
11 emissions would have to be achieved to  
12 determine if there is something unexpected  
13 and unique with these emissions."

14 Do you recognize that language "unexpected  
15 and unique" from Safety Code 6?

16 DR. BAILEY: A: It seems familiar, but I'd have to be  
17 -- I'd have to check to confirm that, but --

18 MR. AARON: Q: It's in the --

19 DR. BAILEY: A: -- I'll take your representation for  
20 it, yes.

21 MR. AARON: Q: It's in the preamble of Safety Code 6,  
22 isn't it?

23 DR. BAILEY: A: Yes, it seems familiar.

24 MR. AARON: Q: Then he goes to say -- I'm skipping a  
25 sentence but he says:

26 "I note that FortisBC refers back to the

1           E<sup>x</sup>ponent Report in reference to those  
2           'grossly similar' studies where E<sup>x</sup>ponent  
3           claims that they are aware of "*laboratory*  
4           *studies that have involved exposures to RF*  
5           *signals of similar frequencies, on/off*  
6           *'speeds', and generally higher intensities*  
7           *and longer duration cycles.*"

8                           And then he goes on to say something which  
9           I put to you by way of information request or --

10           "I would like to see the original references  
11           to all these studies that E<sup>x</sup>ponent is aware  
12           of, in order to verify if they are all  
13           relevant to smart meter emissions. I  
14           question the relevance of studies using  
15           higher intensity exposures and longer duty  
16           cycles to smart meter emissions."

17           Which goes to our previous discussion. But if he  
18           would like to see the original references to those  
19           studies that E<sup>x</sup>ponent is aware of, would you please  
20           provide them?

21   MR. MACINTOSH:   Mr. Chair, excuse me, but if that has not  
22           been the subject of an IR request weeks ago or months  
23           ago, I forget what the scheduling is, it is not the  
24           time now for that kind of production. I'm happy to  
25           canvass with Dr. Bailey during the break what effort  
26           that includes, and if it's -- and I don't want to

1           commit to this but I do want to say as a practical  
2           matter that if it's relatively easy, my position will  
3           vary. But if it's voluminous I will be making the  
4           point that if my friend wanted these produced they  
5           should have been requested weeks or months ago.

6 THE CHAIRPERSON: I think what we'll do at this stage is  
7           call our break. I thought we were making pretty good  
8           progress until I realized the clock had stopped on the  
9           wall.

10 MR. AARON: Mr. Chair, would you care to hear from me on  
11           my --

12 MR. MACINTOSH: That's Mr. Fulton's technology. He's a  
13           wizard.

14 THE CHAIRPERSON: I will hear from you, but I think it's  
15           important just to have Mr. Macintosh determine the  
16           work involved, and then we can get back to your  
17           position on it, which may or may not be relevant to  
18           hear depending on the reaction.

19 MR. AARON: Is it clear what the request is?

20 THE CHAIRPERSON: Perhaps you could restate the request.

21 MR. AARON: I think it's on the record in Don Maish's  
22           statement at page 12 starting with "I note". So he  
23           says, "I note" and I've read it already into the  
24           record.

25 THE CHAIRPERSON: Okay. So we'll break in a moment.  
26                           I'd just like to pause and apologize to Mr.

1 Macintosh. Having made the objection earlier, we  
2 heard from Mr. Aaron and then I proceeded to begin to  
5 give the decision of the Panel prior to hearing from  
4 you again. I hope, though, that the decision that we  
5 had come to is satisfactory and you don't feel you  
6 were treated unfairly by us responding prior to -- or  
7 beginning to respond prior to hearing again from you.

8 MR. MACINTOSH: No, thanks very much for raising it, Mr.  
9 Chair. Given the decision, I could have and don't  
10 have any concern or objection, thank you.

11 THE CHAIRPERSON: That was an error on my part and I  
12 simply wanted to clarify that.

13 MR. FULTON: Mr. Chairman, when we come back, depending  
14 on what Mr. Macintosh's position is, I may ask to make  
15 some submissions on Commission process in the context  
16 of this request that has just been made.

17 THE CHAIRPERSON: Certainly. So when we come back then,  
18 we'll hear from Mr. Macintosh in terms of the work  
19 involved. We can hear from -- as appropriate, as  
20 needed, hear from Mr. Aaron and we'll also hear from  
21 Mr. Fulton, and as necessary have an opportunity for  
22 Mr. Macintosh to respond. Thank you.

23 We'll take a break for 15 minutes.

24 **(PROCEEDINGS ADJOURNED AT 10:22 A.M.)**

25 **(PROCEEDINGS RESUMED AT 10:40 A.M.)**

**T18/19**

26 THE CHAIRPERSON: Please be seated.

1 MS. HERBST: And, subject to people's wishes, I am up  
2 only because I've got undertakings to file. I can  
3 also do that later. One of them relates to some of  
4 the studies that have been mentioned earlier regarding  
5 the GSM mobile phones. But I'm entirely at the  
6 Panel's wishes.

7 THE CHAIRPERSON: How long will you be?

8 MS. HERBST: Perhaps five minutes.

9 THE CHAIRPERSON: Okay, let's do that now, and then we'll  
10 move on to the other item.

11 MS. HERBST: Thank you. So the first undertaking is  
12 Undertaking No. 5, and if I can pass up -- we've got a  
13 written document as well, and we'll have some copies  
14 passed back. And this is in response to Mr. Aaron's  
15 request of Dr. Bailey and Dr. Shkolnikov regarding  
16 studies reviewed for the E<sup>x</sup>Ponent Report that  
17 considered the long-term chronic effects of the  
18 specific modulation of the AMI meter. And this is a  
19 response that sets out that the specific modulation of  
20 the AMI meter is frequency shift keying. It sets out  
21 the basis on which E<sup>x</sup>Ponent, in the interests of time,  
22 has focused on GSM mobile phones, given the same  
23 modulation time frequency shift keying, in addition to  
24 three other areas of similarity between the AMI meters  
25 and the GSM technology.

26 For convenience and transparency, E<sup>x</sup>Ponent

1 has provided detailed explanations for those  
2 similarities in the appendix. It's also for  
3 convenience set out abstracts of the studies that it's  
4 included, and noted, of course, more generally that  
5 this isn't an exhaustive list. It's noted as well  
6 that there are other studies of chronic exposure of  
7 animals at other frequencies and modulations, but  
8 given the parameters of the undertaking, aren't  
9 included here.

10 And if my recollection of exhibit numbering  
11 from yesterday is correct, this would be B-43. And  
12 the --

13 THE HEARING OFFICER: Marked B-43.

14 MR. FULTON: I believe it's 42.

15 MS. HERBST: Forty-two?

16 **(FORTISBC UNDERTAKING NO. 5, VOLUME 4, PAGE 631, LINE**  
17 **2 TO PAGE 665, LINE 14 MARKED EXHIBIT B-43)**

18 MS. HERBST: And the second undertaking, Undertaking NO.  
19 6, and again, we have got this in writing as well. If  
20 I can hand up a few copies. This is in response to  
21 Mr. Aaron's question directed to Mr. Warren of  
22 purchase order, or the discussion got to the issue of  
23 a purchase order from FortisBC to E<sup>x</sup>Ponent in relation  
24 to the report. And so that's attached. And  
25 specifically what's attached is the purchase order,  
26 some terms and conditions that accompany it, and an

1 August 29<sup>th</sup>, 2011 letter from E<sup>x</sup>Ponent setting out the  
2 details of the tasks performed. In addition to  
3 setting out a schedule of rates and charges. And so,  
4 with my correct -- with the numbering corrected --  
5 MR. FULTON: Well, actually, I do need to apologize,  
6 because our record wasn't as accurate as I would have  
7 liked it to have been. So the first document should  
8 have been B-43, and this will be B-44. Your  
9 arithmetic is much more precise than mine.  
10 MS. HERBST: That very rarely happens. I only have to  
11 thank the various people sitting behind me for the  
12 correct arithmetic. So this would be B-44. And thank  
13 you.  
14 THE HEARING OFFICER: Marked B-44.  
15 **(FORTISBC UNDERTAKING NO. 6, VOLUME 4, PAGE 735, LINE**  
16 **2 TO PAGE 736, LINE 20 MARKED EXHIBIT B-43)**  
17 MR. AARON: Not by way of undertaking, but would Fortis  
18 counsel be good enough to e-mail me copies of both of  
19 these? Thank you.  
20 THE CHAIRPERSON: Yes. Actually, I think we were just  
21 going to have Mr. Macintosh indicate the result of his  
22 conference with --  
23 MR. MACINTOSH: Dr. Bailey.  
24 THE CHAIRPERSON: -- Dr. Bailey during the break, in  
25 terms of responding to your request.  
26 MR. MACINTOSH: Yes, thank you, Mr. Chair. First of all,

1 as a practical matter, it -- I was going to say cannot  
2 be done. That's -- I'm sure that's overstating it.  
5 But it would take days and days of work, I am advised  
4 by Dr. Bailey. He did advise me that he and Dr.  
5 Shkolnikov working late into last evening to track  
6 down research for a far more limited response that was  
7 called for in one of the two responses that you just  
8 received, and that this effort that is the subject of  
9 this new request would be much, much, much greater  
10 than that.

11 But again, there is a bit of a principle  
12 here.

13 **Proceeding Time 10:46 a.m. 20**

14 THE CHAIRPERSON: Okay, well, let's deal with that.  
15 Let's hear from Mr. Aaron first then. It looks like  
16 we're going to hear from Mr. Fulton first.

17 I think, Mr. Fulton, it might be helpful to  
18 everybody if we could have Mr. Aaron just restate his  
19 request, just so that we can remind everybody about  
20 the matter that we're talking about and the context.  
21 So perhaps Mr. Aaron could just stand up briefly and  
22 repeat his request.

23 MR. AARON: The request arises through the language of  
24 Maisch in his report which was issued at the deadline  
25 for filing reports after the Information Requests.  
26 And the request is stated in these terms:

1 "I note that FortisBC refers back to the  
2 E<sup>x</sup>ponent report in reference to those  
3 'grossly similar' studies where E<sup>x</sup>ponent  
4 claims that they are aware of '*laboratory*  
5 *studies that have involved exposures to RF*  
6 *signals of similar frequencies, on/off*  
7 *speeds, and generally higher intensities and*  
8 *longer duration cycles'*. I would like to  
9 see the original references to all these  
10 studies that E<sup>x</sup>ponent is aware of, in order  
11 to verify if they are at all relevant to  
12 smart meter emissions. I question the  
13 relevance of studies using higher intensity  
14 exposures and longer duration cycles to  
15 smart meter emissions."

16 And by way of submission, I say that this  
17 is fair game, this is cross-examination. In  
18 colloquial terms it amounts to this. In your E<sup>x</sup>ponent  
19 Report you referred to studies. Please cite the  
20 references. It's basic cross-examination. He  
21 referred to the studies in the report without citing  
22 the references.

23 THE CHAIRPERSON: So your question then is for him to  
24 cite the references.

25 MR. AARON: Yeah. I would like to see the original  
26 references to the studies that you referred to in your

1 report that you say are grossly similar. Frankly I'm  
2 surprised this is an issue.

5 THE CHAIRPERSON: Thank you. Mr. Fulton.

4 MR. FULTON: Yes, I did want to make some submissions and  
5 I thought it would be appropriate for me to make them  
6 before Mr. Aaron made his submission so that he could  
7 respond, and certainly he can respond further and Mr.  
8 Macintosh can make their comments.

9 But I am concerned about the fairness of  
10 the Commission process in terms of what's happening  
11 here, and I just wanted to highlight for the  
12 Commission that Dr. Maish's report was dated January  
13 the 22<sup>nd</sup>, 2013. So it's been out there for a  
14 substantial amount of time.

15 The requests that he made in his report has  
16 been there since that time. And there certainly is no  
17 order that allowed for further information requests on  
18 the report. But I am concerned about burdening any  
19 witness panel with a number of questions that relate  
20 to work involving the witness panel, when those  
21 questions could have been asked on or about January  
22 the 22<sup>nd</sup> or a week after or two weeks after, and the  
23 issue could have been joined at that time. Mr.  
24 Macintosh could have taken the position, "We'll get  
25 those for you, there's plenty of time to do it," but  
26 no request was made.

1 **Proceeding Time 10:50 a.m. T21**

2 So now we're in the fourth day of a  
3 hearing, and we are in cross-examination of this  
4 panel. These requests are being made. And so, you  
5 need to determine whether, in the circumstances, this  
6 is a reasonable request at this time for this panel to  
7 provide this information, or if they should provide  
8 the information, whether that information should be  
9 provided as it's provided with undertakings in the  
10 past, that while the utility tries to get the  
11 information out before the evidentiary hearing -- the  
12 oral hearing closes, that certain undertakings come in  
13 later.

14 I am concerned about, as I said, requiring  
15 any witness panel, whether it's a Fortis panel or an  
16 intervener panel, to do work while in the midst of  
17 their cross-examination, that could have been avoided  
18 if the question had been asked a long time ago, as it  
19 should have been asked.

20 THE CHAIRPERSON: Thank you. Mr. Aaron?

21 MR. AARON: I submit that it's not work. There is a  
22 reference in the -- it's just cross-examination.  
23 There is a reference in the E<sup>x</sup>Ponent Report. The  
24 witness has issued a report referring to grossly  
25 similar studies. The question is, what did you --  
26 which studies did you mean by that? There is no work.

1           It's -- I'm challenging the witness who's purporting  
2           to summarize the state of scientific literature and  
3           he's done so in terms that, in my challenge to him,  
4           are vague.

5                           And so I say, "What did you mean by the  
6           grossly similar reports, which ones?" He purports to  
7           be engaging in a scientific scrutiny, professional.  
8           There is no work. The Information Request -- it's  
9           awkward that there is no Information Request -- there  
10          is no -- it's not like in court where there's this  
11          continual opportunity to probe for discovery. This is  
12          a very structured process. We requested another  
13          opportunity for Information Requests and we were  
14          denied. That leaves me to cross-examine. There's  
15          absolutely no work involved to answer this question.

16 THE CHAIRPERSON:    Thank you. Mr. Macintosh?

17 MR. MACINTOSH:      The chronology that's relevant here, Mr.  
18                       Chair, is as follows. My friend had the report from  
19                       E<sup>x</sup>Ponent last July. And so last July, this passage was  
20                       found in the E<sup>x</sup>Ponent Report in my friend's hands.  
21                       That's really the time from which it's reasonable to  
22                       start thinking that if they needed more information it  
23                       might have been pursued with us.

24                           The first intervener IR date was October 26  
25                       of last year. The second intervener IR round was  
26                       November 23<sup>rd</sup> of last year. As Mr. Fulton observes,

1           this comment -- and that's all it is -- by Mr. Maisch,  
2           or Dr. Maisch, was January 22<sup>nd</sup> of this year, a month  
5           and a half ago. So, there were many, many, many times  
4           when this issue could have been aired. And it never  
5           was. And it is casual, and presumptive, for my friend  
6           to be wading into this time-laden process now to ask  
7           for any response on this.

8                         And Mr. Fulton correctly pointed out that  
9           there is sometimes the process of the witnesses  
10          responding after the hearing is over. I would  
11          strongly object to that in this context for much of  
12          the same reasoning. In other words, he's known about  
13          this -- my friend has known about this since last  
14          July. And Dr. Bailey and Dr. Shkolnikov, like all of  
15          us, have other commitments when this hearing ends.  
16          It's not as if they go back to their office and have  
17          five empty days to respond to these kinds of queries.

18                         And so I say this has to -- ought to be  
19          stopped at this stage, and that ought to be the end of  
20          it.

21   **Proceeding Time 10:55 a.m. T22**

22                         It's similar in principle to my friend an  
23          hour and a half ago or so asking Dr. Bailey to give us  
24          the Israeli standards, except it's far more voluminous  
25          in its scope, in the undertaking. So I say it should  
26          be stopped now, and there not be a residual

1           undertaking at all.

2 MR. AARON:    To clarify, it's not an --

5 THE CHAIRPERSON:    No. Mr. Aaron.

4 MR. AARON:    Yes.

5 THE CHAIRPERSON:    I think we've finished the -- there was  
6           an objection, you had an opportunity to respond. Mr.  
7           Macintosh has had an opportunity to reply. It's now  
8           up to -- and Mr. Fulton has provided some guidance.  
9           It's now up to the Panel to decide how they're going  
10          to deal with this matter.

11 MR. AARON:    With your leave, Mr. Chair, I have a couple  
12          of brief remarks that I request an opportunity to  
13          submit arising from what my friend said. I won't take  
14          long, and I feel like they're quite important to my  
15          position.

16 THE CHAIRPERSON:    Then I think -- no. I'm not going to  
17          permit that. We've had a process here. If your brief  
18          remarks are allowed, then I'm obliged to go back and  
19          let Mr. Macintosh make some additional comments. And  
20          we just can't continue this.

21 MR. AARON:    Okay. He's misrending [*sic*] my request. I'm  
22          not asking for production. I'm asking him to answer a  
23          question of what he meant.

24 THE CHAIRPERSON:    I think we heard what your request was,  
25          and we'll be dealing with that request.

26 MR. AARON:    All right. Okay.

1 THE CHAIRPERSON: The request was made in the form of a  
2 cross-examination question, and that had to do with  
3 your ability to cite some examples of the research  
4 that was referred to, and the Panel would ask you to  
5 do that. You know, to your recollection. But this  
6 shouldn't be the subject of an undertaking.

7 So I ask you to just answer the question.

8 DR. BAILEY: A: I review the radio frequency literature  
9 on an ongoing basis. And I review studies that  
10 involve a wide variety of topics and exposures. And  
11 when I review that literature, if I -- I don't  
12 segregate out a separate group of studies within this  
13 review and say, "These studies have some specially  
14 unique characteristic that deserves setting aside and  
15 treating separately from the rest of the literature."  
16 And the scientific basis for that is that there are  
17 many studies which have very similar frequencies,  
18 exposure characteristics, and I don't know of a  
19 national or an international health agency that has  
20 concluded that these small differences between  
21 different types of signals have been shown to have a  
22 reasonable scientific basis of explaining either a  
23 particularly high or a particularly lower risk.

24 I would like to call attention to a report  
25 that was authored by scientists for the National  
26 Council on Radiation Protection back in 2003. And



1           advocacy on the underlying point as to whether  
2           variances are material or not. He's not only not  
3           answered the question but he's not standing on a  
4           platform and arguing on the underlying points. I'm  
5           trying to understand what certain language meant and I  
6           request that the witness be reined in at this point.

7 MR. MACINTOSH: Well, Mr. Chair, if my friend is saying  
8           that he has asked his question and received an answer  
9           to it and is prepared to move along, that's fine, and  
10          Dr. Bailey need not further amplify the response and  
11          we can take it that way. Otherwise I'll wish to speak  
12          further.

13 MR. AARON: No. My position is that he has not answered  
14          the question and he's now going on to cite a study on  
15          a point of why variances make no difference.

16 MR. MACINTOSH: Mr. Chair, to facilitate the matter, if  
17          the Commission accepts this, I'm content that my  
18          friend put another question and Dr. Bailey give an  
19          answer, and maybe that will do it.

20 THE CHAIRPERSON: Would you like to restate the question?

21 MR. AARON: Q: All right. I will do so by reference to  
22          FortisBC's response to CSTS IR No. 2. I'm referring  
23          to the document where the language that I'm looking  
24          for particularization on arises. So that's FortisBC  
25          response to CSTS IR No. 2. Question 4.3, CSTS asks:

26                    "What studies have been done on the effect

1           on human health of continuous long-term  
2           exposure to strobe flashes, of any emission,  
5           of any duration, of any strength, on an  
4           on/off basis, 1,268 times per day?"

5           And the answer was:

6           "Studies and reviews of health research on  
7           cell phones and on signals similar to those  
8           of cell phones which produce RF signals and  
9           frequencies and other characteristics  
10          grossly similar to the RF signals from  
11          FortisBC advanced meters are reviewed and  
12          cited in E<sup>x</sup>ponent's Report."

13                   And I'm asking you to identify which  
14          studies you meant to refer to by describing them as  
15          those that are grossly similar. Does that make it  
16          clear?

17       THE CHAIRPERSON:    Yes.

18       DR. BAILEY:        A:    Yes.

19       MR. AARON:         And while the witness is --

20       THE CHAIRPERSON:    Just let the witness just do his work.

21           I'm afraid that additional conversation will just  
22          delay the process, so --

23       MR. AARON:         Yeah, I was just going to speak to a  
24          housekeeping matter.

25       THE CHAIRPERSON:    We'll entertain that when you have an  
26          answer to your question.

1 **Proceeding Time 11:05 a.m. T24**

2 DR. BAILEY: A: On pages 13 to 16 I reference expert  
3 reviews of radio frequency fields in health, and  
4 contained in those reviews are assessments of a  
5 variety of laboratory studies and epidemiology studies  
6 as we discussed early this morning that would have  
7 involved exposures to GSM phones, or GSM-like signals,  
8 as well as other similar signals. And I take you also  
9 to page -- as an example of what is in these  
10 documents, and in the literature generally, I take you  
11 to undertaking number 5. And there is a study, for  
12 instance, in the second document indicated, a study by  
13 Tillman *et al.*, 2007. And they were assessing the  
14 potential carcinogenicity of GSM phones. And they  
15 have investigated the exposure of these animals over a  
16 period of two years, and the SAR levels range from 0.4  
17 to 4 milliwatts per kilogram.

18 And those are an example of the kind of  
19 studies that one can find in the literature that are  
20 relevant to smart meters.

21 MR. AARON: Q: All right.

22 THE CHAIRPERSON: Thank you for your answer.

23 MR. AARON: My housekeeping matter is with respect to the  
24 duration of my cross-examination.

25 THE CHAIRPERSON: Yes.

26 MR. AARON: And it's long. It's taking a long time. And

1 I cite this question as an example of a question that,  
2 in my submission, ought to have been asked and  
3 answered in 30 seconds and took 15 minutes. And I say  
4 this because I'm requiring considerable more time to  
5 complete my cross-examination and I beg for leave from  
6 the Panel to consider the circumstances under which  
7 some of my cross-examination are occurring.

8 MR. MACINTOSH: Mr. Chair, I don't know what exactly my  
9 friend means, but my friend should just carry on with  
10 his cross, and the panel will be as responsive as it  
11 can, and that's going to be the best way to try and  
12 get things done.

13 THE CHAIRPERSON: Thank you.

14 MR. AARON: Q: So in answering the question, Dr.  
15 Bailey, you referred to two things. Correct? You  
16 referred to the reviews at page 13 to 16 of your  
17 report that would have cited such grossly similar  
18 studies, and you referred to one example of one  
19 specific study. Correct?

20 DR. BAILEY: A: It wasn't that these studies would have  
21 cited. They do cite.

22 MR. AARON: Q: Right.

23 DR. BAILEY: A: And that is -- that's where that  
24 detailed information is found.

25 MR. AARON: Q: Right. So, the only study that you, as  
26 a witness, and as an author of the E\*Ponent Report have

1           cited is this Kuster study, in answering my question.  
2 DR. BAILEY:   A:    I gave that -- there are other examples  
5           in this document here.  
4 MR. AARON:    Q:    Okay. Well, let's look at this document  
5           then.  
6 DR. BAILEY:   A:    Sure.  
7 MR. AARON:    Q:    Undertaking No. 5. And let's start with  
8           the Kuster study.  
9 DR. BAILEY:   A:    Which --  
10 MR. AARON:   Q:    Oh, sorry. It's Smith, is the --  
11 DR. BAILEY:   A:    Smith.  
12 MR. AARON:   Q:    Smith and Kuster. And Ebert.  
13                       Rats were exposed two hours a day, five  
14           days a week, for 104 weeks. Were they exposed to  
15           constant emissions, or on/off emissions, the kind of  
16           one emission per minute emission that the AMI meters  
17           will make?  
18 DR. BAILEY:   A:    It specifies two hours a day and Dr.  
19           Shkolnikov can address the other aspect of this.  
20 MR. AARON:   Q:    Okay.  
21                       **Proceeding Time 11:10 a.m. T25**  
22 DR. SHKOLNIKOV: A:    As included in the appendix where  
23           we describe the similarity, between the GSM technology  
24           and AMI smart meter technology, and specifically on  
25           page 10 of the undertaking, the first figure right  
26           here which shows the burst transmissions diagram,

1           virtually all modern technology uses burst  
2           transmissions and that includes GSM phones, CDMA  
5           phones as well as other technologies I list here. GSM  
4           phones specifically turns on and off a signal 217  
5           times a second. So it sends a -- when in use, 217  
6           times a second it turns on the radio power and turns  
7           it off to allow other phones to transmit in the same  
8           frequency range. When it is not in use, the range is  
9           very large from once a minute 700 times a minute.  
10          When it's in idle with typical number about 30 times a  
11          minute, the GSM phone turns on and off.

12                            While the details of the study on number 2  
13          don't specify how often the signal was turned on and  
14          off, it is reasonable to assume that it would have  
15          been turned on and off at least 217 times a minute  
16          because that is the slowest -- that is the maximum  
17          rate at which GSM phones can turn on or off.

18 MR. AARON:    Q:    Thank you, that's very clear. So, Dr.  
19                Shkolnikov, so that would equate to similar exposure  
20                to smart meters.

21 DR. SHKOLNIKOV:  A:    I think we had this discussion  
22                earlier. If you could state what you mean by  
23                "similar".

24 MR. AARON:    Q:    The same kind of modulation. This would  
25                be like being exposed to -- two hours of exposure to  
26                these meters -- I'm sorry, to these phones in the

1       Smith study would be like two hours of exposure to  
2       smart meters.

5 DR. SHKOLNIKOV:   A:   I think, let's maybe for purposes  
4       of making sure we're -- you know, the modulation is  
5       being used in very different ways.

6 MR. AARON:       Q:   Yeah.

7 DR. SHKOLNIKOV:   A:   The turning on and off is not a  
8       modulation.  When people speak about communication  
9       systems, modulation refers to how the information --  
10       the modulation contains the information to be  
11       transmitted.  In this case the device is not what  
12       people call pulse modulated, pulse amplitude  
13       modulated, which I think was mentioned in one of the  
14       reports.  They are frequency shift keyed.  The going  
15       up and down is a burst nature of transmissions.

16 MR. AARON:       Q:   Okay.

17 DR. SHKOLNIKOV:   A:   So just to clarify that in terms of  
18       -- so I think it would be good -- we can talk about  
19       the number of bursts.  So in two hours of GSM exposure  
20       bursts, the number of bursts incurred by a subject  
21       animal would greatly exceed the number of bursts that  
22       would be transmitted by my smart meter, even -- so a  
23       two hour exposure to a GSM would require -- there are  
24       217 bursts per second, and then there's 3600 seconds  
25       in an hour and then multiplied by two.  So that number  
26       is by far greater number of bursts than in the -- from

1           the AMI smart meter.

2 MR. AARON:   Q:   Okay, so it's a different number of  
5           bursts than the AMI smart meter.

4 DR. SHKOLNIKOV:   A:   I mean --

5 MR. AARON:   Q:   It's what you just said.

6 DR. SHKOLNIKOV:   A:   If for this particular --

7 MR. AARON:   Q:   It's very hard for me to understand all  
8           the technical details as a layman, so I tried to just  
9           get the gist of what you're saying, put it back to you  
10          and see if you could confirm it. It's a different  
11          amount of bursts as between the GSM phones studied in  
12          the Smith and the smart meters.

13 DR. SHKOLNIKOV:   A:   As I said, the details of how --  
14          what protocol they have filed in those hours of  
15          exposure is not detailed in the abstract, but if the  
16          answer is is GSM phones producing higher number of  
17          pulses per -- or whatever bursts or whatever you want  
18          to refer to it, bursts -- bursts per second, and for  
19          the duration of the study, the answer is likely yes  
20          for the specific study.

21 MR. AARON:   Q:   Okay, but you can't -- sorry.

22 DR. BAILEY:   A:   And just to follow up, that the animals  
23          in this study would have been exposed to a far greater  
24          number of these bursts, as Dr. Shkolnikov described,  
25          than would occur in a very long time in -- from a  
26          smart meter.

1 **Proceeding Time 11:14 a.m. T26**

2 MR. AARON: Q: Okay. So they're not similar with  
5 respect to the amount of bursts. The amount of bursts  
4 here were -- are more than one would be exposed during  
5 the --

6 DR. BAILEY: A: The total number of bursts that were --  
7 to which the animals were exposed would be similar to  
8 that of a smart meter over a very, very long period of  
9 time.

10 MR. AARON: Q: Okay, so, in this study you have a lot  
11 of bursts in two hours that you're saying would be  
12 similar to the amount of bursts that you receive in a  
13 -- from a smart meter in a longer period of time.

14 DR. BAILEY: A: But it's not just --

15 MR. AARON: Q: Could you just confirm that that's what  
16 you're saying?

17 DR. BAILEY: A: The answer is yes, but you're also  
18 forgetting about that it's also two hours a day, five  
19 days a week, for 104 weeks.

20 MR. AARON: Q: Yes. Right.

21 DR. BAILEY: A: So that that's the total exposure that  
22 was investigated in this study.

23 MR. AARON: Q: And with smart meters, the -- I put it  
24 to you that that's not congruent. The potential  
25 exposure from smart meters is not anything similar to  
26 two hours a day, five days a week, for 104 weeks.

1           It's more in the ballpark of -- I don't know, eight or  
2           -- eight to fourteen hours a day, seven days a week,  
5           for -- a thousand weeks.

4 DR. SHKOLNIKOV:   A:   I think that one way to answer is,  
5           if you are proposing an exposure metric that doesn't  
6           rely on magnitude of the signal, but just in terms of  
7           number of bursts, and as I understand it from Dr.  
8           Maisch and Dr. Maret's -- or other people's testimony,  
9           that is a relevant metric, the cumulative number of  
10          pulses over the exposure -- total exposure duration,  
11          then I think you are correct, by that metric, by  
12          number of pulses, number of bursts or number of pulses  
13          as they refer -- intervenor experts referred to -- the  
14          total number of pulses cumulative over the duration of  
15          a smart meter will be by far less than is likely to  
16          have been experienced from the study.

17                        So you are correct.  If that is your  
18          exposure metric, you're correct.  The animals in the  
19          study were exposed to far greater levels of exposure  
20          if your exposure metric is number of pulses over the  
21          lifetime of the animal.

22 MR. AARON:    Q:    I'm not quite following you, but the  
23          line of cross-examination goes to challenge Dr.  
24          Bailey's evidence that this is a study that's grossly  
25          similar to smart meter exposure.  And I challenge you,  
26          and I say it's not.  The amount of bursts are

1 different, the exposure period is different, the  
2 durations are different. Am I not right?

5 DR. BAILEY: A: The -- no. The signals are the same.  
4 The durations of exposure encompass the animal's  
5 entire lifetime, essentially. And the exposure -- the  
6 total amount of exposure as defined by your witnesses  
7 in terms of focusing on the number of bursts is  
8 relevant to the assessment of exposures of people to  
9 radio frequency emissions from the smart meters.

10 So, as Dr. Shkolnikov testified, it would  
11 appear that the total number of bursts that are --  
12 that the animals were exposed to during this study is  
13 equivalent to radio frequency exposure from a smart  
14 meter over many years.

15 MR. AARON: Q: And --

16 DR. BAILEY: A: And from that standpoint, I argue that  
17 this is a relevant study.

18 MR. AARON: Q: Oh, I agree, it's relevant. I just  
19 don't think it's grossly similar.

20 What's the latency period for cancer in  
21 rats? Because in humans, you said it's several  
22 decades.

23 **Proceeding Time 11:19 a.m. T27**

24 DR. BAILEY: A: The entire processes are accelerated  
25 depending upon the lifespan on the animals. So rats  
26 develop tumours much more rapidly than they would in a

1 human. And the safety of almost all of our drugs and  
2 medicines depends upon studies in which animals have  
5 exposures to various agents, chemicals, radio  
4 frequency fields, and in fact the National Toxicology  
5 Program, as we discussed earlier in cross-examination,  
6 is doing yet another study to examine potential long-  
7 term effects of exposure to radio frequency fields.

8 MR. AARON: Q: Is there a study in this whole pack that  
9 you've provided by way of Undertaking No. 5 of  
10 exposure for -- of emissions that are similar to smart  
11 meter emissions in terms of bursts, to use the  
12 colloquial term, in terms of frequency, 900 megahertz,  
13 and in terms of exposure pattern being eight hours a  
14 day at least, and in terms of duration being long  
15 term? Can you point to a study like that?

16 DR. BAILEY: A: First of all --

17 MR. AARON: Q: Because that's what I would, in my view,  
18 would be grossly similar, so --

19 DR. BAILEY: A: If you read the undertaking we discuss  
20 these first group of studies.

21 MR. AARON: Q: Because you refer to this one study, the  
22 Smith study, in answer to the question which we  
23 debated extensively as to whether I was entitled to  
24 ask it, what did you mean by grossly similar? And you  
25 provided a study of two hour a day exposure five days  
26 a week, and I'm saying, well, can you do better? Can

1       you show me a study where there was exposure eight  
2       hours a day for seven days a week for a long-term  
5       period, which is pretty much what's being contemplated  
4       by Fortis? And this is somewhat relevant, I concede,  
5       but I'm just looking for the grossly similar.

6 DR. BAILEY:    A:    I think there's a conflagration of two  
7       different topics, and one has to do with exposure and  
8       the other has to do with time. Since the duty cycle  
9       of a smart meter is so low, there is much of the time  
10      when no exposure is taking place at all. And so to  
11      say that you have two hours of exposure to a smart  
12      meter and two hours of exposure as an experiment like  
13      this, doesn't mean that two hours of exposure to a  
14      smart meter has actually -- that anything has really  
15      occurred except during the time when the animal  
16      actually had -- was incurring exposure to the radio  
17      frequency field.

18                 So I think the relevant thing is not just  
19      the number of hours but what is happening during those  
20      hours. And what we're pointing out in the example in  
21      this study is that what is happening during those two  
22      hours for five days a week and so on are happening,  
23      much more exposure to pulses or whatever  
24      characteristics of radio frequency fields you want to  
25      look at, are occurring in that two hour period than  
26      are occurring in a two hour period from a smart meter.

1 MR. AARON: Q: What's the duty cycle in the Smith  
2 study?

5 DR. BAILEY: A: This is essentially 100 percent duty  
4 cycle.

5 MR. AARON: Q: Okay.

6 DR. SHKOLNIKOV: A: Well, I should be more -- it  
7 appears that it's 100 percent utilization, which for a  
8 -- which means that the duty cycle was at  
9 approximately one-eighth. So that's approximately  
10 one-eighth, you know, times 100 if you want to  
11 multiply to calculate the fraction, at a maximum. It  
12 depends on the details of the experiment.

13 MR. AARON: Q: Okay.

14 DR. SHKOLNIKOV: A: It could have been shorter.

15 MR. AARON: Q: What's one-eighth in percent? Would  
16 that be point --

17 DR. SHKOLNIKOV: A: It's 12.5 percent, approximately  
18 12.5 percent.

19 MR. AARON: Q: 12.5. So we have conflicting

20 **Proceeding Time 11:24 a.m. T28**

21 MR. AARON: Q: 12.5. So we have conflicting evidence.  
22 Dr. Bailey says it's 100 percent. You say it's 12.5  
23 percent, which is it?

24 DR. SHKOLNIKOV: A: I don't think there is -- this is  
25 where we get into the details of the technology and  
26 the GSM phone utilizes time division multiplex, and

1       which means if you look at any particular phone, at  
2       100 percent utilization of a GSM frequency channel,  
5       your individual phone is communicating about -- well,  
4       as I said, one-eighth of the time. I don't want to  
5       mix up the fraction.

6 MR. AARON:   Q:   So would you revise your evidence then,  
7       Dr. Bailey, that the duty cycle was 100 percent? Or  
8       do you concede that it's 12 percent?

9 DR. BAILEY:   A:   I think Dr. Shkolnikov's clarification  
10       is a more accurate representation.

11 MR. AARON:   Q:   And the duty cycle of the AMI phones  
12       could be up to 5 percent, correct?

13 DR. BAILEY:   A:   The AMI --

14 MR. AARON:   Q:   The maximum duty cycle.

15 DR. BAILEY:   A:   The maximum duty cycle for the FortisBC  
16       AMI smart meter is -- I believe was stated as 5  
17       percent.

18 MR. AARON:   Q:   So in the smart meter scenario we're  
19       talking about a maximum duty cycle of 5 percent on an  
20       eight hour exposure, and here we had in this Smith  
21       experiment, we had a two hour exposure on a slightly  
22       higher duty cycle, 12 percent, but only five days a  
23       week, not seven days a week.

24 MR. WARREN:   A:   One small point of clarification, Mr.  
25       Aaron. The 5 percent duty cycle is a theoretical  
26       maximum.

1 MR. AARON: Q: Yes.

2 MR. WARREN: A: In the studies that have been done on  
3 thousands of meters, the measured maximum --

4 MR. AARON: Q: I take your point.

5 MR. WARREN: A: -- duty cycle was .58 percent.

6 MR. AARON: Q: I take your point. So my statement is  
7 that with the maximum 5 percent duty cycle on -- I  
8 don't know how much time people spend at home these  
9 days, probably a lot.

10 VOICE: Not very much.

11 THE CHAIRPERSON: Based on this hearing, not all that  
12 much.

13 MR. AARON: Q: Not enough. Not enough with the wife and  
14 kids and the smart meter. I think I have to increase  
15 my duty cycle. But --

16 DR. SHKOLNIKOV: A: CEC, by the way, has entered into  
17 the exhibit that information, so if you want to  
18 address it.

19 MR. AARON: Q: Oh.

20 DR. SHKOLNIKOV: A: The CEC one, it was cross-examining  
21 me, it has provided the time at home estimates based  
22 on studies.

23 MR. AARON: Q: You could be home, at least you're  
24 sleeping for seven hours, you're -- I'm going to say a  
25 modest estimate of ten hours. In confronting you with  
26 my challenge that there are -- it's not a grossly

1 similar study. Let me finish my question please.

2 It's not a grossly similar study. There's  
5 a difference between two hour exposure and ten hour  
4 exposure. There's a difference between five days a  
5 week and seven days a week. And I put it to you that  
6 it's not grossly similar, and those differences, it  
7 would be reasonable to say that those differences  
8 could be material with respect to biological effects.  
9 Would you agree with me on the materiality of  
10 assertion?

11 DR. BAILEY: A: From my review of the scientific  
12 evidence, these differences do not appear to be  
13 material. And I would point out that if you go to the  
14 study, the Summer study, this exposure involved GSM  
15 exposures 24 hours a day, seven days a week. That's  
16 on page 7.

17 MR. AARON: Q: We can get to that study. The question  
18 is whether this one is grossly similar.

19 DR. BAILEY: A: So there's an example of something --  
20 what?

21 MR. AARON: Q: We can get to that, but I'm talking  
22 about whether this one's grossly similar.

23 DR. BAILEY: A: I thought that the was question was  
24 going back to the quotation in Maisch about my  
25 testimony --

26 MR. AARON: Q: Yes, yes.

1 DR. BAILEY: A: -- the E<sup>x</sup>ponent Report, and we had said  
2 that the studies in the literature are grossly  
5 similar, and in this undertaking, for example, we have  
4 some that have identified exposures that are identical  
5 to that of the Itron meter and we have other studies  
6 that are cited that are similar.

7 MR. AARON: Q: Right, and the challenge to you is that  
8 this one is not grossly similar, and you're answering  
9 it by saying, well, another one is. So let's focus on  
10 this one. And I'm saying, are the variances in  
11 exposure patterns material? Yes or no. In your  
12 opinion. Is it reasonable to think that they might be  
13 material?

14 THE CHAIRPERSON: Let him answer the question. I think  
15 you have posed a question and let's hear the answer to  
16 it.

17 **Proceeding Time 11:29 a.m. T29**

18 DR. BAILEY: A: There are many ways to characterize  
19 exposure. You can characterize exposure by the  
20 maximum exposure that might have occurred during a  
21 certain period of time. You might characterize it as  
22 the average exposure, you might characterize as the  
23 number of pulses occurred during a certain period of  
24 time. There are various ways to characterize this,  
25 but they all ultimately are interpreted as whether,  
26 over -- for a given type of exposure, whether there is

1 an observed increase in a biological effect, or an  
2 adverse effect, and the fact that that -- in one  
3 study, the pattern of exposure may have been Monday  
4 and Friday exposures, and another one may have been  
5 Tuesday and Thursday exposures, or that might not be  
6 at all a meaningful difference.

7 And we have talked here about the number of  
8 days or hours per week of exposure. That may be  
9 relevant in terms of, if you find differences in the  
10 results of the exposure, you could say, "Well, the  
11 reason why this study did not show an effect was  
12 because they didn't count sufficient exposures."

13 THE CHAIRPERSON: Dr. Bailey, I'm going to ask you to  
14 stop, and I think the question was a fairly clear  
15 question. And it had to do with the matter of  
16 materiality. And are you able to answer that  
17 question?

18 MR. AARON: Q: I can restate it if you want.

19 DR. BAILEY: A: Please restate it.

20 MR. AARON: Q: I think you're great at what you do, Dr.  
21 Bailey, I mean, but this is really a simple question.

22 MR. MACINTOSH: Just restate it.

23 MR. AARON: Q: I have identified some differences  
24 between the exposure patterns in the Smith study and  
25 the exposure patterns in the AMI systems. There is a  
26 difference in duty cycle. Five percent, twelve

1           percent. There is a difference in exposure, two hours  
2           a day, ten hours a day. Five hours a day -- sorry,  
5           five days a week, seven days a week. And my question  
4           to you is, could those differences be material, vis-à-  
5           vis bioeffects from the exposure? In your opinion.  
6           And I put it to you it's a yes or no question. Oh,  
7           there might be an explanation attached, but before we  
8           get to the explanation, let's have the answer.

9 DR. BAILEY:   A:   Yes, depending upon the circumstances,  
10           the exposure patterns could be important. I don't  
11           believe from the evidence that I've reviewed that  
12           these exposure patterns would make a critical  
13           difference and make such studies like this not useful  
14           in terms of evaluating potential effects of AMI smart  
15           meters.

16 MR. AARON:    Q:   Oh, I'm sure they're useful. The  
17           question is whether they're grossly similar. And --

18 DR. BAILEY:   A:   If they were not grossly similar, then  
19           they wouldn't be useful.

20 MR. AARON:    Q:   Well, the question is -- I mean --

21 THE CHAIRPERSON:   No, I think you have the answer to your  
22           question, Mr. Aaron.

23 MR. AARON:    Yeah. I am not answering the same question -  
24           - I am not asking the same question.

25           Q:    Is whether there have been studies of AMI  
26           emissions, and you are saying there have been grossly

1 similar studies. And I'm saying you haven't shown  
2 grossly similar studies, you've only shown studies  
5 that inform the analysis.

4 MR. MACINTOSH: Mr. Aaron is of the view that these  
5 studies are not grossly similar, which I think is  
6 somewhat of a term of art anyway. But be that as it  
7 may, Mr. Aaron has one view, the witness has another.

8 MR. AARON: I'll move on. I'll move on.

9 MR. MACINTOSH: Thank you.

10 MR. AARON: Q: What was the other study you referred to  
11 in the -- I asked you to cite what you meant by  
12 grossly similar. You referred to the ICNIRP material,  
13 or the overview that would have -- and you referred to  
14 the Smith. Is there another study that --

15 DR. BAILEY: A: I believe I recall that I had  
16 referenced the -- I talked about the Summer study,  
17 because --

18 MR. AARON: Q: Summer. Is that in here?

19 DR. BAILEY: A: -- this was one you were interested in,  
20 and something that an exposure involved seven days per  
21 week.

22 MR. AARON: Q: Right. Is that at page 7.

23 **Proceeding Time 11:34 a.m. T30**

24 DR. BAILEY: A: Correct.

25 MR. AARON: Q: All right. All right, I'll have a look  
26 at this study and then I might come back with further

1 questions on it.

2 What about the concern of exposure while  
3 sleeping? And I want to ask you if that has been  
4 studied, of exposure in the course of slumber has been  
5 studied, and to ask you that question I want to -- I'm  
6 not the one who asked the question for -- I'm asking  
7 the question, but the reason I ask you, and I'll show  
8 you why, is because of Meret. His concern at page 22.  
9 Under the heading "Concerns about nighttime meter  
10 emissions". He says,

11 "Microwave radiation exposure from RF mesh  
12 network and the ZigBee transmitters  
13 occurring during sleep may adversely affect  
14 our biological and circadian rhythms, the  
15 daily physiological regulatory cycles.  
16 Smart meters will pulse intermittently day  
17 and night, and may have an adverse effect on  
18 sleep cycles. Unlike the users of cell  
19 phones who do not use them during sleep, RF  
20 mesh network meters will continue to emit  
21 low levels of pulsed RF radiation  
22 intermittently all night long. Exposure to  
23 microwave radio frequency fields affect the  
24 neuroendocrine system causing neuroendocrine  
25 chemical modulations and neurobehavioural  
26 reactions. Already in 1970s it was known

1           that resonant absorption within the cranium  
2           may result in the focusing of energy and the  
3           production of electromagnetic "hot spots" in  
4           the brain (Johnson and Guy '72). Microwaves  
5           may disturb the critical hormonal regulatory  
6           areas, including the hypothalamic-pituitary  
7           axis through "low intensity" exposure. The  
8           body may elicit a different responses  
9           relative to the timing of the exposure with  
10          respect to the circadian rhythm. At night  
11          while sleeping the body's principally in  
12          repair mode and the exposure to microwave  
13          radiation from these meters may be  
14          potentially more damaging than exposure  
15          during the day. It's vital that long-term  
16          exposure studies during the night be carried  
17          out to determine if pulsed microwave  
18          radiations from meters could have an adverse  
19          biological effect on the population. One of  
20          the most common complaints from exposure to  
21          existing smart meter installations are sleep  
22          disturbances, which appear when the person  
23          is removed from the environment near the  
24          meter -- "

25          Which disappear, sorry.

26          "...when a person is removed from the

1 environment."

2 So my question for you, Dr. Bailey, is have  
3 there been, to your knowledge, any long-term exposure  
4 studies during the night?

5 DR. BAILEY: A: Do you mean like a long-term  
6 epidemiology study or a long-term laboratory study or  
7 --

8 MR. AARON: Q: Either. Have there been studies of --  
9 and I'm not a scientist, so I just refer to the  
10 language of my consultant, who said that --

11 DR. BAILEY: A: The reason --

12 MR. AARON: Q: -- it's vital that long-term exposure  
13 studies during the night be carried out to determine  
14 if pulsed microwave radiation from the meters could  
15 have an effect. He say it's vital that there be such  
16 studies, and I'm asking you, have there been such  
17 studies?

18 DR. BAILEY: A: There have been two types of studies.  
19 There have been long-term studies in which people have  
20 looked at the potential relationship of sleep  
21 disturbances and other neurobiological responses as a  
22 function of potential exposure to mobile phone base  
23 stations, and those would include GSM stations, and a  
24 variety of other radio frequency sources.

25 **Proceeding Time 11:38 a.m. T31**

26 These are epidemiology studies that have

1 looked for associations between potential exposure and  
2 use, and then turning to Dr. Meret's comment here,  
5 which seems to me, in terms of the references he's  
4 citing, a focus more on short-term exposures and there  
5 have been a variety of studies that have been done in  
6 which subjects have come into the laboratory and slept  
7 a night or so and during that time they have been  
8 exposed to GSM mobile phones during the night and look  
9 to see if that's interfered with their sleep cycles,  
10 and other physiological responses that might be  
11 related to that.

12 MR. AARON: Q: And you're familiar with the studies  
13 that Meret refers to?

14 DR. BAILEY: A: He's not referencing -- he's not  
15 referencing any study here that --

16 MR. AARON: Q: Johnson and Guy and Michaelson?

17 DR. BAILEY: A: Those don't have to do with nighttime  
18 exposures. These are -- these are both review  
19 articles and they're not focused on the issue that is  
20 of current focus in the scientific community.

21 MR. AARON: Q: Okay. The Maisch report at page 3,  
22 refers to a criticism that I think the working group  
23 made, of the failure to take into consideration the  
24 differing sensitivity of human tissue when calculating  
25 SAR limits. Is that criticism valid? And that  
26 reference is right in the middle of the page, and it's

1 a concern that the working group, RFIAWG raised with  
2 the IEEE standards. Did the IEEE consider the  
3 different sensitivity of human tissue?  
4 DR. BAILEY: A: Yes, and this comment here is  
5 describing in 1999 and the IEEE standard came out a  
6 number of years later, and that is specifically  
7 addressed in the standard.  
8 MR. AARON: I'm at a biological need to break for about  
9 60 seconds, and it's quite pressing, and I don't know  
10 if it's because of the complexity of the evidence, but  
11 I put that to the panel. I'm having trouble  
12 continuing. It would only be 60 seconds, or we can  
13 break early for lunch, I don't know.  
14 THE CHAIRPERSON: Well, I think perhaps it would be most  
15 practical for us to -- I have a long answer to your  
16 question. Very long answer to your question.  
17 I think it would be most practical if we  
18 broke then for lunch and -- but let's -- it's quarter  
19 to 12:00 by my watch. Let's reconvene at 12:30. That  
20 will give us 45 minutes.  
21 MR. AARON: I am at a change of chapter anyways.  
22 THE CHAIRPERSON: Excuse me, one of my colleagues has a  
23 meeting with another panel on another matter that's  
24 schedule for 12:30. Will 15 minutes be adequate? So  
25 we'll be back at 12:45.  
26 MR. AARON: Thank you.

1 THE CHAIRPERSON: Thank you.

2 (PROCEEDINGS ADJOURNED AT 11:42 A.M.)

5 (PROCEEDINGS RESUMED AT 12:45 P.M.)

T23/33

4 THE CHAIRPERSON: Please be seated.

5 Mr. Fulton?

6 MR. FULTON: Thank you, Mr. Chairman. Before Mr. Aaron  
7 returns to the mike, I just wanted to say that there  
8 will be an opportunity following the conclusion of the  
9 proceedings today for people to see how the video  
10 conferencing will work. And I understand it will take  
11 five to ten minutes to set things up to show people.  
12 So if they're interested in seeing how it works, the  
13 opportunity will be there tonight.

14 THE CHAIRPERSON: Thank you.

15 Mr. Aaron, please continue.

16 MR. AARON: Thank you.

17 MR. AARON: Q: Dr. Bailey, returning to Undertaking No.  
18 5, and the Somerville study. Sorry, Sommer, S-O-M-M-  
19 E-R.

20 DR. BAILEY: A: Sommer.

21 MR. AARON: Q: At page 6 of that package. Is this one  
22 of the studies that you referred to as being within  
23 the scope of those studies that you referred to in the  
24 Information Request as being grossly similar in terms  
25 of exposure?

26 DR. BAILEY: A: Yes.

1 MR. AARON: Q: All right. Similar in terms -- 900  
2 megahertz, is that a similarity?

5 DR. BAILEY: A: Correct.

4 MR. AARON: Q: Lots of exposure, 24 hours a day. Is  
5 that a similarity?

6 DR. BAILEY: A: It's a long-term exposure. That's what  
7 I was interested in.

8 MR. AARON: Q: Right.

9 DR. BAILEY: A: Not necessarily a specific number of  
10 hours per day.

11 MR. AARON: Q: Okay. Long-term exposure, duty cycle,  
12 Mr. Shkolnikov, you're assuming would be 12 percent on  
13 the GSM phones.

14 DR. SHKOLNIKOV: A: Yes, 12 and a half percent.

15 MR. AARON: Q: And we're at maximum theoretical at five  
16 percent. Similar enough. And in this study, they  
17 were looking for a specific outcome with respect to  
18 exacerbation of a propensity to get leukemia, correct?

19 DR. BAILEY: A: Lymphoma specifically.

20 MR. AARON: Q: Oh, sorry.

21 DR. BAILEY: A: But it's similar in the same sort of  
22 family.

23 MR. AARON: Q: Lymphoma, sorry. And so they were  
24 looking for specific -- a deleterious health outcome,  
25 and they didn't find any difference as between the  
26 exposed rats and the unexposed rats, correct?

1 DR. BAILEY: A: Yes. What they were trying to do was  
2 to increase the sensitivity to detect an effect.

5 MR. AARON: Q: Right.

4 DR. BAILEY: A: By looking at animals that had a  
5 genetic predisposition to the development of this  
6 particular type of disease.

7 MR. AARON: Q: Mm-hmm. And the exposure made no  
8 difference in that regard.

9 DR. BAILEY: A: That's what they report.

10 MR. AARON: Q: And then they report that the exposure  
11 caused the exposed rats to get fat. Correct?

12 DR. BAILEY: A: I don't remember the specificity in  
13 terms of weight gain. It's a common observation in  
14 these laboratory studies to have variations in weight  
15 gain. But that also could be part of the -- in this  
16 study a weight gain could be related to the  
17 infiltration of fluid around -- as a tumour develops,  
18 that fluid would accumulate around the tumour and that  
19 may be a factor.

20 MR. AARON: Q: Right. So the weight gain caused by the  
21 exposure could have been related to a number of  
22 things. Correct?

23 DR. BAILEY: A: Right. I don't know -- they didn't  
24 investigate it further as to what that related to.

25 MR. AARON: Q: Mm-hmm. Mr. Loski, did Fortis introduce  
26 the AMI project or did it commence the AMI project

1 knowing of this study, with respect to the fact that  
2 rats exposed to these grossly similar emissions got  
5 fat?

4 MR. LOSKI: A: I did not have specific knowledge of  
5 this specific study.

6 **Proceeding Time 12:49 p.m. T34**

7 MR. AARON: Q: Okay. Mr. Warren, in being cross-  
8 examined by Mr. Miles, and I don't need to take you  
9 there, I think we could -- possibly we could agree  
10 that you said there's no ability to turn them off, or  
11 Mr. Miles said these things are on all the time, and  
12 you said, "Well, that might be true, there's no  
13 ability to turn them off, but they're only on for .06  
14 of the time for those 20 years." Could you agree to  
15 having said that or do I need to go to the transcript?

16 MR. WARREN: A: I do not believe I said that they can't  
17 be turned off, but I did say that they were active on  
18 average about .06 percent of the time.

19 MR. AARON: Q: Okay, well, we could agree that they  
20 can't be turned off, correct? They're operating all  
21 the time. The customer can't turn them off.  
22 Fortis doesn't intend to turn them off. Correct?

23 MR. WARREN: A: You're correct that we don't intend to  
24 turn them off, correct.

25 MR. AARON: Q: All right, so that's not an issue. And  
26 you said they're operating for only .06 percent of the

1           time.

2   MR. WARREN:    A:    On average, yes.

5   MR. AARON:     Q:    For 20 years.

4   MR. WARREN:    A:    Correct.

5   MR. AARON:     Q:    Okay. But you admit that the maximum  
6           duty cycle is 5 percent.

7   MR. WARREN:    A:    As I said earlier, the theoretical  
8           maximum duty cycle is 5 percent. The maximum duty  
9           cycle that was measured in a study performed by Itron  
10          in their white paper showed a maximum duty cycle of  
11          .58 percent.

12   MR. AARON:    Q:    And so let's see, what does that amount  
13          to, 5 percent of 20 years? Can you calculate that?  
14          Mr. -- there you go, I knew you could. You know  
15          what? I did it in advance. It's one year, isn't it?

16   DR. SHKOLNIKOV:  A:    Yes.

17   MR. AARON:     Q:    So the exposure over 20 years would be a  
18          one year of continuous exposure to these emissions  
19          that were grossly similar to those in the Sommer  
20          study, correct?

21   MR. WARREN:    A:    No, I would not agree with that. That  
22          would be at the theoretical maximum exposure.

23   MR. AARON:     Q:    Okay, well, let's just qualify it like  
24          that. Theoretically the maximum exposure would be --  
25          well, you know. I know you're talking amongst  
26          yourselves and I just want to put the question to you.

1 DR. SHKOLNIKOV: A: I would like to caution here, if  
2 we're going to be talking about cumulative exposure  
5 over 20 years --

4 MR. AARON: Q: Yes.

5 DR. SHKOLNIKOV: A: -- the appropriate metric to use is  
6 average duty cycle --

7 MR. AARON: Q: Okay.

8 DR. SHKOLNIKOV: A: -- because it is basically  
9 impossible to have smart meter, as I would say,  
10 continuously win the lottery by always communicating  
11 at 5 percent. So the appropriate value, if you're  
12 looking at the cumulative exposure, which I think is  
13 the question here, is to use 0.06 percent value.

14 MR. AARON: Q: All right, well, for some reason Health  
15 Canada wants you to calculate the theoretical and  
16 limits you in that regard, and the theoretical is 5  
17 percent. And I don't hear anyone telling me that the  
18 theoretical maximum duty cycle is not more than 5  
19 percent. Nobody's saying that, are they?

20 DR. SHKOLNIKOV: A: I think that we are mixing here a  
21 compliance question versus exposure question. For  
22 compliance purposes, Industry Canada doesn't even  
23 allow you to use a 5 percent value, but that's really  
24 for purposes of compliance. The question you're  
25 asking is for comparing to exposure, which is a  
26 separate question, and then for exposure the relevant

1 question is what is a -- and especially for the  
2 questions of cumulative exposure, the question would  
3 be the average value. Because the idea is that, you  
4 know, in the long term the value you're going to get  
5 averaged over many years is the average value, and  
6 therefore 5 percent would be improper to use.

7 MR. AARON: Q: Okay. So if we use the average, .006,  
8 so that would be .0006 times 20 years, you'd be  
9 exposed for something like one month of continuous  
10 exposure.

11 MR. WARREN: A: That's roughly correct, I think, yes.

12 MR. AARON: Q: So on the average duty cycle you've got  
13 one month of continuous exposure. On the theoretical  
14 maximum duty cycle you've got a year of continuous  
15 exposure to the emissions that were grossly similar to  
16 those in -- studied in the Sommer study, correct?

17 **Proceeding Time 12:54 p.m. T35**

18 DR. BAILEY: A: Yeah.

19 DR. SHKOLNIKOV: A: And the key thing here would be if  
20 we are counting exposure as total duration rather than  
21 volume, because this is -- the actual -- so this is  
22 true for duration of exposure, I should say.

23 MR. AARON: Q: Okay. It's not clear to me the ZigBee  
24 emissions, it's a whole different kind of emission.  
25 Will the smart meter as it is installed, if this  
26 application is approved, will it be installed with the

1 ZigBee emission being in a state of emission  
2 regardless of whether the ZigBee chip is opted into by  
5 the customer?

4 MR. WARREN: A: No, we intend to install the meters  
5 with the ZigBee radios in what's called "quiet mode",  
6 in which there are no transmissions.

7 MR. AARON: Q: All right. And so, unless a customer  
8 consents to the ZigBee, there will be no ZigBee  
9 transmissions.

10 MR. WARREN: A: That's correct.

11 MR. AARON: Q: All right. Well, that satisfies me with  
12 respect to the health issues concerning the ZigBee  
13 matter.

14 DR. SHKOLNIKOV: A: I am sorry, I just did the  
15 calculation and maybe I am incorrect. For 20 years,  
16 12 month use per year, and 0.06 percent, you are  
17 getting -- I am getting about 0.15 of a month instead  
18 of one month.

19 MR. AARON: Q: Isn't it years? It's 20 years, right?

20 DR. SHKOLNIKOV: A: Yes. So, 20 years, 12 months a  
21 year --

22 MR. AARON: Q: Yes.

23 DR. SHKOLNIKOV: A: -- times 0.06 divided by 100, I'm  
24 getting 0.144 months.

25 MR. AARON: Q: Oh, okay. I'm not going to query you on  
26 the calculation.

1                   Why don't you just read into the record  
2           your formula for getting to that? To your  
3           calculation.  
4 DR. SHKOLNIKOV:   A:   Yes. So, 0.06 divided by 100,  
5           times 20, times 12.  
6 MR. AARON:       Q:   Okay, thank you. In the 2003 version of  
7           the Royal Commission report, Dr. Bailey, at page 3,  
8           there is a reference --  
9 DR. BAILEY:     A:   I'm sorry, was the --  
10 THE CHAIRPERSON:   Are you referring to the Royal Society  
11           report?  
12 MR. AARON:     Q:   Yes, and there was by way of undertaking  
13           a 2003 version of that which came into evidence.  
14           Undertaking No. 3.  
15 DR. BAILEY:     A:   Yes.  
16 MR. AARON:     Q:   I refer to this Moneda study, 2003,  
17           which is in the middle of the page.  
18 DR. BAILEY:     A:   What page, though?  
19 MR. AARON:     Q:   Oh, sorry. Page 3. And it says  
20           "Moneda...verified by the means of numerical  
21           calculation that the higher the frequency,  
22           the more superficial is the absorption."  
23                   Am I understanding that correctly? And  
24           Moneda observed that with a higher frequency, as in --  
25           that's in more hertz, the absorption into their --  
26           into the body, versus the calculation of specific



1           minute. The numbers for number of times a day is  
2           correct. I don't know how to quantify small amounts  
3           of information, but I will take her word that she  
4           thinks that it's a small amount of information. I  
5           think -- how far do you want me to review this?  
6 MR. AARON:   Q:   Just those three paragraphs, the last  
7           paragraph being "According to the icon" 95.  
8 DR. SHKOLNIKOV:   A:   I would say there's one piece of  
9           information which would be important for -- if she's  
10          going to go and continue estimating the exposure and  
11          which isn't then a gain -- which usually is reported  
12          always after you give the power, and that's a gain of  
13          1.66. I wouldn't say that's incorrect but it is an  
14          omission. And then in terms of 5 percent duty cycle,  
15          I don't know if her statement of it that it's a  
16          characteristic of a need to propose network, clearly  
17          the observation is that the smart meters communicate  
18          much less frequently than 5 percent. So I can't  
19          confirm, it is not evident that any future limits,  
20          that would be up to Itron, the manufacturer, to state  
21          that.  
22 MR. AARON:   Q:   Thank you. Could you refer to the  
23          Exponent report, Dr. Shkolnikov?  
24 DR. SHKOLNIKOV:   A:   Yes.  
25 MR. AARON:   Q:   At page 15 please.  
26 DR. SHKOLNIKOV:   A:   At what page?

1 MR. AARON: Q: 15.

2 DR. SHKOLNIKOV: A: Okay, 15, okay.

5 MR. AARON: Q: The last two lines, it says:

4 "Typical RF levels of advanced meters are  
5 not higher than these sources of low level  
6 exposure..."

7 Why was it that you used the word  
8 "typical"? "Typical RF levels"? You're talking about  
9 Fortis meters, I take it, right?

10 DR. SHKOLNIKOV: A: Well, I think this has to do with  
11 what we're trying to compare. We have reported  
12 maximum exposure for reference, but it's important to  
13 realize, for example, one of the projects I worked on,  
14 you have an AM tower which is transmitting 50,000  
15 watts. And so we can talk about typical exposure at  
16 the specific distance, or we can talk about maximum.  
17 Both are relevant answers. And as I mentioned earlier  
18 when you're trying to talk about -- if you are  
19 concerned about cumulative exposure specifically, not  
20 -- you know, I'm going to defer to Dr. Bailey if  
21 that's a relevant metric or not, but if you're just  
22 concerned about typical exposure, the idea is what is  
23 your exposure averaged over a long period of time?  
24 And therefore the comparison is typical.

25 But as we put directly in the appendix of  
26 the report, we've considered typical, we've considered

1 maximum measured on the network, and we've considered  
2 5 percent duty cycle, and we have also clearly used  
3 the numbers that assume that the smart meter is  
4 transmitting 100 percent of the time as part of the  
5 comparison.

6 MR. AARON: Q: So you didn't say that level -- when you  
7 refer to the RF levels of advanced smart meters, you  
8 use the word "typical" because you could be talking  
9 about the average emission or maximum, is that right?

10 DR. SHKOLNIKOV: A: If you're asking me why is it  
11 typical, the answer is I'm trying to make a relevant  
12 comparison. If I were talking about -- I mean, we can  
13 -- if you would like to pose a question to compare,  
14 you know, maximum versus maximum or typical versus  
15 typical, I'd be happy to do that. But as I said, the  
16 maximum exposure, based on the technology, could  
17 greatly exceed the maximum exposure from smart meter,  
18 or be -- you know, so that's a kind of -- you know,  
19 there is a choice of how to do a comparison. And the  
20 normal one is to do typical and to disclose that  
21 values could be greater than a typical, depending on  
22 operating conditions.

23 **Proceeding Time 1:04 p.m. T37**

24 MR. AARON: Q: Okay. And what you've disclosed in that  
25 vein is that they could be five percent.

26 DR. SHKOLNIKOV: A: We have actually in report, I

1 believe, alluded to even the reports in the -- filed  
2 with FCC which we actually showed 100 percent as well,  
3 on top of the --  
4 MR. AARON: Q: Okay.  
5 DR. SHKOLNIKOV: A: Even the theoretical maximum of 5  
6 percent.  
7 MR. AARON: Q: Okay. Well, let's work on that  
8 theoretical average of 5 percent.  
9 DR. SHKOLNIKOV: A: Yes.  
10 MR. AARON: Q: That amounts to 72 minutes a day,  
11 doesn't it? On that measure.  
12 DR. SHKOLNIKOV: A: Five percent -- so, five -- I will  
13 do the calculation here.  
14 MR. AARON: Q: Sure. You're the man for that.  
15 DR. SHKOLNIKOV: A: Sorry.  
16 MR. AARON: Q: No pressure.  
17 DR. SHKOLNIKOV: A: Yeah, 72. It's correct. Sorry.  
18 Just want to confirm the number.  
19 MR. AARON: Q: Okay. 72 minutes a day.  
20 DR. SHKOLNIKOV: A: Mm-hmm.  
21 MR. AARON: Q: And then on page 18 of the E<sup>x</sup>Ponent  
22 report, the top two lines,  
23 "...relevant to the development of RF exposure  
24 limits and standards, frequencies used in  
25 mobile phones are more similar to those used  
26 by advanced meters..."

1 Correct?

2 DR. SHKOLNIKOV: A: Sorry, could you --

5 MR. AARON: Q: Frequencies used in mobile phones are --  
4 there is a statement of -- and I think it's Dr. Bailey  
5 who should answer. There is a statement with respect  
6 to the similarity between the mobile phone frequencies  
7 and those used by advanced smart meters.

8 DR. SHKOLNIKOV: A: Yeah. I mean, 900 megahertz.

9 MR. AARON: Q: Right.

10 DR. SHKOLNIKOV: A: Which has nothing to do with  
11 duration, but 900 megahertz is similar to those used  
12 by GSM -- well, actually, cellular phones, some types  
13 of cordless phones, and other devices, yes.

14 MR. AARON: Q: Right. Dr. Bailey, you know that group  
15 in the Interphone study, the heavy user group.

16 DR. BAILEY: A: Mm-hmm.

17 MR. AARON: Q: In relation to which there was found to  
18 be a significant correlation between their telephone  
19 use and say tumours.

20 DR. BAILEY: A: Correct.

21 MR. AARON: Q: Are you familiar with that?

22 DR. BAILEY: A: Yes.

23 MR. AARON: Q: What was the criteria for heavy  
24 telephone use?

25 DR. BAILEY: A: It was the highest -- they divided the  
26 telephone use into deciles, or tenths, and so it is

1 the highest ten percent of hours used in the -- by the  
2 -- by users.

5 MR. AARON: Q: Would use of that telephone for 72  
4 minutes a day, every day, seven days a week, 52 weeks  
5 a year, for 20 years, put someone in that category  
6 after 20 years?

7 DR. BAILEY: A: Well, I haven't done that calculation.

8 MR. AARON: Q: I put it to you that it would. And I  
9 invite you to come back with a refutation by reference  
10 to the Interphone study. And particulars as to how  
11 they characterize the top ten percent heavy users.

12 DR. BAILEY: A: And your assumptions again? If you  
13 could just repeat them.

14 **Proceeding Time 1:09 p.m. T38**

15 MR. AARON: Q: I put it to you that use of a telephone  
16 for 72 minutes a day, every day for 20 years, would  
17 put an individual into a category of persons in  
18 relation to whom the Interphone study found a  
19 significant 3.0 or greater odds ratio correlating  
20 their telephone use to tumours in the brain.

21 DR. BAILEY: A: Got it.

22 **Information Request**

23 MR. AARON: Q: Okay, thank you.

24 Was there a reference in the materials,  
25 either the E<sup>x</sup>ponent Report or the information request  
26 answers, to the fact that there already is natural

1 radio frequency exposure in the environment anyways?

2 DR. BAILEY: A: Yes, that is correct.

5 MR. AARON: Q: Yes. And so I want to challenge that,  
4 and I will do so by referring to the Maret report at  
5 pages 32 and 33.

6 DR. BAILEY: A: Okay.

7 MR. AARON: Q: I think Fortis's reference is either  
8 under question 6 in its response, Fortis says they  
9 don't

10 "...believe it's possible for any customer to  
11 eliminate RF signals from their personal  
12 environment, even those in rural  
13 environments. Both natural (from the earth  
14 and even human bodies) and man-made RF  
15 signals are constantly present all around  
16 us."

17 And then Fortis says:

18 "Considering the extremely low level of RF  
19 emissions associated with AMI, it's  
20 difficult to quantify to what extent the  
21 provision of an opt-out...may potentially  
22 reduce an individual's exposure, however  
23 based on these extremely low levels, and  
24 considering the multiple sources of natural  
25 and man-made RF signals, it's clear that  
26 such a reduction from AMI meters would not

1 significantly reduce...exposure."

2 Do you stand by that statement?

5 DR. BAILEY: A: Yes, I do.

4 MR. AARON: Q: And then the challenge that I put is  
5 through the advice of my consultant on page 33, he  
6 says:

7 "If we accept a .05 microwatt per square  
8 centimetre background levels in metropolitan  
9 area similar to Sweden's 2000 levels, a  
10 smart meter transmitting with peak power  
11 levels of 9 microwatts per centimeter  
12 squared at one metre distance from the meter  
13 would be briefly exceeding the ambient  
14 levels by 180 times."

15 And he says:

16 "By averaging power density...one would obtain  
17 a lower average power density figure.  
18 However, it is the sudden pulsations and the  
19 meter transmits that might cause the  
20 potential biological...effects..."

21 But you're not suggesting that we're  
22 naturally subject to those kind of pulsations that the  
23 meter would emit, are you?

24 DR. SHKOLNIKOV: A: I would like, considering the  
25 volume of read-in --

26 MR. AARON: Q: Yes.

1 DR. SHKOLNIKOV: A: -- could I start addressing the  
2 questions -- they're multi-question. Could I start  
5 addressing them one at a time?

4 MR. AARON: Q: Yes.

5 DR. SHKOLNIKOV: A: At least from my recollection of  
6 the number of questions asked.

7 In terms of Dr. Maret's response about the  
8 natural exposure, it will greatly surprise NASA, which  
9 has been doing measurements of temperature of earth  
10 and radio frequency range for least a decade with very  
11 great success for monitoring the environment.

12 MR. AARON: Q: Mm-hmm.

13 DR. SHKOLNIKOV: A: Those exposures are very well known  
14 and studied and taught to any undergraduate physics  
15 person. And if you look at radio frequency as defined  
16 by Health Canada and you have a range of 3 kilohertz  
17 to 300 gigahertz, you do get a significant total  
18 exposure from that frequency range which, from earth,  
19 is about 1.3 milliwatts per square metre.

20 **Proceeding Time 1:13 p.m. T39**

21 So, the answer is, I'm not sure -- that's a  
22 basic physics fact that has been known for close to a  
23 hundred years. If Dr. Maret is disputing that, I  
24 would strongly disagree with him.

25 MR. AARON: Q: Okay, fair enough.

26 DR. SHKOLNIKOV: A: Then in terms of values reported by

1 U.S. EPA 1986, it is important to note that their  
2 measure -- first, 1986, in terms of RF technology,  
3 does, you know, reduce the -- you know, the exposure  
4 to a lot of other frequencies which have been  
5 implemented since then. But the other thing to note  
6 is that EPA had a very specific band of frequencies  
7 they were measuring. They were measuring something  
8 close to 1 percent of radio frequency signal, because  
9 they were interested in not natural but background  
10 levels of RF, and therefore they measured only the  
11 frequency ranges which cover standard man-made  
12 frequencies, which in 1986 would clearly not include  
13 cellular phone towers but would include other  
14 frequencies.

15 In terms of the statement you made about  
16 Sweden 2000 levels, 0.05 microwatts per centimetre  
17 squared, the measurement equipment I am familiar with  
18 would -- I would have to assume, unless something is  
19 explicitly written, that is the average level. And  
20 therefore the peak value could actually be greatly  
21 exceeding this number. And therefore the comparison  
22 between background levels and exposure of smart meter  
23 should be used in the same terms. You should either  
24 compare the average to average, or peak to peak, but  
25 you should not be comparing average to peak value.

26 MR. AARON: Q: Okay. In your opinion, Dr. Shkolnikov,

1 is there a natural source of RF emission at -- that's  
2 the same as the RF emission that stands to come from  
5 the AMI meters? That has the same characteristics.

4 DR. SHKOLNIKOV: A: There are two questions. Do I  
5 think there is a natural source of RF signal? That's  
6 not an opinion, that's a fact. If you're asking me --

7 MR. AARON: Q: But that has the same -- yeah. It's one  
8 question.

9 DR. SHKOLNIKOV: A: Well, actually the answer is of  
10 course no, because you wouldn't be able to communicate  
11 if it had the same characteristic as the background.

12 MR. AARON: Q: Okay. And I think this is a good time  
13 to go to the E<sup>x</sup>Ponent Report -- sorry. Safety Code 6  
14 itself. Which is at Exhibit -- okay, Appendix B-6 to  
15 Exhibit B-1.

16 DR. SHKOLNIKOV: A: Okay.

17 MR. AARON: Q: And I think I'm going to address these  
18 questions to Dr. Bailey, primarily. There is an  
19 errata on page 2 of 30 of that exhibit. It says, "For  
20 frequencies between 2 kilohertz and ..." Well, that  
21 doesn't matter. Let's start at the next sentence.

22 "For frequencies greater than 100 kilohertz  
23 and up to 15,000 megahertz, time averaging  
24 provisions in this code take into account  
25 the basic restriction -- that the basic  
26 restrictions are designed to limit

1           temperature increases in tissues."

2           Would you agree, Dr. Bailey, that the basic  
5           restrictions in Safety Code 6 are designed to limit  
4           temperature increases in tissues?

5 DR. BAILEY:    A:    Yes.

6 MR. AARON:     Q:    Going on.

7           "Temperature increases in living tissue due  
8           to RF energy absorption follow a well-  
9           defined pattern with a time constant of  
10          approximately 6 minutes (thermal time  
11          constant), whereas 63 percent of the steady  
12          state temperature increase occurs within 6  
13          minutes."

14                 So, this time averaging with 6 minutes, is  
15                 it correct to characterize that, time averaging within  
16                 six minutes, as a methodological design specifically  
17                 crafted or oriented to identifying temperature  
18                 increase.

19                                 **Proceeding Time 1:18 p.m. T40**

20 DR. BAILEY:    A:    No, it's not for identifying  
21                 temperature increase. It's the criteria which has to  
22                 be met under the standard.

23 MR. AARON:     Q:    Okay, so can I say then, would it be  
24                 correct to say that the time averaging within six  
25                 minutes houses a methodological design specifically  
26                 crafted to measuring -- identifying and measuring

1 temperature increase? Or quantifying temperature  
2 increase -- increase?

5 DR. BAILEY: A: Perhaps Yakov --

4 MR. AARON: Q: Okay.

5 DR. BAILEY: A: -- can clarify this because I didn't  
6 make myself clear the first time I answered this, so  
7 Yakov can try.

8 DR. SHKOLNIKOV: A: Yes. So this is kind of going back  
9 to our discussion about heat and temperature. By an  
10 analogy, if you're in a room and there is a heater and  
11 an air-conditioning system, you can quantify the heat  
12 that is produced by the -- let's say by the heater.  
13 And then if there's an air-conditioning system that  
14 can keep up with the load produced by the heat, there  
15 is no temperature rise. So there are two separate  
16 questions. What is the heat introduced into the  
17 system and what is a temperature rise?

18 A Safety Code 6 doesn't, you know, is not  
19 concerned from point of view of compliance about  
20 temperature rise. It already has determined that if  
21 you exceed the limit by a factor of 50, the  
22 temperature rise would be one degree. From that point  
23 on, it only is concerned about the heat introduced  
24 into the system to verify that it has a safety limit.

25 MR. AARON: Q: Oh, how much heat is going into the  
26 system.

1 DR. SHKOLNIKOV: A: Yes.

2 MR. AARON: Q: Okay.

5 DR. SHKOLNIKOV: A: Rather than the temperature rise.

4 MR. AARON: Q: All right. So this is a system to  
5 determine how much heat goes into a system.

6 DR. SHKOLNIKOV: A: Yes.

7 MR. AARON: Q: Okay.

8 DR. SHKOLNIKOV: A: And if you look on page 20 of the  
9 standard formula, 2.1 is clear they're calculating the  
10 time average power density, which would be the  
11 calculation for that.

12 MR. AARON: Q: So this is a methodological design for  
13 that computation.

14 DR. SHKOLNIKOV: A: Basic methodological design to  
15 calculate the amount of -- I would almost say energy  
16 imparted on a human body.

17 MR. AARON: Q: So what's the methodological design to  
18 identify non-thermal adverse bio-effects?

19 DR. BAILEY: A: There is not a specification in Safety  
20 Code 6 for that.

21 MR. AARON: Q: Okay. Over the page --

22 DR. SHKOLNIKOV: A: Actually I would correct. There's  
23 no methodological for the frequency range we're  
24 talking about for other frequencies. There are other  
25 considerations in the standard.

26 MR. AARON: Q: Right. We're talking about the 900

1 megahertz.

2 DR. SHKOLNIKOV: A: Correct.

5 MR. AARON: Q: Yeah, that's -- on page 5 of 30 of the  
4 exhibit there's a preface, and then in the second last  
5 paragraph:

6 "In a field where technology is advancing  
7 rapidly and where unexpected and unique  
8 problems may occur, this code cannot cover  
9 all possible situations. Consequently the  
10 specification in this code may require  
11 interpretation under special circumstances.  
12 This interpretation should be done in  
13 consultation with scientific staff with the  
14 Consumer and Clinical Radiation Protection  
15 Bureau of Health Canada."

16 In 2009 when they wrote this, there was no  
17 deployment of smart meters, was there? In Canada.

18 DR. SHKOLNIKOV: A: I don't know the -- there was no  
19 deployment, but in around 2007, 2000 -- maybe even  
20 prior to that, when I was contacted on a different  
21 smart meter issue, I have actually specifically called  
22 Industry Canada with the parameters that we're working  
23 with to identify if there was a standard testing  
24 method covering calculating the exposure from these  
25 devices. And I was directed -- I was told yes and  
26 directed to use Industry Canada's RSS 102 as a method

1 for calculating the exposure as it relates to Safety  
2 Code 6 compliance.

5 MR. AARON: Q: Okay. And then it says:

4 "The safety limits in this code are based on  
5 an ongoing review of published...studies..."

6 So Health Canada makes a representation  
7 that it's done an ongoing review of published studies.  
8 You don't have any evidence, Dr. Bailey, that that  
9 ongoing review of published studies has occurred. You  
10 take Health Canada's word for it, correct?

11 **Proceeding Time 1:23 p.m. T41**

12 DR. BAILEY: A: I take their statements that -- their  
13 representations and also the fact that I'm aware that  
14 they have at periodic intervals requested assistance  
15 from the Royal Society of Canada to provide updates to  
16 them as part of this ongoing review.

17 MR. AARON: Q: Okay. Over to the next page, 9 of 30.  
18 Two-thirds of the way down the page, the paragraph  
19 starting

20 "The exposure limits specified in Safety  
21 Code 6 have been established upon a thorough  
22 evaluation of the scientific literature  
23 related to thermal and possible non-thermal  
24 effects of RF energy on biological systems."

25 So, Health Canada represents that it has done a  
26 thorough evaluation.

1 "Health Canada scientists consider all peer-  
2 reviewed scientific studies, on an ongoing  
5 basis, and employ a wealth of evidence --"

4 Sorry.

5 "...employ a weight of evidence approach when  
6 evaluating the possible health risks of RF  
7 energy. This approach takes into account  
8 both the quality --"

9 Sorry,

10 "...whether there is an adverse effect or not,  
11 but more importantly the quality of those  
12 studies."

13 So I put it to you, and you've heard this  
14 before from my friend, Mr. Andrews, the process of a  
15 thorough evaluation, the language of employing a  
16 weight of evidence approach, the language of taking  
17 into account the quantity -- the quality of studies.  
18 All of that connotes the exercise of subjective  
19 judgment.

20 DR. BAILEY: A: Parts of that would involve expert  
21 judgment.

22 MR. AARON: Q: And are we to take Health Canada for its  
23 word that it's done a thorough evaluation? That's one  
24 question. A related question is, you know, how can we  
25 assess if that subjective judgment was properly made?

26 DR. BAILEY: A: I would suggest that we ask Health

1 Canada.

2 MR. AARON: Q: There is nothing in the evidence that  
5 speaks to the thoroughness of the evaluation, is  
4 there? Other than Health Canada's statement that it's  
5 done it. Correct?

6 DR. BAILEY: A: Yes.

7 MR. AARON: Q: And Health Canada is not here to be  
8 cross-examined on that representation, are they?

9 DR. BAILEY: A: No, they are not.

10 MR. AARON: Q: And you haven't sat in on any of these  
11 evaluative processes. Correct?

12 DR. BAILEY: A: No, I have not.

13 MR. AARON: Q: All right. And the same goes with  
14 ICNIRP. They have engaged in the same kind of weight  
15 of evidence analysis, but they have done so behind  
16 closed doors, correct?

17 DR. BAILEY: A: Yes.

18 MR. AARON: Q: And you yourself in your evidence said  
19 that you've never had access to the details of  
20 ICNIRP's reasoning. And you know what, I have the  
21 citation. Ah, here we go. You know what, I'll have  
22 to come back to it when I can find it, and when I get  
23 to it.

24 Sorry, because I'm now jumping all over the  
25 place. So, the -- continuing on with Safety Code 6.  
26 The exposure -- there is a sentence, "Poorly conducted

1 studies," leaving off from where I left off. And then  
2 next sentence --

5 "The exposure limits in Safety Code 6 are  
4 based upon the lowest exposure level at  
5 which scientifically established human  
6 health standards occur."

7 And I put it to you that health hazards occur. Sorry,  
8 I'm getting tired.

9 **Proceeding Time 1:28 p.m. T42**

10 So I put it to you that the determination  
11 of what is scientifically established is a result of  
12 those very processes of thorough evaluation, employing  
13 a weight of evidence approach, and taking into account  
14 the quality of studies. Those three or four processes  
15 are pillars in the determination of what's  
16 scientifically established.

17 DR. BAILEY: A: The statement here reflects the fact  
18 that the process that they have followed has resulted  
19 in the standard, and these scientific -- based upon a  
20 scientifically established hazard.

21 MR. AARON: Q: So the way they have obtained a  
22 determination of what's scientifically established,  
23 they have done so through subjective processes which  
24 we have not had an opportunity to be privy to, or to  
25 scrutinize for their thoroughness.

26 DR. BAILEY: A: As we discussed a minute ago, we are

1 not privy to the internal deliberations of Health  
2 Canada as to their development of the standard, but I  
3 would point out that the basis for that standard is  
4 similar to that of IEEE and ICNIRP.

5 MR. AARON: Q: Right, which we also haven't had the  
6 opportunity, with respect to ICNIRP at least, to be  
7 privy to their deliberations.

8 DR. BAILEY: A: Yes.

9 MR. AARON: Q: There's a sentence eight lines down at  
10 the end of the line:

11 "The scientific approach used to establish  
12 the exposure limits in Safety Code 6 is  
13 comparable to that employed by other  
14 science-based international bodies... As such  
15 the basic restriction in Safety Code 6 are  
16 similar to those adopted by most other  
17 nations, since all recognized standard-  
18 setting bodies are using the same scientific  
19 data."

20 Are you following me?

21 DR. BAILEY: A: Yes.

22 MR. AARON: Q: But you can have the same scientific  
23 data, Doctor, and different subjective judgments with  
24 respect to the quality of the data and the weight of  
25 evidence analysis, correct?

26 DR. BAILEY: A: Yes.

1 MR. AARON: Q: And over onto page 11:

2 "The scientific literature with respect to  
3 the possible..."

4 DR. BAILEY: A: Sorry.

5 MR. AARON: Q: Sorry, yeah, I'm at the top.

6 DR. BAILEY: A: Just to confirm that's 11 out of 30.

7 MR. AARON: Q: Yes, thank you.

8 DR. BAILEY: A: "The scientific literature with  
9 respect to possible biological effects of RF  
10 energy has been monitored by Health Canada  
11 scientists on an ongoing basis since the  
12 last version of Safety Code 6 was  
13 published."

14 Again that assertion that it's being  
15 monitored, we don't have anything more than to take  
16 Health Canada at their word for it on the evidence, do  
17 we?

18 DR. BAILEY: A: No. Apart from, as I said before, the  
19 regular petitions to the Royal Society.

20 MR. AARON: Q: One of which is coming out this fall.

21 DR. BAILEY: A: Yes.

22 MR. AARON: Q: And then the second paragraph:

23 "Despite the advent of thousands of research  
24 studies on RF energy and health, the  
25 predominant adverse health effects  
26 associated with RF energy exposures in the

1 frequency range from 3 to 300 -- 3 kilohertz  
2 to 300 gigahertz still relate to the  
3 occurrences of tissue heating and excitable  
4 tissue stimulation from short-term (acute)  
5 exposure."

6 Where in Safety Code 6 is the analysis to  
7 support that conclusion? It's not set out, is it?

8 **Proceeding Time 1:32 p.m. T43**

9 DR. BAILEY: A: No.

10 MR. AARON: Q: It's what happened behind the veil.  
11 Correct?

12 MR. MACINTOSH: I'm getting worried that my friend is  
13 seeking to create a scenario based on him saying  
14 certain things in a certain way which has no  
15 relationship to fact. My friend is talking about the  
16 "veil" and "behind closed doors". And the innuendo  
17 and the inference from that is a pejorative and  
18 negative one.

19 Health Canada came up -- excuse me. Health  
20 Canada created Safety Code 6. There is no evidence of  
21 any veil.

22 MR. AARON: Hold on. He's assisting the witness. I'm  
23 entitled to cross-examination and I -- I object to --

24 THE CHAIRPERSON: Mr. Aaron, just a moment. He is  
25 objecting -- and you'll have a chance to have your  
26 say.

1 MR. AARON: But the content of his objection, with  
2 respect, is -- is -- is inappropriate.

5 MR. MACINTOSH: Well, let me be clearer for my friend.  
4 One is not allowed --

5 MR. AARON: Maybe we should have a witness exclusion  
6 order during this objection.

7 MR. MACINTOSH: This won't be necessary, because what I'm  
8 going to say doesn't reflect on what the panel knows  
9 or does not know. The point is, when you're cross-  
10 examining you are not entitled, as a matter of law, to  
11 posit a question to a witness that contains an  
12 assumption of fact that you are not prepared to prove  
13 or you do not have a reasonable belief for the truth  
14 of. There is no proof coming, as far as I know, of  
15 Health Canada operating behind some veil or in some  
16 dark and mysterious way. And my friend continuing to  
17 say it doesn't make it so.

18 And I am objecting to a question as being  
19 an improper question, because it contains an  
20 assumption of fact which is not in evidence and will  
21 not be proven. So I am objecting to it as an improper  
22 question.

23 MR. AARON: Q: All right, I won't use the word "veil".  
24 I think everyone knows what I mean. Is that the  
25 reasoning is not set out. And you would agree that  
26 the reasoning is not set out in Safety Code 6.

1 DR. BAILEY: A: And I have given the answer. Yes.

2 MR. AARON: Q: Thank you.

5 And the Code goes on to say,

4 "At present, there is no scientific basis  
5 for the premise of chronic and/or cumulative  
6 health risks from RF energy at levels below  
7 the limits outlined in Safety Code 6.

8 Proposed effects from RF energy exposures in  
9 the frequency range between 100 kilohertz  
10 and 300 gigahertz, at levels below threshold  
11 to produce normal effects, have been  
12 reviewed. At present, these effects [I  
13 emphasize] have not been scientifically  
14 established, nor are their implications for  
15 human health sufficiently well understood."

16 And I ask a question, Dr. Bailey, with respect to that  
17 statement, that these effects have not been  
18 scientifically established nor are their implications  
19 for human health sufficiently understood. I am asking  
20 you if you can point me to the analysis in Safety Code  
21 6 that supports that conclusion.

22 DR. BAILEY: A: I think this is the same question that  
23 I have asked three or four times -- that I have  
24 answered three or four times before. What you have is  
25 present in Safety Code 6, and apart from the Royal  
26 Society reports going to Health Canada, I don't have

1 other information to have insight into their  
2 deliberations.

5 MR. AARON: Q: So, no, the question before related to a  
4 different conclusion, or assertion, in Safety Code 6  
5 and now I ask that same question with respect to -- to  
6 answer my friend's question, which conclusion, the  
7 conclusion that these effects have been not been  
8 scientifically established nor are their implications  
9 for human health sufficiently understood. And that  
10 you have confirmed is a statement that is not  
11 explicitly supported by analysis or explanation within  
12 the contents of Safety Code 6.

13 DR. BAILEY: A: Well, it's -- they have not given out a  
14 detailed rationale behind that statement, but they  
15 point out that these effects have not been  
16 scientifically established, and so therefore if they  
17 haven't been established, then it's hard to assess  
18 their implications for human health to the fullest.

19 **Proceeding Time 1:37 p.m. T44**

20 MR. AARON: Q: Well, they do -- you would agree that  
21 they did assess those implications in the context of  
22 engaging in the weight of evidence analysis, and in  
23 the context of assessing the quality of studies that  
24 showed certain studies.

25 DR. BAILEY: A: Yes.

26 MR. AARON: Q: You would agree that --

1 DR. BAILEY: A: I said yes, but I believe that in  
2 saying that -- in following this weight of the  
5 evidence, that weight of the evidence has not  
4 persuaded them that there are other effects that had  
5 been scientifically established and which could serve  
6 as the basis for a standard.

7 MR. AARON: Q: You would agree there are some studies  
8 that indicate from the studies -- at least the authors  
9 of the studies take the position that their studies  
10 indicate an adverse bioeffect from RF exposure.

11 DR. BAILEY: A: Yes.

12 MR. AARON: Q: And Health Canada has evaluated the  
13 quality of those studies, correct?

14 DR. BAILEY: A: That's what they state.

15 MR. AARON: Q: And in doing so they have concluded that  
16 those studies don't support the -- or scientifically  
17 establish implications for human health, that they're  
18 not well understood.

19 DR. BAILEY: A: That is what they describe for  
20 biological effects or responses that are reported at  
21 levels below the adverse effect result from heating.

22 MR. AARON: Q: We have no particulars from Health  
23 Canada in relation to their reasoning or the analysis  
24 by which they found any of these non-thermal studies  
25 to be unpersuasive.

26 DR. BAILEY: A: We do not have a detailed analysis from

1 Health Canada on that point.

2 MR. AARON: Q: Okay. The last paragraph says:

5 "For frequencies from 100 kilohertz to 300  
4 gigahertz, tissue heating is the predominant  
5 health effect to be avoided."

6 Does that frequency range include the AMI meter  
7 frequency?

8 DR. BAILEY: A: Yes.

9 MR. AARON: Q: And Health Canada did not say that  
10 tissue heating is the only health to be avoided, did  
11 they?

12 DR. BAILEY: A: Could you state that again?

13 MR. AARON: Q: It's written here by the Safety Code 6  
14 authors:

15 "For frequencies from 100 kilohertz to 300  
16 gigahertz, tissue heating is the predominant  
17 health effect to be avoided."

18 DR. BAILEY: A: I see that.

19 MR. AARON: Q: And I'm suggesting to you this doesn't  
20 say that tissue heating is the only health effect to  
21 be avoided.

22 DR. BAILEY: A: That's the implication of that  
23 statement, yes.

24 MR. AARON: Q: The implication is that there are other  
25 effects other than tissue heating that are to be  
26 avoided.

1 DR. BAILEY: A: Yes.

2 MR. AARON: Q: Moving on, at page 3 of the E<sup>x</sup>ponent  
3 Report -- sorry. At the second paragraph, at the end  
4 of the paragraph you're describing the specific risk  
5 characterization process and you say at the end of the  
6 paragraph:

7 "The final step is to compare the specific  
8 exposure to the relevant standard."

9 Correct? That's what you wrote?

10 DR. BAILEY: A: Yes.

11 MR. AARON: Q: What standard do you mean in this  
12 context as being the relevant standard?

13 **Proceeding Time 1:42 p.m. T45**

14 DR. BAILEY: A: We have stated that for the purposes of  
15 the assessing in Canada the compliance of the smart  
16 meters with Canadian regulations, we used the Safety  
17 Code 6 as the relevant standard that had to be met for  
18 deployment of the smart meters.

19 MR. AARON: Q: So you're premising your notion of  
20 relevance -- you're premising your notion of Safety  
21 Code 6's relevance on your understanding that you had  
22 to meet that standard.

23 DR. BAILEY: A: That -- standards are based upon -- are  
24 determined on a national basis, generally, for  
25 compliance. And so if the question is, what is the  
26 standard to which the smart meter have to comply, then

1           that obviously points to Safety Code 6 as the national  
2           standard. But that is not a substitute for the  
3           scientific assessment, health risk assessment process  
4           independent of that.

5 MR. AARON:   Q:   Oh. I agree with you on that. But you  
6           identified Safety Code 6 as the relevant standard on  
7           the presumption that you were required at law to meet  
8           that standard.

9 DR. BAILEY:   A:   Yes. I can --

10 MR. AARON:   Q:   And you do realize that there are other  
11           standards, such as in the -- that Eastern Bloc nations  
12           have a different standard. That they studied the  
13           effect of RF radiation for many years and the  
14           scientific basis for, you know, the ex-Soviet Union  
15           and Russia standards are quite different from Safety  
16           Code 6. Are you aware of that?

17 DR. BAILEY:   A:   Yes.

18 DR. SHKOLNIKOV: A:   So, as Dr. Bailey has referenced,  
19           if we were to do this report in another country, for  
20           example, in Russia, China, or Poland --

21 MR. AARON:   Q:   Yes.

22 DR. SHKOLNIKOV: A:   -- we would do the comparison to  
23           those standards. But specifically for FortisBC AMI  
24           smart meters, the conclusion would have been the same.  
25           That they are below the safety limits in all those  
26           other countries.

1 MR. AARON: Q: Would they?

2 DR. SHKOLNIKOV: A: Yes. That is actually a conclusion  
3 not only of me, but of also Dr. Maret, who has  
4 helpfully done that comparison -- produced the charts  
5 comparing those two things in his report.

6 MR. AARON: Q: All right. Dr. Carpenter says the FCC  
7 is updating its standard. He says it's currently  
8 updating its standard. Are you -- can you confirm  
9 that?

10 DR. BAILEY: A: I have -- the FCC has indicated that it  
11 is in the process of the review of its standard. Yes.

12 MR. AARON: Q: Yes. And it would be fair to say that  
13 Safety Code 6 is also in the process of being updated,  
14 because there is a review that's supposed to come out  
15 from the Royal Society this fall, correct?

16 DR. BAILEY: A: Yes, and I would presume that that  
17 would inform Health Canada and, if it needed to make  
18 -- address changes, then it would subsequently respond  
19 by issuing an updated standard.

20 MR. AARON: Q: Dr. Carpenter says, at page 12 of his  
21 report, he says that -- sorry. At page 14, he says  
22 Safety Code 6 ignores some important stuff.

23 DR. BAILEY: A: Can I confirm -- page 14?

24 MR. AARON: Q: Yes. No. He says at page 14, in  
25 answering a question, that the E<sup>x</sup>Ponent Report accepts  
26 the fallacious assumption that there are no adverse

1 health effects not mediated by tissue heating. This  
2 is a fundamental flaw so as to invalidate the whole  
3 report. As discussed above the authors dismiss the  
4 evidence of non-thermal effects by referencing the  
5 reports of the IEEE 2005.

6 And then skipping a sentence, he says the  
7 reason -- this reasoning is completely invalid. There  
8 is consistent and reproducible evidence that extensive  
9 and prolonged use of cell phones is associated with an  
10 elevated risk of brain cancer, certainly a biological  
11 effect that is clearly linked to an adverse effect on  
12 health. There is enormous body of evidence  
13 summarizing in encyclopedic detail in the  
14 Bioinitiative report that demonstrates a variety of  
15 mechanisms, one of which may be the basis for the  
16 development of cancer.

17 And then he goes on to answer your concern  
18 about the absence of a mechanism, and at the second-  
19 last sentence, he says,

20 "A single mechanism for cancer is not known  
21 for many cancer-causing substances as, for  
22 example, arsenic and dioxin and yet they are  
23 identifying as carcinogens. However, the  
24 major basis behind all of these agency  
25 reports, as well as the E<sup>x</sup>Ponent Report, is  
26 this article of faith, not fact, that there



1 a jurisdiction that was under Bioinitiative 2007  
2 report, FortisBC smart meters would still meet those  
5 limits.

4 So I mean, I think that has to be, you  
5 know, has to be taken into account that when you do  
6 exposure assessment in comparison to the limits, from  
7 my perspective regardless of their basis, you compare  
8 to the limit, and Bioinitiative 2007 were used as a  
9 limit is Canada, FortisBC smart meters would still  
10 meet the Bioinitiative 2007 limit.

11 MR. AARON: Q: Well, the Bioinitiative 2000 report says  
12 there are adverse bioeffects from non-thermal  
13 emissions.

14 DR. BAILEY: A: At levels above their limit. And  
15 that's why they set a limit below those, below an  
16 exposure level where those effects that they believe  
17 exist occur.

18 MR. AARON: Q: But there is a lack of consensus as  
19 between the scientific community that representatives  
20 the Bioinitiative working group and the scientific  
21 community that represents the Safety Code 6 and ICNIRP  
22 community, correct?

23 DR. SHKOLNIKOV: A: Ignoring the fact that taken at  
24 your word, there is a disagreement between the members  
25 as to the appropriateness of the limit they have set,  
26 I'm saying if I were to use the Bioinitiative report

1 as a standard to comply with, they do -- they have  
2 published a number in the report which they say is the  
5 limit, at least in 2007 they have stated is a limit  
4 for compliance, and FortisBC AMI smart meet that  
5 level.

6 MR. AARON: Q: With respect to what? Cumulative  
7 exposure?

8 DR. SHKOLNIKOV: A: The standard -- I would agree the  
9 Bioinitiative 2007 report is a bit sloppy as it makes  
10 it difficult to value the exposure with it, but the  
11 2007 report, as you have stated in references here, is  
12 taking into account all the chronic exposures, and  
13 based on that, your summary of it and also on the  
14 statements in the intervener expert's testimony, I am  
15 assuming that that implies 24/7 continuous exposure  
16 and FortisBC AMI smart meters under typical use would  
17 meet those limits, even if you were half a metre in  
18 front of it the whole duration of your lifetime.

19 MR. AARON: Q: But you haven't included the  
20 Bioinitiative report in the E<sup>x</sup>ponent Report. You  
21 haven't even referred to it, correct?

22 DR. SHKOLNIKOV: A: But you brought in that we're not  
23 including all the other jurisdictions. And in  
24 response, you know, if as an engineer I have to do a  
25 valuation based for, you know, not for health effects  
26 but for compliance. So the compliance in this case

1 with respect to Health Canada Safety Code 6. If I  
2 were doing this compliance assessment in Poland or  
3 Russia it would be Polish and Russian.

4 MR. AARON: Q: Okay.

5 DR. SHKOLNIKOV: A: And if there were a jurisdiction  
6 that would accept Bioinitiative 2007 report, I would  
7 do it as well. But as I said, the value for exposure  
8 is irrelevant to where I do it, and if -- but by  
9 bringing up Bioinitiative 2007 as a possible  
10 precautionary limit to be used -- all I'm saying is  
11 that even with that limit, the FortisBC AMI meters  
12 don't change how they function depending on what  
13 standard you're evaluating them with, in respect to  
14 compliance. They do meet those limits.

15 **Proceeding Time 1:53 p.m. T47**

16 MR. AARON: Q: If there was a jurisdiction that  
17 accepted the Bioinitiative report, and we're getting  
18 into argument here and we shouldn't, but if there was  
19 a jurisdiction that accepted the Bioinitiative report,  
20 it would adopt the Elara Principle because of the  
21 concern of possible adverse bioeffects from the RF  
22 emission, and it would according to the Elara  
23 Principle it wouldn't allow wireless smart meters. It  
24 would opt for a wired alternative.

25 DR. BAILEY: A: That is your assumption, but I would  
26 have to go back and check, but I believe that part of

1 the reasoning in the Bioinitiative report was to  
2 recommend a limit that would be consistent with the  
5 idea of Elara.

4 MR. AARON: Q: All right. At the E<sup>x</sup>Ponent Report at  
5 page 7 -- oh, sorry. In the paragraph starting with  
6 "The results of epidemiology", the last long sentence.

7 "While this information from an  
8 epidemiological study may provide an  
9 indication as to the factors involved in  
10 health and disease, neither a statistical  
11 association nor a correlation between the  
12 two things is a direct indication of cause  
13 and effect."

14 Do you see that, Dr. Bailey?

15 DR. BAILEY: A: Mm-hmm.

16 MR. AARON: Q: So an agent can be a factor in health  
17 and disease? Without being established as a cause, of  
18 that effect being the disease.

19 DR. BAILEY: A: The statistical associations we're  
20 referring to here, if they don't represent a cause and  
21 effect relationship, may be an indication for  
22 investigation of some --

23 MR. AARON: Q: Right.

24 DR. BAILEY: A: -- potential aspect of a risk.

25 MR. AARON: Q: So, according to your analysis, you  
26 would accept that something could be a factor in a

1 disease, theoretically, but notwithstanding that it's  
2 a factor in a disease you still won't necessarily  
5 accept that it's a causal factor. I think that's what  
4 you've said there.

5 DR. BAILEY: A: That's -- I don't think that's an  
6 accurate characterization. The sentence -- if there  
7 is a statistical association, then that provides an  
8 indication as to a factor that might be involved in  
9 health and disease. Maybe the sentence isn't written  
10 particularly artfully, but I think that the sentence  
11 is clear that you couldn't identify -- if you had no  
12 association between an exposure and disease, then you  
13 wouldn't consider it a factor to be considered in the  
14 risk of that risk.

15 MR. AARON: Q: Right. But you could still have a  
16 factor, like you've said here, with this information  
17 from an epidemiology study, may provide an indication  
18 as to the factors involved in the disease. But they  
19 won't provide, necessarily provide a statistical  
20 association or correlation with respect to cause and  
21 effect. So those are two different things, whether  
22 something is a factor in a disease and whether it's  
23 actually accompanied by statistics that show cause and  
24 effect. Correct?

25 DR. BAILEY: A: The determination of cause and effect  
26 involves more than just the assessment of statistical



1 DR. BAILEY: A: Well, I think, for example, the fact  
2 that a statistical association has been reported  
3 between the usage of mobile phones and certain types  
4 of cancer, which was recognized in the IARC review,  
5 would be an example that that level of exposure was  
6 something that had -- the presence of that  
7 association, although not determined to be causal, is  
8 something that suggested this is a factor to be  
9 considered in doing further work to determine if the  
10 relationship is causal.

11 MR. AARON: Q: Would you also say it's a factor to be  
12 considered in health and disease, to use the language  
13 on page 7?

14 DR. BAILEY: A: Yes, I would say so.

15 MR. AARON: Q: So then the type of emissions that arise  
16 from AMI meters are a factor to be considered in  
17 health and disease, one of which is cancer.

18 DR. BAILEY: A: Yes.

19 MR. AARON: Q: Now, when you wrote what you wrote at  
20 page 13 of the E<sup>x</sup>ponent Report, in the first paragraph  
21 starting with "Many organizations" and you list them  
22 and you say:

23 "They've reviewed and researched and have  
24 independently supported the derivation of  
25 exposure limits on the basis of tissue  
26 heating, or developed a set of exposure

1                   limits."

2           And then you go on to say:

5                   "These organizations have reviewed all of  
4                   the available research for 2009 but have not  
5                   concluded that RF exposure below the  
6                   exposure limits developed by ICNIRP, which  
7                   are similar to those of Health Canada,  
8                   causes any type of cancer or other chronic  
9                   disease, adverse psychological [sic] changes  
10                  or symptoms..."

11           You wrote that?

12 DR. BAILEY:    A:    "...adverse physiologic..."

13 MR. AARON:     Q:    Oh, sorry.

14 DR. BAILEY:    A:    "...changes or symptoms..."

15 MR. AARON:     Q:    What did I say, "psychologic"?  Sorry.

16           So they've concluded that -- they have not concluded.

17           So this is a negative statement, correct?  It's saying  
18           what hasn't happened.  Correct?

19 DR. BAILEY:    A:    That's the way it's stated, yes.

20 MR. AARON:     Q:    It's saying that there's been an absence  
21           of a finding of cause, correct?

22 THE CHAIRPERSON:  I think he answered that question.

23 MR. AARON:     Q:    Yeah.  And they haven't concluded that  
24           these RF emissions are healthy, correct?

25 DR. BAILEY:    A:    They haven't proved the negative.  They  
26           haven't proved that something could not occur from

1 radio frequency fields from whatever the source.

2 MR. AARON: Q: They haven't come out and say, "We've  
5 done studies and on the basis of our studies we can  
4 say that the scientific evidence proves that there are  
5 not adverse bioeffects," correct?

6 DR. BAILEY: A: Correct. Their assessment involves  
7 reviewing the evidence that is available and asking  
8 the questions: Does that evidence cause us to  
9 conclude that there are adverse health effects at low  
10 exposure levels?

11 MR. AARON: Q: Right. And Mr. Warren, in your evidence  
12 you said that wireless is commonplace, correct?

13 MR. WARREN: A: Can you give me a reference for that?

14 MR. AARON: Q: I think it was at the very beginning,  
15 but you would agree --

16 MR. WARREN: A: I don't disagree with that.

17 MR. AARON: Q: Right. But you wouldn't say that  
18 because it's commonplace, by virtue of the fact that  
19 it's commonplace, that it doesn't have adverse  
20 bioeffect.

21 **Proceeding Time 2:04 p.m. T49**

22 DR. BAILEY: A: I'm not qualified to comment on whether  
23 it has an adverse bioeffect.

24 MR. AARON: Q: Oh. All right.

25 Dr. Bailey, you said in responding to Mr.  
26 Andrews's cross-examination at day 3, at page 571 of

1 the transcript, that scientists are necessarily  
2 cautious. And this was in response to Mr. Andrews  
5 approaching this very topic. He said -- you'll agree  
4 this is stated in the negative. They haven't gone and  
5 provided us with any assurance that this stuff is  
6 safe. And you said,

7 "I think we got a bit into this issue a bit  
8 yesterday, said, scientists are necessarily  
9 cautious and since science cannot prove the  
10 negative, that we have to be careful not to  
11 extrapolate beyond the point where the  
12 research takes us."

13 Correct?

14 DR. BAILEY: A: Yes.

15 MR. AARON: Q: But there is a standard for establishing  
16 reasonable assurance that's referenced in the E<sup>x</sup>Ponent  
17 Report at page 9. And you quote it. You say,

18 "Furthermore, the position of the United  
19 States Environmental Protection Agency is  
20 that '...the absence of tumours in well-  
21 conducted, long-term animal studies in at  
22 least two species provides reasonable  
23 assurance that an agent may not be a  
24 carcinogenic concern for humans..."

25 DR. BAILEY: A: That's correct.

26 MR. AARON: Q: And we don't have those studies with

1           respect to the emissions that stand to come from the  
2           AMI meters, correct?

5 DR. BAILEY:   A:   No, I would not agree with that.  As I  
4           indicated in the undertaking, I indicated a number of  
5           studies that had -- were chronic, well-conducted  
6           animal studies that addressed the emissions from Itron  
7           meters, and there are other studies conducted with  
8           similar types of exposures that are referenced by  
9           these reviews.  And you have to recognize that very  
10          few exposures in our society ever have epidemiology  
11          studies done on them.

12                        So, most of the safety and assessment of  
13          potential toxicity, including cancer of exposures in  
14          our environment, is based upon long-term animal  
15          studies and the NTP's experience is that agents that  
16          are toxic in animals can reasonably be anticipated  
17          with considerations of the species differences and so  
18          on, to be -- to be toxic in humans.  And I think that  
19          this is a well-accepted principle that justifies the  
20          consideration of animal studies in predicting human  
21          risk from exposures.

22 MR. AARON:   Q:   So would you go far as to say, to quote  
23          the language on page 9, that there is reasonable  
24          assurance that low-level RF emissions such as those  
25          proposed by Fortis are not a carcinogenic concern for  
26          humans?  Would you say that?

1 **Proceeding Time 2:08 p.m. T50**

2 DR. BAILEY: A: Based upon, using applying the EPA's  
5 characterization of the use of those studies, the data  
4 that we have about radio frequency fields that are the  
5 same as or similar to the AMI smart meters, one might  
6 expect that the EPA, you know, in theory, might apply  
7 this conclusion, that these exposures would not be of  
8 carcinogenic concern. You have to recognize, however,  
9 that that's not -- we don't analyze risks by just  
10 considering these data. We have long-term -- we have  
11 epidemiology studies that have to be taken into  
12 account. And as the IARC has indicated, we would want  
13 to try and find out the reasons for some of these  
14 associations that have been reported to have even  
15 greater confidence that we haven't overlooked some  
16 risk.

17 MR. AARON: Q: So, given that the EPA hasn't come out  
18 and said that RF emissions can reasonably be assured  
19 not to be a carcinogenic concern, given that we don't  
20 have that information from the EPA -- or would you  
21 just confirm that we don't have that statement from  
22 the EPA?

23 DR. BAILEY: A: No. This EPA is describing their  
24 general process for how they evaluate evidence.

25 MR. AARON: Q: Right. So they haven't applied that  
26 process and come to a conclusion with respect to the

1 RF emissions we're talking about. Correct?

2 DR. BAILEY: A: That's correct, yes.

5 MR. AARON: Q: And given that IARC has classified those  
4 very emissions as possible 2B carcinogen, is it your  
5 opinion that there is a scientific basis to support a  
6 reasonable assurance that these RF emissions are not a  
7 carcinogenic concern?

8 DR. BAILEY: A: Based upon the animal studies, I  
9 believe that that would meet the EPA's criterion. I  
10 have not stated that as my opinion but I said if we  
11 look at the animal studies alone, and you applied the  
12 EPA criterion, that would be the conclusion.

13 MR. AARON: Q: Okay. But I am going to ask for your  
14 opinion. And the question is on the record. Do I  
15 need to restate it? It might be difficult for me to  
16 get it right. I'll try it again.

17 DR. BAILEY: A: Sure.

18 MR. AARON: Q: Is it your opinion that there is an  
19 established scientific basis -- or that the state of  
20 science supports the conclusion that there is a  
21 reasonable assurance that AMI-type -- AMI-meter-type  
22 RF emissions are not a carcinogenic concern for  
23 humans? And it's a question as to your opinion with  
24 respect to the state of the science.

25 DR. BAILEY: A: I understand.

26 MR. AARON: Q: Thank you.

1 DR. BAILEY: A: My opinion with respect to the state of  
2 the science as summarized in our report was that the  
3 reviews and published science, and recently-published  
4 research with improved exposure information do not  
5 provide a reliable scientific basis to conclude that  
6 the operation of advanced meters will cause or  
7 contribute to adverse health effects or physical  
8 symptoms in the population, to which I would add,  
9 including cancer, to be specific to your question.

10 MR. AARON: Q: So, this might take a while, because you  
11 haven't answered the question. Because the question  
12 asked if the science supports a reasonable assurance  
13 that RF is not a carcinogenic concern. And you've  
14 answered the question by saying, well, the science  
15 doesn't show that it's a hazard, and you would  
16 appreciate, being a scientist, Dr. Bailey, that  
17 there's a difference between those two statements.  
18 And the answer is clear. I would just like to get it  
19 from you. And you know, I --

20 **Proceeding Time 2:13 p.m. T51**

21 DR. BAILEY: A: I would say, based upon the evidence  
22 that I reviewed, it provides us with a reasonable  
23 assurance that the exposures to the advanced meters do  
24 not pose a human health hazard. And I think that, you  
25 know, my -- I'm not trying to replace the opinion of  
26 the EPA, but I think the weight of the evidence does

1 not support the conclusion that there is a basis for  
2 asserting a health risk.

5 MR. AARON: Q: So now you've said two different things  
4 because you deferred back to the negative statement  
5 saying that it doesn't support --

6 MR. MACINTOSH: He didn't say inconsistent things, with  
7 respect. He just added to his response.

8 THE CHAIRPERSON: That was my understanding of his  
9 answer.

10 MR. AARON: Q: And you're confident saying that the  
11 science provides a reasonable assurance that the RF  
12 emissions do not pose a -- or that they are not a  
13 carcinogenic concern. You're confident that the  
14 science supports a reasonable assurance in that regard  
15 notwithstanding the IARC finding of an association of  
16 those very RF emissions with brain tumours amongst  
17 heavy cell phone users, correct?

18 DR. BAILEY: A: Yes, but my -- you have to -- you can't  
19 say that reasonable assurance is the same as  
20 impossible total scientific certainty. And I think  
21 I've been very clear in my testimony in recognizing  
22 the statistical associations that have been reported  
23 in the Interphone and other studies, and the  
24 recognition of the IARC panel in assessing those, and  
25 those are one part of their review. And I am not  
26 discounting in any way those considerations at all,

1 but I think the state of the science, even with the  
2 IARC review, is that the science provides us with a  
5 reasonable assurance that there is not a public health  
4 risk from the deployment of smart meters.

5 Now, does that mean that every scientific  
6 question has been answered about every study and the  
7 radio frequency literature? The answer is no. There  
8 is uncertainty about how it is that that association  
9 arose in the Interphone studies and some other  
10 studies. We want to make more certain that we have  
11 not overlooked a potential risk.

12 But based upon the evidence we have at  
13 present, I don't think that they provide us with an  
14 indication of any significant risk.

15 MR. AARON: Q: And further you think that the evidence  
16 today provides us with a reasonable assurance that  
17 there's no carcinogenic concern.

18 DR. BAILEY: A: Apart from the research issues which  
19 I've already indicated.

20 MR. AARON: Q: All right. So it's not an absolute  
21 statement. It's got a caveat with respect to the  
22 research issues that you've just stated.

23 DR. BAILEY: A: Right, and based upon the evidence that  
24 we have today.

25 MR. AARON: Q: Mm-hmm. So to use Kevin Miles'  
26 language, he said the jury is still out, and you said

1 -- sorry, sorry, Keith Miles. And you said, well, you  
2 have difficulty with that jingle. You said at page  
5 505 of day 2's transcript. You don't have to go  
4 there.

5 **Proceeding Time 2:18 p.m. T52**

6 DR. BAILEY: A: I --

7 MR. AARON: Q: You said if there was a -- you said that  
8 -- if I could call it that jingle, it's that it  
9 doesn't allow you to discriminate between whether we  
10 have a glass which is so full of evidence that if you  
11 shake it a little bit, there will be -- or add one  
12 more drop to it, there will be so much evidence that  
13 every person in the world could be convinced that the  
14 radio frequencies are harmful. That's one --

15 THE CHAIRPERSON: Mr. Aaron, I'm going to interrupt you.  
16 I think Dr. Bailey has answered your question, and I  
17 will admit that at times he --

18 MR. AARON: I'm on to a different question.

19 THE CHAIRPERSON: It sounded to me like you were  
20 approaching the same question from a different way.  
21 But I'll let you continue.

22 MR. AARON: Yeah.

23 THE CHAIRPERSON: But I hope it is a different question.

24 MR. AARON: Yeah. I mean, sometimes in cross-examination  
25 one does that. One approaches the same question from  
26 a different way, especially where it -- the answer has

1           been nuanced.

2           Q:    In that analogy, you said -- can we distinguish  
3           from your phrase that that situation, or one where a  
4           drop of evidence in a cup would take a wealth of  
5           studies to convince scientists and other people that  
6           there was a health risk at such levels.  So that you  
7           can use that phrase, but I don't think that it's  
8           helpful in discriminating various degrees and amounts  
9           of evidence, and I think that it could be  
10          misinterpreted by the general public.

11                        So, you would agree to me that as between  
12          your analogy of the two extremes, the glass being full  
13          and the glass being completely empty, the state of  
14          science right now is somewhere in between.

15 DR. BAILEY:   A:    Yes.  With an indication towards the  
16          lower end.

17 MR. AARON:    Q:    All right.  I'm going to move on to a  
18          different topic now.  The validity of *in vitro*  
19          studies.  With -- by reference to the E<sup>x</sup>Ponent Report  
20          at page 4.  And at the top of that page, you wrote,

21                        "Only human and animal studies of RF  
22                        exposures are considered in this report  
23                        because they provide more direct information  
24                        on human health than *in vitro* studies."

25          Whose opinion is that?  That they provide more direct  
26          information on human health than *in vitro* studies?

1 DR. BAILEY: A: That's my opinion, and it's also an  
2 opinion shared by many risk assessors.

5 MR. AARON: Q: In the Safety Code 6 review by the Royal  
4 Society in 1999, at page 12 -- let me pause and ask  
5 you. On the basis of that statement that you -- you  
6 haven't considered *in vitro* studies in the preparation  
7 of the report.

8 DR. BAILEY: A: I did not provide a summary of research  
9 in that area. Yes.

10 MR. AARON: Q: Well, you went further. You said that  
11 you didn't consider them. That's what you wrote.

12 DR. BAILEY: A: Well, I would say that my use of that  
13 term "considered" is described or discussed.

14 MR. AARON: Q: Are you of the opinion that all *in vitro*  
15 studies are not worthy of consideration?

16 DR. BAILEY: A: Certainly not.

17 MR. AARON: Q: Okay. The authors of Safety Code 6  
18 review, by the Royal Society, under the heading "What  
19 research is needed to better understand potential," on  
20 page 12, say

21 "The committee has identified four distinct  
22 experimental approaches which are required  
23 to further our knowledge of RF fields.  
24 These are *in vivo* and *in vitro* animal cell  
25 experiments to provide basic information  
26 with which to assess health effects."

1                   So, you would agree that the authors of  
2                   this document clearly see *in vitro* studies as being  
5                   worthy of consideration.

4                                   **Proceeding Time 2:23 p.m. T53**

5 DR. BAILEY:    A:    And I agree with that.

6 MR. AARON:    Q:    But you didn't consider them in the  
7                   preparation of your report.

8 DR. BAILEY:    A:    I considered in terms of my background  
9                   experience, I considered them, but I did not describe  
10                  or discuss them in this summary for the reason I gave.

11 MR. AARON:    Q:    That the other kind of studies provide  
12                  more direct information

13 DR. BAILEY:    A:    Correct. And the Royal Society panel  
14                  also says, they were talking about epidemiological  
15                  approaches to assess, to monitor the potential impact  
16                  of RF exposure on human health. So those -- the  
17                  advantage of epidemiology is that we're dealing  
18                  directly with humans, and there is a better rationale  
19                  for extrapolating from animal studies to human health  
20                  than there is jumping from *in vitro* studies directly  
21                  to human health.

22 MR. AARON:    Q:    Where does it say that it's better.

23 DR. BAILEY:    A:    That's my --

24 MR. AARON:    Q:    Oh, that's yours.

25 DR. BAILEY:    A:    My commentary on this.

26 MR. AARON:    Q:    So because one thing's better than the

1 other, you didn't accord any relevance to *in vitro*  
2 studies or do any analysis on *in vitro* studies for the  
5 purposes of your determination of what the established  
4 science is on this issue.

5 DR. BAILEY: A: For my determination of what the  
6 science is, I rely on all of this research. In  
7 putting forth a summary of the current state of the  
8 science, I did not, for the reason explained, I did  
9 not provide a review of *in vitro* research.

10 For instance, sir, when you sit on the IARC  
11 panel, the major focus is on epidemiology studies and  
12 animal studies, and the IARC guidance is that data  
13 from *in vitro* studies are supplementary. That is,  
14 they are used to help perhaps shed light on or  
15 contribute to our understanding from animal and  
16 epidemiology studies.

17 MR. AARON: Q: They have their weaknesses, right, *in*  
18 *vitro* studies?

19 DR. BAILEY: A: All scientific studies have strengths  
20 and weaknesses. And in a full health risk assessment,  
21 all of this information is being considered.

22 MR. AARON: Q: And epidemiological studies also have  
23 their weaknesses, correct?

24 DR. BAILEY: A: As I said, yes.

25 MR. AARON: Q: Those weaknesses are set out at page 77  
26 of the Royal Society 1999 report under the heading:

1 "8.1.1 Epidemiology of the Distribution and  
2 Determinants of Health Conditions in Human  
5 Populations Provide the Most Direct Evidence  
4 of Risks to Human Health. However,  
5 generally they cannot provide definitive  
6 evidence of causality on their own. Since  
7 virtually all epidemiological investigations  
8 of factors that affect health risk are  
9 observational rather than experimental in  
10 nature, the interpretation of these results  
11 is difficult. Potential bias or  
12 unrepresentativeness in the selection or  
13 participation of study populations, the  
14 existence of confounding variable factors,  
15 both genetic and environmental that relate  
16 to both exposure and health risk, and  
17 difficulties in assessing exposures,  
18 represent important limitations of  
19 epidemiological studies."

20 Would you agree with that?

21 DR. BAILEY: A: Absolutely. I think, however, that  
22 this statement, even though that there are issues and  
23 limitations in the interpretation of epidemiology,  
24 doesn't argue with the direct relevance of  
25 epidemiology to human health.

26 MR. AARON: Q: And then you would also say the same



1 available scientific research -- sorry,  
2 scientific literature, the panel recommends  
5 that further research into the potential  
4 health effects of radio frequency fields be  
5 conducted, particularly in the area of non-  
6 thermal effects."

7 Next paragraph.

8 "The committee identified four distinct  
9 scientific approaches ..."

10 DR. BAILEY: A: Wait, sir, we're not on the same page.

11 MR. AARON: Q: Ah. 113.

12 DR. BAILEY: A: Oh, one thirteen. Okay, I thought it  
13 was page 13. I'm sorry.

14 MR. AARON: Q: That's just preamble. So I'll continue.

15 "The committee identified four distinct  
16 scientific approaches to further our  
17 knowledge of RF fields. *In vivo* and *in*  
18 *vitro* laboratory experiments conducted at  
19 both the cellular and animal level can be  
20 used to obtain information on the potential  
21 adverse health effects of radio frequency  
22 fields using non-human test systems."

23 And then it goes on to talk about the other kinds of  
24 scientific research. And under "Laboratories" it  
25 says:

26 "Because of the potential impact of RF

1 fields on human health is not yet well  
2 characterized there is a need for well-  
5 designed laboratory studies of relevant end  
4 points based on cellular and animal test  
5 systems."

6 So I put it to you, Dr. Bailey, that on the  
7 basis of what the authors of this review have stated,  
8 *in vivo* studies have a critical role in furthering our  
9 knowledge of RF fields. Sorry, *in vitro*.

10 DR. BAILEY: A: I don't disagree with that. And the  
11 goal of performing a complete health risk assessment  
12 such as has been done by IARC, ICNIRP, Royal Society  
13 of Canada, all of these studies are considered and in  
14 the reviews that I cited in our report, *in vitro*  
15 studies are thoroughly evaluated. But the purpose of  
16 my report was much more limited than a full health  
17 risk assessment. And so therefore I decided, because  
18 these studies have less direct relevance to relegate  
19 -- for people who are interested in that area of  
20 research, that they could go to the reviews for  
21 details on that topic.

22 MR. AARON: Q: Well --

23 DR. BAILEY: A: It wasn't that I didn't think that *in*  
24 *vitro* studies were not helpful and useful and had  
25 their appropriate place in health risk assessment.

26 MR. AARON: Q: Well, wasn't the purpose of the E<sup>x</sup>Ponent

1 Report to summarize the established data of science --  
2 what's established science? On the health issue?

5 DR. BAILEY: A: It was to summarize it.

4 MR. AARON: Q: Right.

5 DR. BAILEY: A: And we've -- you know, it wasn't to  
6 produce a 500-page review.

7 MR. AARON: Q: And so if the purpose of the E<sup>x</sup>Ponent  
8 Report was to summarize the established state of  
9 science, and *in vitro* studies contribute and are such  
10 a significant factor in the established state of  
11 science, I put it to you that you were remiss in not  
12 considering them.

13 DR. BAILEY: A: I considered them in reaching my  
14 opinion, but it probably would have been more helpful  
15 if I had drawn out in greater detail why I was not  
16 devoting additional space in the report to those  
17 discussions.

18 MR. AARON: Q: Do you still consider your work in the  
19 E<sup>x</sup>Ponent Report to be a complete review of the  
20 available published literature?

21 **Proceeding Time 2:33 p.m. T55**

22 DR. BAILEY: A: It was not meant to be a complete  
23 review of the literature. That -- to meet that  
24 standard one would have to duplicate the effort of  
25 ICNIRP and these other review panels. So there was no  
26 way in the scope of this assignment and its purpose to

1 assess thousands of studies and to provide an up-to-  
2 date summary of every single area of research that  
5 someone might be interested in.

4 MR. AARON: Q: Okay. The assertion from my client's  
5 consultants, and I'll just read to you from Don  
6 Maisch's report at page 4 -- you don't have to go  
7 there, there'll be no issue as to whether he said  
8 this:

9 "There's substantial peer-reviewed and  
10 published research in existence that found  
11 scientific evidence of adverse biological  
12 effects at exposure levels far below the  
13 standard limits guidelines that are based on  
14 thermo regulatory considerations."

15 You understand that to be my client's  
16 assertion?

17 DR. BAILEY: A: Yes.

18 MR. AARON: Q: That my client's consultants refer to a  
19 body of available peer-reviewed and published research  
20 which shows, they say, which shows that RF levels are  
21 well below that which causes tissue heating, and that  
22 they can still -- those emissions can still have  
23 biological effects. You understand that that's their  
24 position.

25 DR. BAILEY: A: Yes.

26 MR. AARON: Q: You have not evaluated non-thermal

1           publications in the preparation of your report. You  
2           have not done an analysis to evaluate the veracity of  
3           the position as put forward by my client, have you?  
4 DR. BAILEY:    A:    I have not included that in the report,  
5           and obviously his assertions were made after I  
6           prepared this report.  
7 MR. AARON:    Q:    Your report actually makes no mention of  
8           the body of opposing views and opposing reviews in the  
9           literature such as the Bioinitiative and the ICEMS  
10           reports, correct?  
11 DR. BAILEY:   A:    That's correct.  
12 MR. AARON:    Q:    And E<sup>x</sup>ponent has not done its own  
13           analysis in the E<sup>x</sup>ponent Report on whether there's any  
14           validity with respect to the concern that there might  
15           be adverse bioeffects at the non-thermal level.  
16 DR. BAILEY:   A:    We considered that and other scientific  
17           health agencies have considered that, and I think  
18           there is an agreement among these reviewers that the  
19           scientific evidence does not support Mr. or Dr.  
20           Maisch's position.  
21 MR. AARON:    Q:    Right. I know that the review bodies  
22           have, through their analysis, come to that conclusion  
23           such as Health Canada and ICNIRP, correct? Although  
24           we haven't been privy to their analysis in that  
25           regard, correct?  
26 DR. BAILEY:   A:    Yes.

1 MR. AARON: Q: And in your report you rely on their  
2 conclusions in that regard, correct?

5 DR. BAILEY: A: I don't rely on those conclusions.  
4 They are part of the information that is available to  
5 me as an expert in forming my opinion. But I point  
6 out that my assessment is similar to that that has  
7 been reached by other review groups in other countries  
8 and for other purposes.

9 MR. AARON: Q: But your analysis of the validity of the  
10 position as advocated by the non-thermal camp, the  
11 position being non-thermal levels still have adverse  
12 bioeffects, that analysis is not set up in the E<sup>x</sup>ponent  
13 Report anywhere.

14 DR. BAILEY: A: That's correct.

15 **Proceeding Time 2:37 p.m. T56**

16 MR. AARON: Q: And would you agree with this very rough  
17 characterization that there's an order of scientific  
18 -- of scientists. You find them on ICNIRP and Safety  
19 Code 6, that have the view that there is no non-  
20 thermal adverse bioeffects. Correct?

21 DR. BAILEY: A: I think that may be an overstatement.  
22 I think the position is that these reviews have not  
23 concluded that the evidence persuades them that there  
24 are such effects. It doesn't exclude the possibility  
25 that there could be.

26 MR. AARON: Q: Okay.

1 DR. BAILEY: A: And that's exactly why they include  
2 these studies in their review, and why I have reviewed  
5 them as well.

4 MR. AARON: Q: And then there is another camp, so to  
5 speak -- allow me to speak colloquially. Such as the  
6 Bioinitiative working group. Such as Dr. Martin  
7 Blank, Dr. Carpenter. That are, through their own  
8 self-publications, are taking the opposite view.  
9 Correct? They are saying that they're -- there is  
10 scientific basis that indicates adverse bioeffects on  
11 a non-thermal level. Correct?

12 DR. BAILEY: A: Yes.

13 MR. AARON: Q: And they are saying that the Health  
14 Canada Safety Code 6 and ICNIRP guidelines are  
15 insufficient for that reason. Correct?

16 DR. BAILEY: A: Yes.

17 MR. AARON: Q: And can I characterize this as a clash  
18 of paradigms? In your view.

19 DR. BAILEY: A: I don't know that it represents a clash  
20 of paradigms, but certainly there is a difference in  
21 the conclusions reached by the groups that you  
22 described.

23 MR. AARON: Q: Right. And there is no analysis in the  
24 E<sup>x</sup>Ponent Report with a view to resolving these  
25 differences.

26 DR. BAILEY: A: That's correct.

1 MR. AARON: Q: But there has been within the offices of  
2 Health Canada and ICNIRP. Correct?

5 DR. BAILEY: A: It would appear so, based upon their  
4 published reports.

5 MR. AARON: Q: But we don't know what that analysis is.  
6 Correct?

7 DR. BAILEY: A: Neither do I know what the analysis is  
8 that went into the Bioinitiative report.

9 MR. AARON: Q: Right. So there is a lack of consensus  
10 in the scientific community as to whether there are  
11 established adverse bioeffects from RF emissions.

12 DR. BAILEY: A: It's hard to -- I would say yes, but  
13 it's hard to -- I think it would be a  
14 mischaracterization to describe this as -- well, I'll  
15 just -- I'm sorry, I'll just leave it at that.

16 MR. AARON: Q: Okay. And at page 5 of the E<sup>x</sup>Ponent  
17 report, under the heading "Types of studies considered  
18 in this risk assessment", in the middle of that  
19 paragraph, you say,

20 "This process is designed to ensure that all  
21 relevant studies are considered regardless  
22 of their conclusions or support for any  
23 particular hypothesis."

24 Correct?

25 DR. BAILEY: A: Yes.

26 MR. AARON: Q: You wrote that. And on page 13, you

1 wrote in May, 2000 -- under the IARC, you wrote,  
2 "In May, 2011 a working group of scientists  
5 with expertise in various areas related to  
4 RF was convened to review the evidence for  
5 RF exposure under IARC."

6 Oh, sorry. I'm reading the wrong paragraph.

7 The middle paragraph.

8 **Proceeding Time 2:42 p.m. T57**

9 "Some studies have reported effects  
10 occurring with RF exposures below the level  
11 that raises body temperature, often called  
12 *non-thermal* effects. Non-thermal effects or  
13 low level effects refer to effects that  
14 occur at levels not believed to cause tissue  
15 heating. These studies have been reviewed  
16 by scientific and regulatory agencies..."

17 I pause there.

18 And that's a statement that you don't have  
19 direct knowledge of, correct? You rely on Health  
20 Canada's statement for your --

21 DR. BAILEY: A: Wait a sec. I don't understand.

22 MR. AARON: Q: Sorry.

23 DR. BAILEY: A: I don't have direct knowledge of what?

24 MR. AARON: Q: That these studies have been reviewed by  
25 scientific and regulatory agencies.

26 DR. BAILEY: A: If you go to the reviews that are cited

1 at the bottom of that paragraph, the studies  
2 themselves or -- and sometimes a discussion of non-  
5 thermal issues have been considered as well. So  
4 whether you address the concept of non-thermal versus  
5 thermal effects directly or whether you just review  
6 all the studies that include both thermal and non-  
7 thermal effects, it doesn't matter. Those have been  
8 considered by these agencies.

9 MR. AARON: Q: And those agencies, you write,  
10 "...have not accepted this data as reliable  
11 because the observed biological effects  
12 attributed to non-thermal effects were not  
13 consistent, reproducible, or supported by  
14 any plausible explanation as to how they  
15 could occur, and in some studies the  
16 biological effects are reported to be known  
17 to be --"

18 Not -- are reported --

19 "...reported are not known to be linked to  
20 adverse health effects..."

21 DR. BAILEY: A: "Adverse effects on health".

22 MR. AARON: Q: Sorry. You make this statement as to  
23 the conclusions that the scientific and regulatory  
24 agencies come to, but you don't make the analysis in  
25 that respect yourself in the E<sup>x</sup>ponent Report.

26 DR. BAILEY: A: I did not provide it.

1 MR. AARON: Q: Okay. E<sup>x</sup>ponent -- it's 2:45, Mr. Chair.  
2 THE CHAIRPERSON: I thought we'd work until 3:00 and then  
5 take a break. Unless, Mr. Aaron, you have a need to  
4 break now.  
5 MR. AARON: No.  
6 THE CHAIRPERSON: I thought that might have been a polite  
7 request.  
8 MR. AARON: Yeah. I know what Mr. Macintosh is thinking.  
9 He's thinking Mr. Aaron doesn't know when to move on  
10 from a topic, and that's why I was wanting to make a  
11 -- to take a break just to canvass whether I really  
12 need to go into my next section or whether I've got  
13 what I need from my witness.  
14 MR. MACINTOSH: That's a pretty attractive offer, Mr.  
15 Chair. I'm pretty tantalized by that. Maybe the  
16 Commission is as well. My friend is offering the  
17 possibility of less cross-examining by having a break  
18 now, if I hear him right.  
19 MR. AARON: Dr. Bailey has been so forthright.  
20 THE CHAIRPERSON: Well, I think if you would find a break  
21 at this point to be helpful in that analysis, I think  
22 we will break now then.  
23 Mr. Fulton has one question. So we will  
24 break now and we'll have a 15 minute break. Mr.  
25 Fulton.  
26 MR. FULTON: Yes, it's just a correction to the record,

1 Mr. Chairman. I was about to respond to the  
2 individual who had sought to make further submissions  
5 to the Commission and ask questions, and I wanted to  
4 review the transcript first before I asked the e-mail  
5 to be sent off. And at page 785 of the transcript --  
6 actually I'll begin at 784, line 25, I'm quoted as  
7 saying:

8 "The individual in their e-mail appears to  
9 have some questions of Fortis that are -- or  
10 of B.C. Hydro that haven't been asked in  
11 relation to her property."

12 And what I should have said, if I didn't, was "that  
13 haven't been answered" and they were questions of  
14 FortisBC and B.C. Hydro.

15 So if the record could reflect that. And I  
16 did not mean to restrict her to filing a letter of  
17 comment if she wanted to file a further letter of  
18 comment.

19 THE CHAIRPERSON: Certainly. Thank you.

20 MR. FULTON: Thank you.

21 THE CHAIRPERSON: Okay, I have ten to three and so we'll  
22 reconvene at 3:05.

23 **(PROCEEDINGS ADJOURNED AT 2:47 P.M.)**

24 **(PROCEEDINGS RESUMED AT 3:08 P.M.)**

**T58/59**

25 THE CHAIRPERSON: Please be seated.

26 I apologize for the slight delay.

1 Commissioner Morton is on another panel, and there was  
2 a need to have a telephone call, and I think it went  
5 just a few minutes longer than he had planned.

4 COMMISSIONER MORTON: I talked as fast as I could.

5 MR. FULTON: Mr. Chairman, I have one document that I'm  
6 going to be asking to be marked as an exhibit, that  
7 you have copies in front of you, and I have  
8 distributed it. Before I ask it to be marked, though,  
9 I did want to say a couple of things, and it's in  
10 particular in relation to letters of comment that are  
11 being filed by interested parties.

12 As you know, Section 40(1) of the  
13 *Administrative Tribunals Act* allows the Commission a  
14 broad discretion in terms of the documents that it  
15 might receive in its hearings. And the test is  
16 relevance, necessity, and appropriateness. And it can  
17 accept documents whether or not they would be  
18 admissible in a court of law.

19 Turning to the document that I'm going to  
20 seek to be marked as an exhibit, and I've spoken to  
21 Mr. Macintosh and he does not take objection to this  
22 one, I do want to raise a concern that the document  
23 appears to be using the Commission website as a  
24 vehicle to have people access other websites. And  
25 that's not the purpose of the Commission website, and  
26 our document filing processes.

1                   People are, of course, able to file their  
2                   letters of comment, et cetera, but to then go further  
5                   and encourage others to access other websites and give  
4                   them the websites in the letters, in my view, is not  
5                   something that's appropriate from a document filing  
6                   standpoint.

7                   So while this document is tendered for  
8                   filing, I will be looking closely at any further  
9                   documents that are tendered under the interested party  
10                  category and the letters of comment category, to make  
11                  sure that they are not using the Commission website as  
12                  a vehicle to encourage others to go to other websites.

13                  So, that being said, if the letter of  
14                  comment from Ms. Postnikoff could be marked Exhibit  
15                  D1-21.

16 THE CHAIRPERSON:    Thank you.

17 THE HEARING OFFICER:   D1-21.

18                  **(EMAIL LETTER OF COMMENT FROM C. POSTNIKOFF DATED**  
19                  **MARCH 7, 2013 MARKED EXHIBIT D1-21)**

20 MR. MACINTOSH:    Mr. Chair, I was going to take exception  
21                   to this being introduced until Mr. Fulton reminded me  
22                   that I had allowed 21 other submissions coming in from  
23                   this person, and I thought having a fight at number 22  
24                   might be a difficult one.

25 THE CHAIRPERSON:    It might be a losing battle for you.

26 MR. MACINTOSH:    It might be a losing battle. But I do

1 raise the flag. I'm going to start monitoring them,  
2 and maybe there will come a time, but I'm accepting  
5 this one, thank you.

4 THE CHAIRPERSON: Thank you. Mr. Aaron?

5 MR. AARON: Thank you.

6 Q: Dr. Bailey, whenever IARC or another agency  
7 evaluates the scientific literature for the purpose of  
8 policy-setting, it's customary for them to provide a  
9 monograph documenting the studies that were included  
10 and how they were weighed. And the studies not  
11 included. With justification for their omission.  
12 Correct?

13 DR. BAILEY: A: Some agencies go to that extent. I  
14 would say that the more common practice would be that  
15 they summarize their evaluation of the evidence and  
16 reference

17 **Proceeding Time 3:13 p.m. T60**

18 DR. BAILEY: A: Some agencies go to that extent. I  
19 would say that the more common practice would be that  
20 they summarize their evaluation of the evidence and  
21 reference documents, supporting information to the  
22 extent that they see fit. They typically do not  
23 include a listing of every study that they considered,  
24 but it didn't affect their judgment or so on.

25 MR. AARON: Q: And I've never seen such a monograph.  
26 Have you?

1 DR. BAILEY: A: But you just asked, you were describing  
2 that and so I --

5 MR. AARON: Q: No, and you're the one who's telling me  
4 it exists and I'm taking your word from it. Have you  
5 seen such a monograph?

6 DR. BAILEY: A: I seem to recall that in -- perhaps not  
7 in this particular area but in other areas. It seems  
8 to me some EPA issues that they have listed  
9 information that was not considered. Or sometimes an  
10 agency will say, "Our policy is not to consider  
11 studies that were not published in the peer-reviewed  
12 literature." And if a study comes before it that is  
13 determined to be meritorious or might be a component,  
14 then they will perform their peer review on it and  
15 then may be allowed into the assessment.

16 MR. AARON: Q: So Health Canada didn't produce a  
17 monograph as I described with respect to Safety Code  
18 6.

19 DR. BAILEY: A: Correct.

20 MR. AARON: Q: And there's no disclosure exactly as to  
21 how Canada conducted its weight of evidence analysis  
22 in terms of indicating which studies were included,  
23 how they were weighted, and which studies were  
24 excluded and with what justification.

25 DR. BAILEY: A: That's correct.

26 MR. AARON: Q: What's your position -- maybe this is --

1 I don't know who to ask this. In the 1999 version of  
2 the Safety Code 6 review by the Royal Society at page  
5 21, there are some references to requirements in  
4 Safety Code 6. Second sentence:

5 "Surveys should be conducted as often as  
6 possible around devices and installations  
7 which are..."

8 DR. BAILEY: A: Sorry, help us with the paragraph.

9 MR. AARON: Q: I'm at page 21 of the Royal Society 1999  
10 document under the heading "3.3.3 Measuring Exposure".

11 DR. BAILEY: A: And what paragraph?

12 MR. AARON: Q: First paragraph, second sentence.

13 DR. BAILEY: A: Okay.

14 MR. AARON: Q: "Surveys should be conducted as often  
15 as..." Sorry, third sentence for the record.

16 "Surveys should be conducted as often as  
17 possible around devices and installations  
18 which are capable of exceeding exposure  
19 limits. Otherwise, a survey should be  
20 conducted after any installation, repair,  
21 change in working conditions, or suspected  
22 relevant malfunction.

23 Safety Code 6 stipulates that only  
24 competent persons using appropriate  
25 instrumentation should undertake an RF  
26 survey and outlines that preferred method of

1           measuring, calculating, averaging over space  
2           and time.”

5                   Can anyone tell me on the panel whether  
4           Fortis intends, after the installation of each AMI  
5           meter, to conduct such a survey as I’ve just  
6           described?

7 DR. SHKOLNIKOV:   A:   I can answer the question.  Based  
8           on this paragraph, it says:

9                   “...around devices and installations which are  
10           capable of exceeding exposure limits.  
11           Otherwise, a survey should be conducted  
12           after any installation, repair and change in  
13           working conditions, or suspected relevant  
14           malfunction.”

15                   When a transmitter of the power that is  
16           used in Fortis AMI smart meter is used, there’s  
17           actually, by nature of the total power that it  
18           outputs, it is not -- does not under normal use exceed  
19           the exposure limits.  It’s actually a quite  
20           significant factor below it.  And the test is actually  
21           performed in the version when it is installed.  So if  
22           you look at the photographs, and I don’t know if you  
23           -- these weren’t introduced as exhibits but if you’d  
24           like I can.  They’re photographs of how the test, for  
25           compliance with RSS 102 was performance -- or 210 was  
26           performed, and they have pictures of a smart meter

1 already be installed on a meter panel.

2 **Proceeding Time 3:18 p.m. T61**

5 So I think that satisfies -- so they can't  
4 exceed the exposure limits. They already are tested  
5 after the installation. Basically what would happen  
6 after they're installed. And then the idea here is  
7 that repair and change and working conditions wouldn't  
8 apply to this case, because they're not repairing  
9 radio frequency components in the field. If something  
10 like that were to happen, that would be something --  
11 those things really apply to antenna installations,  
12 or, like, radar installations. It wouldn't apply to  
13 something where you have an off-the-shelf device that  
14 you plug in, into the frame of a house.

15 MR. AARON: Q: Okay. So your evidence, then, am I  
16 right, is your evidence that the last sentence of the  
17 first paragraph is complied with by Fortis? Or stands  
18 to be complied with by Fortis, in that it will conduct  
19 a survey, an RF survey, of any installation.

20 DR. SHKOLNIKOV: A: Well, I mean, you have to see --  
21 this isn't -- I mean, what I am saying here, this is a  
22 not safe -- this is not Industry Canada regulatory  
23 requirement. This is not Safety Code 6 regulatory  
24 requirement. This is a document which is discussing  
25 in general all kinds of installation and devices.

26 MR. AARON: Q: Mm-hmm.

1 DR. SHKOLNIKOV: A: For a specific device, for a  
2 specific device and specific regulatory compliance,  
5 you can go to the relevant standard, which is RSS 210  
4 for testing, RSS 102 for estimating exposure, or  
5 Safety Code 6 where it discusses very fine compliance,  
6 and actually state what you're required to do.

7 But I would like to point out again that  
8 this is -- this section is really applying to a very  
9 general installation, including antenna arrays and  
10 other things. It's not a specific device constraint,  
11 and as I said, for -- if you go to Industry Canada and  
12 you start looking at installations for antenna, like  
13 AM tower installation, it will absolutely have those  
14 requirements for verification/validation. It's just  
15 for this class of devices the regulations have a  
16 separate set of requirements.

17 MR. AARON: Q: I'm not sure what your evidence is. Is  
18 your evidence that the requirement to survey after  
19 installation is not an applicable requirement? Or is  
20 your evidence that Fortis will conduct the survey  
21 described after installation?

22 DR. SHKOLNIKOV: A: My evidence is, the document you  
23 are showing to me is not a requirement.

24 MR. AARON: Q: Okay. It's inapplicable.

25 DR. SHKOLNIKOV: A: It's not a requirement.

26 MR. AARON: Q: Okay.

1 DR. SHKOLNIKOV: A: It's not a document that lists  
2 requirements. This is a review document.

5 MR. AARON: Q: It's describing something else, and we  
4 haven't looked directly at Safety Code 6 in that  
5 regard.

6 DR. SHKOLNIKOV: A: Yes. I mean, this is a review  
7 rather than the standard itself.

8 MR. AARON: Q: Okay. Okay. And so on the question of  
9 whether Fortis will do an RF survey after each  
10 installation, is the answer yes or no to that?

11 MR. WARREN: A: We have to -- we will comply with the  
12 requirements of Industry Canada.

13 MR. AARON: Q: Okay. And can you answer the question  
14 of whether you're planning to do a survey, an RF  
15 survey after each installation?

16 MR. WARREN: A: To the best of my knowledge it is not  
17 required.

18 MR. AARON: Q: Okay. You're going back to the  
19 requirement. I'm asking about your intention.

20 MR. WARREN: A: If it is not required, we won't be  
21 performing such an assessment, no.

22 MR. AARON: Q: Okay. Thank you.

23 On to the issue of children. By reference  
24 to Maisch at page 14, there is a reference in the  
25 middle of the page to an Information Request which was  
26 advanced by CSTS in IR No. 2, at question 44-7, to



1                   from the proposed AMI meters are far below  
2                   the recommended exposure limits."

5                   Would you agree with that statement, Dr.  
4                   Bailey, that children are not more vulnerable to the  
5                   potential effects of RF exposure at level below the  
6                   guidelines?

7 DR. BAILEY:    A:    I don't have any basis to conclude -- I  
8                   don't know of evidence that supports that -- no, let's  
9                   put it this way. I don't know that there's evidence  
10                  suggesting that children are in fact more vulnerable  
11                  to RF effects at levels below the guideline. But we  
12                  have to be careful about what you mean by vulnerable.

13 MR. AARON:    Q:    Okay, well, this is I guess Fortis's  
14                  statement then in answer to an information request. I  
15                  mean, who on the panel can take responsibility for the  
16                  statement and then I can cross-examine them on it?

17 DR. BAILEY:    A:    I think probably I'm the person to  
18                  cross-examine on this.

19 MR. AARON:    Q:    All right, so the statement says:

20                        "Children are not more vulnerable to the  
21                        potential effects of RF exposure at levels  
22                        below the guidelines."

23                   Are you in agreement with that statement?

24 DR. BAILEY:    A:    I am in the sense that there's not  
25                   scientific evidence that I know that supports a  
26                   particular vulnerability of children to RF.

1 MR. AARON: Q: Okay, so I'm going to now go on to try  
2 to challenge you in that regard. I do so by reference  
3 to Maret at page 28. Under question 5 the heading  
4 "Maret Response", the question to him was:

5 "If the transmissions can have health  
6 effects and if people are vulnerable to  
7 health effects of transmissions, are some  
8 more vulnerable than others?"

9 He wrote:

10 "The vulnerable subgroups in the general  
11 population who are more susceptible to RF  
12 radiation from the transmission are pregnant  
13 women, the elderly, immune compromised  
14 individuals, and infants and children.  
15 Children are especially at risk because they  
16 have thinner skulls into which radiation can  
17 penetrate more deeply. Their brains are  
18 smaller with a higher water content and ion  
19 concentrations, and they have a developing  
20 nervous system."

21 Dr. Bailey, are you aware of the Gandhi and  
22 Kheifets studies that advance that position?

23 DR. BAILEY: A: I am aware of the sentence where those  
24 studies are cited. But I think you have to -- that's  
25 why I said the definition of vulnerability might cover  
26 two concepts. And if you'll allow me to just clarify

1           this --

2   THE CHAIRPERSON:    I think the question was whether or not  
5           you were aware of the studies.

4   DR. BAILEY:    A:    Yes, I'm aware of the study and I think  
5           that there is a potential for confusion here if I  
6           don't continue.

7   MR. AARON:    Q:    Are you aware that in Belgium, mobile  
8           phones have been banned for children?

9   DR. BAILEY:    A:    I'm not aware of that, sir.

10   MR. AARON:    Q:    I put it to you that there was a Belgian  
11           government announcement yesterday that announced  
12           measures to restrict the use of mobile phones by young  
13           children, that children would be banned from buying  
14           them. And I put it to you that recommendation is  
15           based on the notion that children are more vulnerable,  
16           contrary to your position.

17   MR. MACINTOSH:   With respect to my friend, Mr. Chair, the  
18           answer 44.8 that was referred to by Mr. Aaron from the  
19           Maisch report had the important additional point,  
20           "children are not more vulnerable to the potential  
21           effects of RF exposure at levels below the  
22           guidelines", is the statement that came from the  
23           company. And the statement from Dr. Maisch who --  
24           from Dr. --

25   MR. AARON:    Maret.

26   MR. MACINTOSH:   Dr. Maret who is not testifying does not

1 appear to be linking vulnerability of children to  
2 being below the guidelines.

5 THE CHAIRPERSON: Thank you for that clarification.

4 MR. AARON: Q: At the Royal Society 2003 report which  
5 you disclosed

6 **Proceeding Time 3:28 p.m. T63**

7 MR. AARON: Q: At the Royal Society 2003 report which  
8 you disclosed in an undertaking. At page 3 of that  
9 document -- let me pause, because counsel for Fortis  
10 has raised an interesting point, which leads me to ask  
11 you another question. Would you accede to this  
12 proposition, that children are more vulnerable to  
13 adverse bioeffects from RF emissions at thermal  
14 levels?

15 DR. BAILEY: A: I would say no, and the reason is that  
16 the only basis that I know that could be possibly  
17 relevant to that is that the -- is that sentence that  
18 you directed me to earlier, is that by the nature of  
19 the thinner skull and scap -- scalp, that for a -- for  
20 instance a cell phone applied at the head, there could  
21 be greater exposure of -- at a certain distance in a  
22 child's brain than for an adult brain. But that is  
23 the difference in exposure. It doesn't speak to the  
24 question of whether as a biological organism children  
25 have an inherently greater sensitivity to a particular  
26 level of exposure.

1                   And that's the point that I was trying to  
2                   get to before. That vulnerability could be used to  
3                   describe either of these conditions.

4 MR. AARON:    Q:    Okay, I appreciate that distinction. So  
5                   you're saying that because a child has a smaller skull  
6                   they will experience more exposure to the same RF  
7                   emissions that an adult would experience.

8 DR. BAILEY:    A:    That's my simple summary, yes.

9 MR. AARON:    Q:    Right. At the bottom of page 3 of the  
10                  2003 Royal Society Report, second last sentence, it  
11                  refers to a study by Yano, *et al*, 2001, where they  
12                  found that

13                         "The tissue average temperature rise was  
14                         higher in the infant model than in the adult  
15                         model except for the eyeballs."

16                  And I put it to you that confirms what you just said.

17 DR. BAILEY:    A:    That would be consistent with my prior  
18                  statement.

19 MR. AARON:    Q:    Right. Dr. Shkolnikov, is the AMI  
20                  meters that are proposed by the applicant here, they  
21                  function below 1.5 gigahertz, correct?

22 DR. SHKOLNIKOV: A:    They are RF LAN functions below 1.5  
23                  gigahertz, correct.

24 MR. AARON:    Q:    Right, excluding the ZigBee chip?

25 DR. SHKOLNIKOV: A:    Yes.

26 MR. AARON:    Q:    Okay. What operates more than 1.5

1 gigahertz?

2 DR. SHKOLNIKOV: A: Quite a few technologies --

5 MR. AARON: Q: No, sorry, within the AMI system.

4 DR. SHKOLNIKOV: A: Oh, within the AMI system? I'm not

5 -- I don't know all the specifications on the

6 collector, but for the piece of equipment that is on

7 the house, the other frequency is 2.4 gigahertz -- I

8 should say that's a band that covers frequencies

9 around that for ZigBee.

10 MR. AARON: Q: That's for ZigBee, but that's not going

11 to be turned on, according to Mark Warren it won't be

12 turned on unless a customer consents to ZigBee.

13 MR. WARREN: A: That's correct.

14 MR. AARON: Q: So when an AMI meter arrives at the

15 house of a Fortis customer, it's all going to be low

16 1.5 gigahertz.

17 DR. SHKOLNIKOV: A: If the function is not turned on,

18 that is correct. If the ZigBee function is not turned

19 on at the request of the customer --

20 MR. AARON: Q: Yes.

21 DR. SHKOLNIKOV: A: -- your statement is correct.

22 **Proceeding Time 3:33 p.m. T64**

23 MR. AARON: Q: Okay. And the -- what does EIRP mean to

24 you?

25 DR. SHKOLNIKOV: A: It's effected isotropic radiated

26 power, is the term for it.

1 MR. AARON: Q: And what's the maximum EIRP of the AMI  
2 smart meter?

5 DR. SHKOLNIKOV: A: I did the calculation, it's about  
4 0.689 times 1.66. I always use a calculator, so I  
5 don't think I've calculated --

6 MR. AARON: Q: What is it, kilometres, metres?

7 DR. SHKOLNIKOV: A: Oh no, sorry, the units are always  
8 in watts usually.

9 MR. AARON: Q: Okay. Is it less than 2.5 watts?

10 DR. SHKOLNIKOV: A: Yes.

11 MR. AARON: Q: Okay. Perhaps Mr. Loski or Warren know  
12 the answer to this question. Has Fortis obtained a  
13 licence from Industry Canada with respect to the  
14 operation of the proposed AMI meters?

15 MR. WARREN: A: No, the AMI operate in a non-licensed  
16 band.

17 MR. AARON: Q: They're exempt?

18 MR. WARREN: A: Yeah.

19 MR. AARON: Q: I don't mean to be asking you questions  
20 of law, but -- so there's been no application for a  
21 licence.

22 MR. WARREN: A: That's correct.

23 MR. AARON: Q: Has Itron, to your knowledge, obtained  
24 any licence in relation to the proposed AMI meters  
25 from Industry Canada?

26 MR. WARREN: A: Not to my knowledge, but if they're

1           required to I'm sure they did. But I believe that --  
2 MR. AARON:    Q:    Okay, not --  
5 MR. WARREN:    A:    -- since they're unlicensed they -- no  
4           such licence was required.  
5 MR. AARON:    Q:    All right.  
6 DR. SHKOLNIKOV: A:    Sorry, in terms of just  
7           terminology, I don't know specifically of -- you know,  
8           the specific terminology. There is a difference  
9           between getting a licence to use the licence frequency  
10          band and also being part of being regulated by -- for  
11          other aspects. So at least with my experience with  
12          FCC, as I said, I'm not a regulator expert, definitely  
13          in Canada --  
14 MR. AARON:    Q:    Well, let's not have you comment in that  
15          regard.  
16 DR. SHKOLNIKOV: A:    But what I --  
17 MR. AARON:    Q:    It's outside the scope of your  
18          expertise.  
19 DR. SHKOLNIKOV: A:    But what I would like to point is  
20          that there is a certificate that was provided to  
21          E<sup>x</sup>ponent when we were asked to do this project, which  
22          is a compliance document with Industry Radio  
23          standards, that was provided to us and that was filed  
24          on behalf of Itron when it started marketing the  
25          product.  
26 MR. AARON:    Q:    Okay, can I get a reference to that?

1 DR. SHKOLNIKOV: A: Yes, that's a certificate exhibit  
2 for FCC ID: SK9AMI7, Industry Canada --

5 MR. AARON: Q: Sorry, is that in the evidence?

4 DR. SHKOLNIKOV: A: It is cited in our report. I can  
5 ask for it to be introduced as evidence.

6 DR. BAILEY: A: It may be already introduced.

7 DR. SHKOLNIKOV: A: It may already be introduced, but  
8 it is definitely cited in our report.

9 MR. AARON: Q: May I see it?

10 DR. SHKOLNIKOV: A: Yes, go ahead. And you may want to  
11 grab the testing photograph that are part of it as  
12 well.

13 MR. AARON: Q: So this is issued by -- this is on  
14 letterhead -- I think we should enter this as an  
15 exhibit. it's being referred to in the proceedings.

16 Mr. Fulton, are we in a position to enter  
17 this as an exhibit? The document that's being raised  
18 by the witness.

19 MR. FULTON: Right. So what I don't know is whether it's  
20 already in the record. So I'm --

21 THE CHAIRPERSON: I understand it's referenced in the  
22 record.

23 MR. MACINTOSH: I don't know if it's in the record on its  
24 own. I have no objection to it going in, but I can  
25 check tonight whether it's already in the record.

26 No, it's not already in the record, and I

1           have no objection to it being marked.

2 MR. FULTON:    So let's mark it then as one of Mr. Aaron's

5           exhibits then.  So it will be C9-19.

4           **(ACS "CERTIFICATE EXHIBIT - FCC ID: SK9AMI7...RF**

5           **EXPOSURE" MARKED EXHIBIT C9-19)**

6 MR. AARON:    Q:   I will give this copy back to you.

7 DR. SHKOLNIKOV:  A:   Okay, that's fine.

8 MR. FULTON:    You need to get the Hearing Officer to make

9           copies.

10 MR. AARON:    All right, can I give it to you in -- defer

11           that for a second, or would --

12 THE CHAIRPERSON:  No, that's fine.  If you have questions

13           you want to ask --

14 MR. AARON:    Q:   It's under letterhead, this document.

15           It says "ACS".

16 DR. SHKOLNIKOV:  A:   Yes.

17 MR. AARON:    Q:   With an address in Georgia, U.S.A.

18 DR. SHKOLNIKOV:  A:   Yes.

19 MR. AARON:    Q:   And that's the issue of this document?

20 DR. SHKOLNIKOV:  A:   No, I think I have to explain how

21           -- where -- what this document is.

22 MR. AARON:    Q:   Please, yes.

23 DR. SHKOLNIKOV:  A:   In United States --

24 THE CHAIRPERSON:  Let me just -- let me just stop for a

25           moment.  I'm just questioning the relevance of this,

26           this matter.  Can you explain why this is relevant?

1 MR. AARON: I can, although that would prejudice my  
2 cross-examination, unless we do a witness exclusion.

5 THE CHAIRPERSON: Okay, carry on, carry on.

4 MR. AARON: Q: Yeah, please.

5 **Proceeding Time 3:39 p.m. T65**

6 DR. SHKOLNIKOV: A: So in United States, when you -- an  
7 Itron meter you're talking about is sold both in the  
8 United States and in Canada. When you want to import  
9 or to use a product in the United States you have to  
10 apply for a grant of equipment authorization. That  
11 requires you to do a specific testing called "FCC Part  
12 15B" testing. And what you do is that you can either  
13 go directly to FCC or to go a lab that is trusted by  
14 FCC to do a specific test. And in this case, it's --  
15 the group of labs is called TCB Labs, and this is one  
16 of them.

17 MR. AARON: Q: Okay.

18 DR. SHKOLNIKOV: A: And you go to this lab. It does  
19 the testing, submits the results to FCC. FCC then  
20 reviews it and once a grant of equipment authorization  
21 is issued, in the packet that is available on the FCC  
22 website, and I always check it because I always trust  
23 my clients, but I always verify. I go to the website,  
24 I download this grant of equipment authorization and  
25 all the company documentation. And this is the part  
26 of the basis on which FCC has issued the grant of

1 equipment authorization.

2 MR. AARON: Q: Okay. So this was obtained, this  
5 authorization, from a private authorizing outfit,  
4 pursuant to compliance with FCC requirements?

5 DR. SHKOLNIKOV: A: No. I obtained those documents  
6 directly from FCC.

7 MR. AARON: Q: Oh.

8 DR. SHKOLNIKOV: A: This was a legal document filed in  
9 FCC and then when companies -- from my understanding,  
10 and I'm not a regulatory expert on Canadian issues,  
11 when a company wants to then pursue Canadian  
12 certification, it is allowed to submit the same report  
13 to Industry Canada. And that's the reference number  
14 on the front is what Industry Canada website -- if you  
15 go under that reference number, that's the -- you are  
16 likely to find an identical submission on the Industry  
17 Canada website for this device.

18 MR. AARON: Q: All right. Mr. Loski, you'd agree with  
19 me that your evidence has been that you need to comply  
20 with Safety Code 6.

21 MR. LOSKI: A: That is correct.

22 MR. AARON: Q: That your advanced meters need to be in  
23 compliance with Safety Code 6 and Measurement Canada.  
24 That was your evidence?

25 MR. LOSKI: A: That is correct.

26 MR. AARON: Q: And in responding to Mr. Miles, you

1 characterized Health Canada as an authority to make  
2 determinations with respect to the -- your meters.

5 MR. LOSKI: A: Yes. And to ensure -- to clarify what I  
4 was getting at there, it is our view that Health  
5 Canada is the body in Canada that is responsible for  
6 setting limits with respect to RF emissions, and they  
7 do so through Safety Code 6. And as I've said, our  
8 advanced meters emissions fall significantly below the  
9 Safety Code 6 limits.

10 MR. AARON: Q: Where do you get the notion that Safety  
11 Code 6 has any regulatory requirements with respect to  
12 your meters? Did someone tell you that? Or -- how do  
13 you come to the understanding that you're under any  
14 requirements under Safety Code 6.

15 MR. LOSKI: A: Certainly based on our review of the  
16 Safety Code 6 and Industry Canada, that -- and the  
17 regulations that we are required to comply with, with  
18 the Safety Code 6.

19 MR. AARON: Q: Okay. So you reviewed the regulations  
20 and you determined that you're required to comply with  
21 it. And we're getting into legal argument, and I'm  
22 going to leave it.

23 MR. MACINTOSH: Well, if my friend is leaving it, that's  
24 fine.

25 MR. AARON: Q: Yeah. I just wanted to put that  
26 challenge out.

1 MR. LOSKI: A: So, do you want me to argue it? That --

2 MR. AARON: Q: No, because -- you're --

5 MR. LOSKI: A: Well, I didn't know what the challenge  
4 meant.

5 MR. AARON: Q: You've reviewed the legislation and you  
6 think that Safety Code 6 requires something of you.  
7 And I put it to you that you're wrong. That Safety  
8 Code 6 is not applicable to your AMI meters. It  
9 imposes -- that your meters are exempt.

10 MR. WARREN: A: That doesn't -- and I suppose -- and  
11 again, I'm not a lawyer, but I think you're putting a  
12 very fine point upon this. I think you're correct  
13 that they are exempt. They still need to comply, but  
14 when you read through the requirements, you're quite  
15 correct that, as you read through them, based on some  
16 criteria, my understanding -- I'm sure Yakov could  
17 explain it better -- they are exempted once you read  
18 through --

19 **Proceeding Time 3:44 p.m. T66**

20 MR. AARON: Q: Well, you have to be a lawyer and a Dr.  
21 Shkolnikov to determine that. If you read through the  
22 *Radio Communication Act* you see that there's licensing  
23 requirements, you see that there's exemptions, and  
24 definitely your meters fall within the scope of an  
25 exemption. But this goes to legal argument and we  
26 could make it without your evidence and I'm willing to

1 move on.

2 MR. MACINTOSH: Okay, the way I understand it works, Mr.  
5 Chair, is the Safety Code 6 has to be complied with.  
4 The signal that these meters emit is such that they  
5 are exempt in certain respects. If my friend is  
6 alleging that Safety Code 6 doesn't matter in some  
7 way, I would ask him to speak to me about that  
8 tonight. That's the first I've heard of that and I  
9 believe we have to comply with Safety Code 6.

10 MR. AARON: I think it's a legal issue that I'm intending  
11 to raise in argument. I'm prepared to have a  
12 discussion with my friend about it.

13 THE CHAIRPERSON: Thank you. Please carry on.

14 MR. AARON: But I don't think it's a matter for further  
15 evidence.

16 MR. AARON: Q: Dr. Bailey, would you return to the  
17 E<sup>x</sup>ponent Report please at page 19. I'm sorry, before I  
18 go to that, just back to Mr. Warren. Or sorry, Mr.  
19 Loski. In your response to Mr. Weafer you indicated  
20 that you'll impose a charge in relation to opt-out as  
21 necessary.

22 MR. LOSKI: A: I did not say that, sir. What I was  
23 getting at was describing the response to a BCUC Staff  
24 IR, IR No. 2, question 50.2 where a hypothetical  
25 question was put to us as to what would be an opt-out  
26 mechanism that we thought would have some merit. And

1           that's what I was describing in that, and included in  
2           that hypothetical opt-out model included some fees.

5 MR. AARON:   Q:   Fair enough. My apologies. And in that  
4           hypothetical model you said you'd set out an  
5           appropriate opt-out mode including cost causation,  
6           recovery of incidental costs of \$110 for one-time fee  
7           and 120 per year. So is it my understanding that  
8           under that hypothetical model, the opt-out would be  
9           100 percent financed by the opting-out customer? And  
10          I'm not going to refer to the transcript too much.

11 MR. LOSKI:   A:   I was just trying to recollect if there  
12          is where, Mr. Chairman, that we cut off discussion on  
13          this because it was opt-out.

14 MR. AARON:   Q:   I have a brief line of questioning on  
15          it. My submission is that it does relate to the  
16          health issue, and I only have one or two questions on  
17          it. It relates to the health issue and if I need to  
18          make submissions as to how it relates to the health  
19          issue I'm prepared to.

20 THE CHAIRPERSON:   Well, you can carry on, but I don't  
21          think we should be getting into the economic side of  
22          that.

23 MR. AARON:   Q:   No, no. My point that I seek  
24          clarification on is that under the hypothetical model,  
25          that opt-out will be paid for by the opting-out  
26          customer.

1 MR. LOSKI: A: Yes, the idea, as I said with the cost  
2 causation is that 100 percent of the incremental costs  
5 associated with implementing opt-out for an individual  
4 customer should be borne by that customer as opposed  
5 to be borne by the rest of the customers as a whole.

6 **Proceeding Time 3:49 p.m. T67**

7 MR. AARON: Q: So, and that opt-out will cost the  
8 company nothing extra, and will cost the non-opting-  
9 out customers nothing extra.

10 MR. LOSKI: A: The incremental cost that would be borne  
11 by the company to implement the opt-out for the  
12 customer would be recovered from that customer.  
13 Again, with the principle of cost causation, then the  
14 remaining -- or the rest of the customers would, in  
15 effect, be kept whole.

16 MR. AARON: Q: So, is it your position now that you are  
17 willing to canvass requests under special  
18 circumstances for an opt-out? For example, if there  
19 is a customer who say they get a hold of the Sommer  
20 report and they read that these kind of emissions made  
21 some rats fat, and they're on a diet, and they write  
22 to Fortis and they say, "Listen, I'm on a diet, I've  
23 got diabetes, I can't afford to gain weight, can I opt  
24 out?" Are you in a -- are you willing to entertain  
25 that kind of an application on health grounds at this  
26 point?

1 MR. LOSKI: A: At this stage, our application stands  
2 where there -- we are not proposing an opt-out  
5 mechanism.

4 MR. AARON: Q: And I appreciate that that's the state  
5 of your regulatory application. But with respect to  
6 the state of your policy, are you willing to entertain  
7 that kind of a request?

8 MR. MACINTOSH: Well, the witness, Mr. Loski, has  
9 responded as to what the company's position is, and  
10 the opt-out is not part of this phase of the hearing.

11 MR. AARON: Well, we were dealing with health issues  
12 here, and --

13 THE CHAIRPERSON: Well, we're also, Mr. Aaron, we're also  
14 dealing with the application that's before us. And I  
15 think it's been made clear that the application that's  
16 before us does not include an opt-out provision. The  
17 issue of opt-out was raised by way of an Information  
18 Request and so attracted a response as a result of  
19 that. I think we should continue to pursue matters  
20 that are part of the application.

21 MR. AARON: Well, the application is to install meters.  
22 And to -- which will be mandatory for every Fortis  
23 customer. And which will emit radio frequency. That,  
24 on the evidence, will have biological effects. It's  
25 questionable whether they're adverse or not. And that  
26 raises the prospect -- and there are many people out

1 here, public interest has a question as to whether in  
2 the context of the regime that Fortis seeks approval  
5 of, they will entertain requests by customers to opt  
4 out, on grounds of health.

5 I realize that's not the application, but  
6 whether Fortis is willing to entertain such requests I  
7 think is directly relevant to the application.

8 THE CHAIRPERSON: Well, I think that's a reasonable  
9 question to ask.

10 MR. AARON: And that's the only question I have.

11 THE CHAIRPERSON: And if we can get a short answer to  
12 that, that will allow us to move on.

13 MR. AARON: Q: And the answer that I'm looking for  
14 isn't with respect to whether you've applied. I know  
15 you haven't applied. It's with respect to your policy  
16 that you intend to implement after the approval of  
17 your application, if it's approved.

18 MR. LOSKI: A: To be clear, the policy that we intend  
19 to implement or that we intend to go forward upon  
20 implementation of smart meters is based on our  
21 application. So, they are one and the same. And the  
22 reason that we have proposed no opt-out, again, is we  
23 believe that's consistent with government policy and  
24 as well we believe that that ensures we can realize  
25 all the significant benefits associated with the  
26 project as we have set out in our application.

1 **Proceeding Time 3:53 p.m. T68**

2 Now, in that IR, I mentioned that the  
3 response to that IR, question 50.2, that was put to  
4 us, we did state that, and I'll be clear here, that if  
5 the Commission found that the -- our application to be  
6 in the public interest, and set a condition with -- on  
7 that application with respect to opt-out, then we  
8 would consider that and move forward.

9 MR. AARON: Q: Thank you. I'll definitely finish  
10 within the next hour.

11 The next section of cross I intend, I've  
12 just got a few studies that I want to put to you, Dr.  
13 Bailey.

14 MR. MACINTOSH: Mr. Chair, I mis-spoke slightly and I may  
15 have been misleading in doing so, about ten minutes  
16 ago on the record. I said these smart meters are  
17 exempt but they still have to meet Safety Code 6, and  
18 that sounds a bit self-contradictory -- a bit  
19 contradictory. And what I meant to say was in  
20 reference to something Dr. Shkolnikov raised earlier,  
21 and that is, the meters are exempt from routine  
22 evaluations. And that's pursuant to a document which  
23 has now been put in evidence, or at least will be put  
24 in evidence in some of the questioning.

25 But they still have to comply with Safety  
26 Code 6, and I thank my friend for letting me correct

1           myself.

2   THE CHAIRPERSON:    Thank you.

5   MR. AARON:    And my position is that they don't have to  
4           comply with anything in Safety Code 6 and we will  
5           canvass that together and then I'm sure you'll have  
6           legal argument from us both on that point.

7   MR. AARON:    Q:    The E<sup>x</sup>Ponent Report, Dr. Bailey, at page  
8           19. Under the second paragraph,

9                    "Some researchers have evaluated reports  
10                   that appear to be cancer clusters by combing  
11                   all types of cancers as one disease."

12           Combing all types of cancers as one disease. That's  
13           something you object to for the purposes of the  
14           analysis, correct?

15   DR. BAILEY:   A:    Let me just say here, I think there is  
16           -- the word should be "combining".

17   MR. AARON:    Q:    Oh, sorry. Did I not say that?

18   DR. BAILEY:   A:    No, no.

19   MR. AARON:    Q:    Oh.

20   DR. BAILEY:   A:    It's a typo.

21   MR. AARON:    Q:    All right. I'm not trusting my eyes any  
22           more.

23                    Combining various cancers, you say,  
24                    "...various cancer types is not viewed as a  
25                    useful method for finding causes because the  
26                    term "cancer" describes over 100 diseases



1           proximity to AM radio or television transmitters and  
2           looked at risk of cancer, particularly leukemia, in  
3           the surrounding population.

4 MR. AARON:    Q:    Yes, that was the study, and what was  
5           the results, because you refer to the results and you  
6           say that they're limited. But what were the results  
7           is my question.

8 DR. BAILEY:    A:    In this group of studies there were  
9           reports that they -- that people who live closer to  
10          transmitters and are presumed to have high exposures  
11          have excess risk of cancer, including leukemia.

12 MR. AARON:    Q:    And over onto the next page, 21, you  
13          refer to -- on the second sentence -- or third  
14          sentence,

15                 "Earlier studies reported some statistical  
16                 association between proxy measures of  
17                 exposure and mortality from leukemia..."

18          What studies were those?

19 DR. BAILEY:    A:    Well, the examples are given here, the  
20          Milham and Szmigielski studies.

21 MR. AARON:    Q:    Oh, are those, Milham and Szmigielski  
22          the studies that reported some statistical association  
23          between proxy measures --

24 DR. BAILEY:    A:    Correct.

25 MR. AARON:    Q:    -- or mortality from leukemia?

26 DR. BAILEY:    A:    Yes.

1 MR. AARON: Q: Okay. And on Safety Code 6 review by  
2 the Royal Society, 1999, at page 85 -- 85, there's a  
5 reference to leukemia. Do you see that?

4 DR. BAILEY: A: And this is about eight lines from the  
5 bottom, approximately?

6 MR. AARON: Q: The reason I ask you if you see it is  
7 because I don't see it.

8 DR. BAILEY: A: I'm just wondering where on the page  
9 you're directing me.

10 MR. AARON: Q: Yeah. I will ask my computer, and if I  
11 can't find it within a minute I'll move on, or within  
12 a second I'll move on.

13 THE CHAIRPERSON: Mr. Aaron, could I ask you to move on,  
14 please.

15 MR. AARON: Yeah. All right.

16 MR. AARON: Q: Then moving on -- ah, found it. It's  
17 actually at the paragraph that starts with "Hocking et  
18 al" at the top, four lines from the bottom -- or five  
19 lines. It says,  
20 "For all ages the leukemia incident rate in  
21 the inner areas was 1.25 times the rate in  
22 the outer areas."  
23 And is this a study that dealt with low level non-  
24 thermal RF emissions?

25 DR. BAILEY: A: It's generally cited as such, yes.

26 MR. AARON: Q: Okay, and then in the same document,

1 Safety Code 6 at page 40 --

2 DR. BAILEY: A: You're saying Safety -- you mean Royal  
5 Society of Canada document?

4 MR. AARON: Q: Yes.

5 DR. BAILEY: A: Okay.

6 MR. AARON: Q: There's a reference to cell damage.

7 **Proceeding Time 4:03 p.m. T70**

8 THE CHAIRPERSON: Could you point out that reference  
9 please?

10 MR. AARON: Q: Yes, and that would be under the heading  
11 6.3.2:

12 "Numerous investigators have now observed  
13 relatively small but reproducible transient  
14 increases in...(ODC) activities in both  
15 cultured mammalian cells and animals exposed  
16 to amplitude modulated frequency or  
17 microwave fields."

18 Are those emissions also accurately  
19 described as non-thermal RF emissions?

20 DR. BAILEY: A: Could you -- I just want to make sure  
21 that I'm clear. Could you just start reading that  
22 sentence again?

23 MR. AARON: Q: "Numerous investigators have  
24 now observed relatively small but  
25 reproducible transient increases in...(ODC)  
26 activity in both cultured mammalian cells

1           and animals exposed to amplitude modulated  
2           frequency or microwave fields and 50 to 60  
5           hertz EMF."

4           Is that a reference to non-thermal RF emissions?

5 DR. BAILEY:   A:   I believe so. I was just confused  
6           because of the next sentence going on into a different  
7           frequency range. I'm sorry.

8 MR. AARON:    Q:   Okay. And then you see on the next  
9           page, 6.3.3 the first line under that heading:

10           "The data in regard to ODC activity clearly  
11           indicates that mammalian cell tissues and  
12           tissues are capable of sensing exposure to  
13           low frequency components of both magnetic  
14           and microwave or radio frequency fields."

15           Is that a statement that you agree with, that there's  
16           a clear indication from the data in that regard?

17 DR. BAILEY:   A:   Well, in this case they're talking in  
18           the -- I'm sorry, it goes on. There are, as they  
19           indicate, there are some reports of effects of radio  
20           frequency fields on ODC activity, but again this is in  
21           1999 and science has continued on since then. And in  
22           fact in the next -- if I recall in the next review by  
23           the Royal Society, they discuss studies that do not  
24           replicate this phenomenon for radio frequency field  
25           exposures.

26 MR. AARON:    Q:   So on one hand there was some

1 replication and other studies failed to replicate it.

2 DR. BAILEY: A: And the other thing is that these  
5 exposures are at levels from .1 to 2.5 watts per  
4 kilogram, which would be fairly high exposures that  
5 should be considered.

6 MR. AARON: Q: All right. Under the heading  
7 "Melatonin" on page 42, and if you go over onto page  
8 43, the last five lines before the next heading it  
9 says:

10 "These studies, while not directly  
11 applicable to the RF field evaluation, do  
12 raise the possibility that ELF and  
13 presumably RF exposure could have effects  
14 on..."

15 DR. BAILEY: A: I'm sorry, I'm having trouble finding  
16 where you are on the page again.

17 MR. AARON: Q: Okay, well we're on page 43.

18 DR. BAILEY: A: Got it.

19 MR. AARON: Q: You see the heading "Cell Membrane  
20 Effects".

21 DR. BAILEY: A: At the bottom, okay.

22 MR. AARON: Q: Well, we're above there by five lines,  
23 under the section "Melatonin".

24 "These studies, while not directly  
25 applicable to the RF field evaluation, do  
26 raise the possibility that ELF and



1 mechanism.

2 MR. AARON: Q: And I recall that the weakness that the  
3 Royal Society 1999 review identified with respect to  
4 methodological studies is that it's not capable of  
5 identifying a causal mechanism. Do you recall that?

6 DR. BAILEY: A: I'm sorry, what type of studies?

7 MR. AARON: Q: Method -- sorry, epidemiological  
8 studies.

9 DR. BAILEY: A: Okay.

10 MR. AARON: Q: Are not capable of identifying a causal  
11 mechanism. That's what the authors of the Royal  
12 Society '99 review said, correct?

13 DR. BAILEY: A: That's correct.

14 MR. AARON: Q: And so is the implication that one needs  
15 to look at *in vitro* studies to find the causal  
16 mechanism?

17 DR. BAILEY: A: If -- you could look *in vitro* studies  
18 or *in vivo* studies. If it was -- if you find  
19 something in the *in vitro* studies, then you would want  
20 to try and establish relevance in the broader sense by  
21 carrying forward follow-up studies in animals.

22 MR. AARON: Q: Would you turn to Dr. Blank's report,  
23 please. At page 5, under the heading "RF-DNA  
24 interaction mechanisms that underline biological  
25 responses". He says,  
26 "Studies of the cellular stress response" --

1 DR. BAILEY: A: This is under the heading "Research  
2 studies" --

5 MR. AARON: Q: Actually, could you turn it over one  
4 more page. It's actually page 6. My apologies for  
5 the record, it's page 6, de facto page 6, under the  
6 heading "RF DNA interaction mechanisms".

7 DR. BAILEY: A: I'm there.

8 MR. AARON: Q: He writes,

9 "Studies of the cellular stress response  
10 have enabled progress on a primary molecular  
11 mechanism of activation by EMF. A  
12 particular DNA segment had been identified  
13 as the molecular target of both ELF and RF,  
14 and it has been possible to manipulate this  
15 segment and use it as an EMF activated  
16 switch when attached to other genes."

17 And he cites Lynn, 1990-2001.

18 "These published experiments constitute a  
19 plausible molecular mechanism to account for  
20 RF activation of DNA."

21 My question to you is, does the E<sup>x</sup>ponent  
22 Report discuss this theory as a possible plausible  
23 mechanism in the context of E<sup>x</sup>ponent's suggestion that  
24 there is no plausible mechanism that's been  
25 identified?

26 DR. BAILEY: A: This is a very, very good sound byte,

1 but in terms of looking at the implications of this  
2 hypothesis, essentially --

5 **Proceeding Time 4:13 p.m. T72**

4 MR. AARON: Q: Sorry, at first, I'll let you go there,  
5 but what's the answer to my question? Does the  
6 E<sup>x</sup>Ponent Report discuss this? Yes or no, and then --

7 DR. BAILEY: A: It does not.

8 MR. AARON: Q: Okay. And then --

9 DR. BAILEY: A: I'm sorry if I left that out at the  
10 beginning of my response.

11 MR. AARON: Q: No problem.

12 DR. BAILEY: A: It does not discuss Dr. Blank's  
13 hypothesis. But this term "activation of DNA" is very  
14 non-specific. Essentially every stimulus in  
15 biological processes in the body, and our reactions to  
16 the environment, involve activation of DNA in terms of  
17 the taking of the DNA template and producing proteins  
18 and carrying out the work of the cell. So, this --  
19 the particular examples that Dr. Blank has done  
20 research on involves the induction of a gene that then  
21 presumably would generate a protein. And so, there is  
22 nothing unique about that process.

23 Others -- every other environmental  
24 stimulus that has an effect on the body does the same  
25 thing. So there is nothing unique about radio  
26 frequency fields, for instance, as a temperature

1 stimulus or some other aspect causing an activation.

2 It shouldn't surprise us.

5 MR. AARON: Q: So, I'm a layman, and I'm trying to  
4 understand the debate between you and Martin Blank.

5 You're saying that the kind of phenomenon  
6 that he refers to has other sources as well, other  
7 environmental sources?

8 DR. BAILEY: A: That since basically almost everything  
9 can activate DNA --

10 MR. AARON: Q: Yes.

11 DR. BAILEY: A: -- adding RF to this list doesn't  
12 really tell us anything.

13 MR. AARON: Q: But you're not going so far as to deny  
14 that there has been a finding within the DNA segment  
15 that is reactive and can be switched and manipulated  
16 in response to RF emissions. You're not denying that.

17 DR. BAILEY: A: I'm not disputing that that's been  
18 published.

19 MR. AARON: Q: Okay. And are you disputing that that  
20 publication constitute a plausible molecular mechanism  
21 to account for RF activation of DNA? Or are you  
22 disputing the relevance of it?

23 DR. BAILEY: A: I'm saying for this -- to my mind, for  
24 something to be a plausible mechanism it has to be  
25 something, a mechanism that has been replicated by  
26 other individuals and that can be shown to be relevant

1 to the disease process that you're interested in. And  
2 that is a -- the kind -- that is where we have a  
5 mechanism that could be investigated further to  
4 perform tests in animals, for instance.

5 MR. AARON: Q: So you're saying this doesn't constitute  
6 a basis for further investigation?

7 DR. BAILEY: A: It -- you would need to have more  
8 replication to make this into a mechanism that could  
9 be followed up in further research. We wouldn't  
10 expend scientific time and resources on pursuing a  
11 hypothetical mechanism that -- where the fundamental  
12 data has not been confirmed by other scientists and  
13 its relevance determined.

14 **Proceeding Time 4:17 p.m. T73**

15 MR. AARON: Q: I don't get that. Then how do you get  
16 the first replication of something? If something  
17 that's unconfirmed won't be subject to further  
18 research, how does anything get replicated?

19 DR. BAILEY: A: Oh --

20 MR. AARON: Q: It's almost like you're saying something  
21 has to be replicated in order to be the subject of  
22 further research.

23 DR. BAILEY: A: I think I stated before that scientists  
24 do not draw conclusions about results from individual  
25 studies. If we want to determine whether a particular  
26 phenomena, whether it's this report from Lynn *et al.*

1 1999 or any other observation is a likely valid  
2 finding (a), and can be used to further our  
3 understanding of disease, then we would -- before we  
4 go forward we want to make sure on the basis of other  
5 publications that there is an agreement that this is a  
6 real effect and it is not something that is localized  
7 to the unique conditions of that experiment, that  
8 experimental condition and if that's been replicated  
9 and confirmed. And then we ask the question, well, is  
10 this potential biological response, is it relevant,  
11 how relevant it is to some disease process.

12 MR. AARON: Q: So Martin Blank, you're not persuaded  
13 when a cellular biophysicist at Columbia University  
14 tells you that he thinks that what has been identified  
15 here is a plausible -- plausible mechanism -- out  
16 there, sorry, I lost my place.

17 So Martin Blank, biophysicist, a cellular  
18 biophysicist at Columbia, he tells you he thinks it's  
19 a plausible molecular mechanism that's been identified  
20 from these studies in his opinion. You're not  
21 persuaded.

22 DR. BAILEY: A: I don't think that he has shown or  
23 other research has shown that this provides a  
24 plausible biological mechanism. And I would point out  
25 that many people have published studies about  
26 individual findings and proposed mechanisms that might

1 explain interactions of radio frequency fields to the  
2 body, but as yet none of these proposals or hypotheses  
3 have been confirmed to the point where they would --  
4 scientists would agree they provide a plausible  
5 biological mechanism as Dr. Blank has proposed.

6 MR. AARON: Q: Plausible is a different standard.  
7 Plausible biological mechanism is a different standard  
8 from an established scientific finding. You would  
9 agree with me on that.

10 DR. BAILEY: A: They may be very close in the sense  
11 that it is not productive as a scientist to go off and  
12 take many steps beyond a simple hypothesis, unless you  
13 have confirmation that the original finding was valid.

14 MR. AARON: Q: And in your E<sup>x</sup>ponent Report where you  
15 speak to the absence of a plausible biological  
16 mechanism, you didn't feel it necessary to reference  
17 the debate that arises from Blank's position, which I  
18 presume you were aware of?

19 DR. BAILEY: A: Yes, I'm quite aware of Dr. Blank's  
20 position, but we're here only focusing on the  
21 hypotheses at this point of Dr. Blank, but over the  
22 years there have been many different hypotheses thrown  
23 out as to how radio frequency fields might interact  
24 with organisms at low levels.

25 **Proceeding Time 4:22 p.m. T74**

26 And as yet the health agencies and

1 scientific agencies have not determined that what has  
2 been put forth is sufficient for them to say, "Wow,  
5 this is a mechanism that has been supported by  
4 replicated research and we want to recommend a  
5 research program, for instance, to pursue it further."

6 MR. AARON: Q: I know you defer a lot to those  
7 scientific agencies, but your E<sup>x</sup>Ponent Report said  
8 there is no plausible biological mechanism. And you  
9 came to that conclusion without having provided us  
10 readers with the benefit of having set out the  
11 position of the community that there is a plausible  
12 biological mechanism, and then going to set out the  
13 position of the community that says there is not a  
14 plausible biological mechanism, and providing your own  
15 analysis in that regard. You've given us no opinion  
16 other than to say a conclusion, and base it on what  
17 ICNIRP found on reasoning that we haven't had the  
18 privy of discovering.

19 DR. BAILEY: A: I did not provide any detail on this,  
20 and I could have written an entire report of similar  
21 length just discussing the many different theories,  
22 including Dr. Blank's, that have been proposed. But  
23 without these many different theories having been  
24 supported to a sufficient extent, I did not choose to,  
25 you know, make those a part of this report.

26 MR. AARON: Q: Look, my problem with your report is,

1           you set out conclusions that there is no plausible  
2           biological mechanism, and then you don't acknowledge  
5           that your conclusions -- behind your conclusions there  
4           is a lack of scientific consensus. That's my problem  
5           with your report. That it's remiss.

6                         It sets out to reassure the reader that  
7           there are no established health concerns, and it does  
8           that on the basis of conclusions that overlook the  
9           fact that the matter on which you're coming to a  
10          conclusion is a subject of debate. And on one side of  
11          debate, the debate, is a Columbia biophysicist who  
12          says there is a plausible mechanism. Don't you think  
13          that's small oversight? Not to mention that? In the  
14          context of saying there is no biological mechanism,  
15          and this is why we discount non-thermal studies.  
16          Isn't that an oversight?

17 MR. MACINTOSH:    I'll just ask my friend to put a little  
18                         bit of a simpler question.

19 DR. BAILEY:     A:    I believe I already answered that  
20                         question.

21 MR. AARON:     Q:    There is the question of natural  
22                         microwave and at the Maret report at page 46, at the  
23                         last paragraph, he asserts that

24                                 "There are no significant levels of natural  
25                                 energy at RF microwave frequencies."

26   Can anyone take a position on that, that

1           there are no significant levels of natural energy at  
2           RF microwave frequencies?

5 DR. SHKOLNIKOV:    A:    I think that statement is incorrect  
4           as shown both by theory, experiments, and systems that  
5           NASA builds that measure microwave frequencies from  
6           space, to observe temperatures on each.  And if you  
7           would like, I can provide you a photographs of earth  
8           at different frequencies, like, 10 gigahertz and above  
9           --

10 MR. AARON:        Q:    Okay.

11 DR. SHKOLNIKOV:   A:    -- as well as photographs of human  
12           body --

13 MR. AARON:        Q:    I take your word.

14 DR. SHKOLNIKOV:   A:    -- in the microwave frequencies.

15 MR. AARON:        Q:    I take your word for it.  I guess what  
16           we don't know is what is meant by "significant".

17 DR. SHKOLNIKOV:   A:    I think the word "significant" can  
18           be put, for the purposes of practical matter of this  
19           hearing, from my perspective, a good comparison would  
20           be to compare it to FortisBC AMI smart meters.  
21           Whether those levels are above or below them seems to  
22           be at least one relevant comparison.  If you're  
23           talking to people who do measurements and design  
24           antennas, the question always is how do you avoid  
25           natural sources of microwave and, in fact, Big Bang  
26           Theory and two Kelvin background was observed by

1 people who were building a telescope at Bell Labs --  
2 or, sorry, an antenna system at Bell Labs, and what  
3 they have found out is that they couldn't go below a  
4 certain measurement level because there was noise  
5 coming from everywhere in space, and that led to the  
6 understanding that there is this concept called  
7 "microwave background".

8 And so, you know, for people who practice  
9 in art of microwave engineering, natural sources of RF  
10 are a big concern because they limit the ability to do  
11 studies, and therefore people like me, for example,  
12 have to cool down our experiments down to 20  
13 milliKelvin, 20-thousands of a degree, so as to avoid  
14 this sources of natural microwave to do the  
15 experiments.

16 **Proceeding Time 4:28 p.m. T75**

17 MR. AARON: Q: I follow you entirely. But you've  
18 already agreed that there's no natural source of  
19 emissions in the same frequency as AMI meters and the  
20 same modulation. You said, "Otherwise we couldn't use  
21 it as a carrier."

22 DR. SHKOLNIKOV: A: Well, I think the question becomes  
23 what do you mean by "same frequencies"? From my  
24 understanding of the Maret discussion and I think the  
25 discussion by -- I think it was Maisch that we just --  
26 no, Dr. Blank we discussed. He basically proposes

1           that the frequency is not relevant because he  
2           discusses both ELF up to RF in his hearing. So he  
3           doesn't make a differentiation between at what  
4           frequency the RF is devised.

5                         Safety Code 6 defines what RF frequency  
6           range is. So does FCC. And actually so does  
7           Bioinitiative report defines it as 3 kilohertz to 300  
8           gigahertz. If you were to tell me what frequency  
9           range you'd like me to limit it to, clearly as you  
10          begin to throw out all the sources that are  
11          inconvenient because they're natural or come from  
12          other devices, you are going to identify that RF  
13          signal from Fortis AMI system is the largest signal in  
14          the environment, but that's a circular argument  
15          because to arrive at this conclusion you have to  
16          actually filter out all the other radio frequency  
17          signals that start from 3 kilohertz, go up to 300  
18          gigahertz.

19 MR. AARON:   Q:   That's the last question I'm going to  
20           ask you. I've had it.

21                         The topic I want to discuss next, Dr.  
22          Bailey, is the topic of -- it arose when you were  
23          being crossed by Keith Miles and you referred to the  
24          E<sup>x</sup>ponent Report at page 26 to 29 which summarizes  
25          current research that has summarized studies that look  
26          at whether people can detect when they're exposed to

1 RF emissions.

2 MR. WARREN: A: Sorry, can you give us the reference  
5 please?

4 MR. AARON: Q: And I don't have the transcript  
5 reference, but the discussion I think can I remind you  
6 is -- the issue is with people who -- with the  
7 investigation into the phenomenon of EHS and whether  
8 it exists. And there have been experiments that  
9 expose people to RF emissions without them knowing,  
10 and they haven't been able to identify or detect that  
11 they were being exposed to RF emissions. Am I raising  
12 an issue there?

13 DR. BAILEY: A: That's one of the findings in the  
14 literature, yes.

15 MR. AARON: Q: Okay. I propose that there is an  
16 assumption at play here, that -- I think these are  
17 called provocation studies? Am I correct?

18 DR. BAILEY: A: Yes.

19 MR. AARON: Q: And the provocation studies have  
20 generally found that people cannot tell when they're  
21 being exposed, correct?

22 DR. BAILEY: A: Yes.

23 MR. AARON: Q: But you can't conclude from that that  
24 people don't have symptoms in relation to exposure,  
25 can you?

26 DR. BAILEY: A: People can have symptoms and they may



1 exposed to an x-ray when you go and get a chest x-ray,  
2 and you can't feel when you're exposed to the x-ray,  
5 can you?  
4 DR. BAILEY: A: No.  
5 MR. AARON: Q: All right. Dr. Bailey, what's your  
6 position with E<sup>x</sup>ponent or your role with E<sup>x</sup>ponent?  
7 DR. BAILEY: A: I'm a principal scientist.  
8 MR. AARON: Q: Okay. Is it a corporation, E<sup>x</sup>ponent?  
9 DR. BAILEY: A: Yes, it is.  
10 MR. AARON: Q: Okay. Is it publicly traded or is it  
11 privately held?  
12 DR. BAILEY: A: It's publicly traded shares.  
13 MR. AARON: Q: Okay, and are you a shareholder in  
14 E<sup>x</sup>ponent?  
15 DR. BAILEY: A: I buy shares during the year, yes.  
16 MR. AARON: Q: Okay. You're not a director?  
17 DR. BAILEY: A: No.  
18 MR. AARON: Q: Or an officer?  
19 DR. BAILEY: A: No.  
20 MR. AARON: Q: Okay. Are the corporate governance of  
21 E<sup>x</sup>ponent generally based in the United States?  
22 DR. BAILEY: A: Yes, the company's headquarters are in  
23 Menlo Park, California.  
24 MR. AARON: Q: Okay. Are you aware -- you've been with  
25 E<sup>x</sup>ponent since 1999, right?  
26 DR. BAILEY: A: 2000.

1 MR. AARON: Q: Oh, 2000. The year before you joined in  
2 1999, E<sup>x</sup>ponent prepared a report stating that certain  
3 kinds of asbestos are less dangerous than the -- were  
4 you aware of that report?

5 DR. BAILEY: A: Sir, this is not my area of study and I  
6 don't know what someone that E<sup>x</sup>ponent before I joined  
7 may or not have done, so --

8 MR. AARON: Q: Are you aware that E<sup>x</sup>ponent in 2010 did a  
9 report defending the harmful effects of Agent Orange?  
10 Are you aware of that one?

11 DR. BAILEY: A: I don't know whether your  
12 characterization is accurate or not. Again, this is  
13 -- I don't follow activities in other practices.

14 MR. AARON: Q: You're not aware that they did a -- they  
15 had a client that sought to refute allegations of  
16 adverse effects of Agent Orange?

17 DR. BAILEY: A: I can't respond to this because I don't  
18 know what activities our firm was requested -- what  
19 services we were requested to provide or what the  
20 conclusions were, so --

21 MR. AARON: Q: You don't know what else they're doing?

22 DR. BAILEY: A: I don't know what they're doing.

23 MR. AARON: Q: So you're telling me you have no -- that  
24 you were unaware that they did reports on asbestos and  
25 Agent Orange.

26 DR. BAILEY: A: I know that some E<sup>x</sup>ponent scientists



1 answers would be either yes, no, or no, I don't know.

2 MR. AARON: That's all I'm asking.

5 THE CHAIRPERSON: Yes.

4 MR. AARON: Q: And I appreciate you wouldn't know any  
5 particulars of the study. I'm just -- you know, we  
6 have an expert report from your firm and I -- can you  
7 confirm that they have had Chevron as a client with  
8 respect to an issue of cancers relating to  
9 environmental contamination by their petroleum  
10 operations in Ecuador?

11 DR. BAILEY: A: I don't know of -- I have -- what I  
12 know about that is basically what I have read in the  
13 newspaper. I don't have any information beyond that.

14 MR. AARON: Q: As long as -- I am satisfied that you've  
15 read something in the newspaper about it. Are you  
16 aware that they -- in 2011, just a couple of years  
17 ago, they prepared a report for Murray Energy  
18 Corporation that concerned recommendations from the --  
19 that U.S. Workers' Compensation Organization we  
20 referenced, the National Institute for Occupational  
21 Safety and Health, concerning the appropriate level of  
22 exposure of miners to respirical coal dust and the  
23 health effects? Are you aware of their involvement in  
24 that one?

25 DR. BAILEY: A: No.

26 MR. AARON: Q: Okay. How about the matter in 2004 that

1           dealt --

2   MR. MACINTOSH:   Excuse me, Mr. Chair.  The reason I rise  
5           is relevance.  My friend is seeking by innuendo to  
4           say, well, research has been done in areas which are  
5           the subject of scientific debate.  So what?  I mean,  
6           that's completely irrelevant to this hearing.  And he  
7           can ask 15 examples and Dr. Bailey can say, "Yes, I  
8           heard that that was happening, at E<sup>x</sup>Ponent," or "No, I  
9           haven't heard."  And it's not relevant to this  
10          hearing.  But my friend is -- I shouldn't say  
11          "mischievous," but my friend is trying to create an  
12          innuendo.  But it's not relevant to the hearing and  
13          Dr. Bailey was uninvolved, and there is no  
14          particulars.  We don't know the issues, we don't know  
15          the brief, we don't know the opinions, and it's just  
16          really trying to create innuendo in a way that's  
17          unfair.

18   MR. AARON:    I'm just wondering if the AMI meters are so  
19           safe, then why Fortis had to hire a firm like E<sup>x</sup>Ponent?

20   MR. MACINTOSH:   That's a deplorable remark by my friend  
21           to make.

22   MR. AARON:    I will conclude my cross-examination, then.

23   MR. MACINTOSH:   No, you don't.  Excuse me, Mr. Chair.  
24           Lawyers don't get to say something that they shouldn't  
25           and then say, "Oh, I'm sitting down, good-bye."

26                           My friend has not really quite played fair

1           there, and to be seeking to impugn this company based  
2           on the level of sophistication you have heard from Dr.  
3           Bailey, Dr. Shkolnikov, we -- and we can suppose there  
4           is equal levels of sophistication in these other  
5           reports. We don't have the faintest idea, none of us  
6           does.

7                           And my friend is seeking to impugn on no  
8           rational reasonable basis. And I object to that.

9 THE CHAIRPERSON:    Do you have any further questions, Mr.  
10           Aaron?

11 MR. AARON:        No.

12 THE CHAIRPERSON:    You've exhausted your questions?

13 MR. AARON:        Yes.

14 THE CHAIRPERSON:    You are satisfied that you've exhausted  
15           your questions?

16 MR. AARON:        Yes. And I have exhausted my back as well.

17 THE CHAIRPERSON:    Good. No, not good that you've  
18           exhausted your back. Good that you've achieved what  
19           you hoped to achieve in terms of the range of  
20           questions you wanted to ask.

21 MR. AARON:        Yeah, and thank you to all four panelists for  
22           your patience.

23 THE CHAIRPERSON:    Thank you.

24                           We have 15 minutes, Mr. Fulton, till five  
25           o'clock. And if we could go a little beyond five,  
26           we've had a long day, but we do have -- you know, we



1 MR. FULTON: You'll give the Hearing Officer the  
2 spelling.

5 MR. ATAMENENKO: I'll give the spelling for that  
4 greening, of course.

5 **CROSS-EXAMINATION BY MR. ATAMENENKO:**

6 MR. ATAMENENKO: Q: So I'm going to start with Exhibit  
7 C-2 to the Commission, page 2, paragraph 3. That's my  
8 letter to Fortis with some comments and then some  
9 questions as we move through this. So I note that  
10 Health Canada's call on parents to limit their  
11 children's use of cell phones following the decision  
12 by the WHO to classify the use of cell phones for fear  
13 resulting exposure to radiation could be harmful, as I  
14 say in my letter.

15 MR. MACINTOSH: Mr. Chair, I do apologize, I'm sorry to  
16 interrupt. I just wonder if the witnesses could get  
17 that in front of them first.

18 THE CHAIRPERSON: Yes. Just a reminder by way of  
19 process, if when you're going to ask a question if you  
20 could give the reference first, and then allow the  
21 witnesses to find that item, that would be helpful.

22 MR. ATAMENENKO: I apologize, Chair.

23 THE CHAIRPERSON: That's fine.

24 MR. ATAMENENKO: I gave the reference but I didn't give  
25 time for them to find it.

26 MR. ATAMENENKO: The reference is C1-2 to Commission,

1 page 2, paragraph 3.

2 MR. ATAMENENKO: Q: I await your instructions as to  
5 when I can proceed. Okay. Are you okay? Do you have  
4 it there?

5 DR. BAILEY: A: Yes.

6 MR. ATAMENENKO: Q: I will continue. So I won't --  
7 I'll repeat the paragraph.

8 "I note Health Canada's call on parents to  
9 limit their" --

10 This is paragraph 3 on page 2.

11 "...limit their children's use of cell phone  
12 following a decision by WHO to classify the  
13 use of cell phones for fear resulting  
14 exposure to radiation could be harmful."

15 In the same paragraph, I note Health's  
16 Canada's statement which admits that there's currently  
17 a lack of scientific information regarding the  
18 potential health impacts of cell phones on children,  
19 and the currently available evidence is far from  
20 conclusive.

21 So my question is, do you agree, Dr.  
22 Bailey, that we have been deploying wireless  
23 technologies for a number of years without  
24 sufficiently considering the impact on children?

25 DR. BAILEY: A: I do not. I think health and  
26 scientific agencies have, as long as I've been

1 involved in this area, had a great deal of interest in  
2 the potential effects on children and have initiated  
5 programs to address that.

4 MR. ATAMENENKO: Q: Thank you. I made mention that I  
5 was disturbed to realize that the safety of emissions  
6 from wireless smart meters stem from inconclusive  
7 findings from research on other wireless applications  
8 such as cell phones, which does not appear to have  
9 specifically addressed the potential impact to  
10 children. Do you agree that most cell phones and  
11 wireless gadgets marketed to families and their  
12 children do not carry any prominent warnings on these  
13 devices suggesting that people should take steps to  
14 limit exposure to EMR?

15 DR. BAILEY: A: On cell phones you said?

16 MR. ATAMENENKO: Q: Yes.

17 DR. BAILEY: A: I don't know that there's a  
18 recommendation there except there is a product insert  
19 that states the FCC's position.

20 **Proceeding Time 4:47 p.m. T79**

21 MR. ATAMANENKO: Q: Thank you.

22 DR. BAILEY: A: In the U.S., anyway.

23 MR. ATAMANENKO: Q: I went on to inform the Commission  
24 that the CIHR have announced investments of \$28.5  
25 million over six years which, among other things, will  
26 study how multiple forms of radiation can alter the

1 expression of our DNA and potentially affect our  
2 health, as well as examining the mechanisms by which  
3 extremely low frequency magnet fields interact with  
4 biological systems. Do you agree or disagree that  
5 companies should take steps to ensure that their  
6 customers are properly informed at the time of  
7 purchase about the recognized hazards and how they  
8 might minimize that hazard? For example, hands-free  
9 operations and keeping a minimum distance from the  
10 body?

11 DR. BAILEY: A: Sir, my experience is in reviewing  
12 research and assessing its relevance, and not making  
13 policy recommendations that are the proper position of  
14 government health agencies. So, I'm called upon often  
15 to advise them about the state of scientific research,  
16 but in terms of how that information is then placed  
17 into perspective in terms of their program, that's in  
18 their area of expertise.

19 MR. ATAMANENKO: Q: Thank you. I'll move on. Dr.  
20 Hyland of the University of Warwick, United Kingdom,  
21 in the International Institute of Biophysics, in  
22 Neuss-Holzheim, Germany, described the human body as  
23 an electrochemical instrument of exquisite sensitivity  
24 and that like a radio it can be interfered with by  
25 incoming radiation. Do you agree with his comment?

26 DR. BAILEY: A: It's a very general comment, and I

1 would agree with the first part, that the human body  
2 is -- the nervous system is an electrochemical system  
5 by which cells communicate with one another by both  
4 electrical and chemical signals.

5 The second part of the question presumes  
6 that the external fields or stimuli are sufficient to  
7 interfere with that electrochemical system to a point  
8 where some health effect or harm occurs. And  
9 certainly at very high levels of exposures, that can  
10 occur. But I don't believe that that at all is what  
11 the science is telling us about smart meters.

12 MR. ATAMANENKO: Q: Thank you. And I guess as we've  
13 seen in previous questions and information is that I  
14 guess there is a concern by -- there is a disagreement  
15 on that by different scientists, and I know that Mr.  
16 Aaron brought that out.

17 In Health Canada's website, under the page  
18 "Healthy living", there is this warning.

19 "Although the RF energy from cell phones  
20 poses no confirmed health risk, cell phone  
21 use is not entirely risk free. Studies have  
22 shown that using cell phones or other  
23 wireless devices can be distracting. Your  
24 risk of serious injury may increase if you  
25 use these devices while driving, walking,  
26 cycling or doing any other activity that

1 requires concentration for personal safety."

2 And they go on to say that

5 "Cell phones may interfere with medical  
4 devices such as cardiac pacemakers,  
5 defibrillators and hearing aids, and also  
6 with other sensitive electronic equipment  
7 such as aircraft communication and  
8 navigation systems."

9 So my question is, is it accurate, then, to  
10 compare the interference by incoming radiation to the  
11 human body as an electrochemical instrument as being  
12 somewhat similar to the type of interference that can  
13 affect pacemakers, et cetera, and other sensitive  
14 electronic equipment described by Health Canada's  
15 warning?

16 DR. BAILEY: A: I think you have to address these quite  
17 separately. And although electricity and, for some  
18 systems, chemical signals may be involved, the human  
19 body is not a pacemaker, and I think that you have to  
20 address these issues quite separately.

21 **Proceeding Time 4:52 p.m. T80**

22 MR. ATAMANENKO: Q: Thank you.

23 MR. WARREN: A: And I would add, Mr. Atamanenko, that  
24 there was a lot of assertions in your question, I  
25 think, and one of them was, you know, that Health  
26 Canada recommends warnings around cell phone and that

1 kind of thing. I actually think those -- there is  
2 information prescribed by regulation.

5 But we have to keep in mind that when  
4 Health Canada sets limits -- and they mention this on  
5 their website when they talk about cell phones in  
6 particular, that Safety Code 6 limits are protective.  
7 And we also have to remember that Safety Code 6 limit  
8 is -- first, Health Canada takes the level at which  
9 they have assessed there to be harm. Then they reduce  
10 that by 50 times. And Mr. Loski was talking about  
11 this yesterday. They reduce that by 50 times. Cell  
12 phones are about 10 times below that limit. And the  
13 smart meters that we're proposing, at maximum typical  
14 duty cycle, are 100 times below that.

15 So, we're talking with the smart meters --  
16 Health Canada asserts that cell phones are safe to  
17 begin with, and smart meters or advanced meters are  
18 50,000 times below the level known to cause harm. And  
19 so, it's -- I just want to put that in perspective  
20 when you're talking about cellular telephones.

21 MR. ATAMANENKO: Q: Let me just read a statement that  
22 Mr. Ivo Till gave on November 7<sup>th</sup> at a public meeting  
23 devoted to this topic. It's in regard to his health,  
24 and I just -- I'd like -- I'll ask you the question  
25 ahead of time, as you read this. For Fortis, what --  
26 yes?

1 MR. FULTON: Mr. Chairman, this statement will be part of  
2 the record of the Community Input Sessions, so that if  
5 Fortis has it --

4 MR. ATAMANENKO: Q: Okay. November 7<sup>th</sup>, at a public  
5 meeting.

6 MR. FULTON: Yes, it was an Osoyoos meeting.

7 MR. ATAMANENKO: Q: Yeah. Mm-hmm. So, the question,  
8 ahead of time, for Fortis, is what actions would  
9 Fortis think to undertake to address his concerns, and  
10 my question to Dr. Bailey would be, do you agree that  
11 Mr. Till has a legitimate concern?

12 So here is what he said.

13 "I had an open heart operation and my heart  
14 is now totally dependent on my pacemaker,  
15 clinically checked twice a year in the  
16 Penticton hospital. When traveling by air,  
17 I have a right to bypass electric check-in  
18 gates. Similarly, I wish to have identical  
19 protection in my house for any movement on  
20 my path with an intimate closeness to an  
21 electronic meter, just two inches, in my  
22 bedroom with a distance less than three  
23 meters. I will not permit any installation  
24 in my house causing me a stress and possible  
25 harm. I will fight it legally."

26 He says. So my question, as I mentioned, one, Dr.

1 Bailey, do you agree that Mr. Till has a legitimate  
2 concern? And Fortis, gentlemen, do you -- what -- how  
5 would you address this?

4 DR. SHKOLNIKOV: A: I think in IR responses we have  
5 touched on this issue, but there are a few things to  
6 keep in mind. One is that there is nothing unique  
7 about the source of RF signal compared to other radio  
8 frequency devices, although I would mention the anti-  
9 -- the safety devices, the anti-theft devices or  
10 screening devices that you see in the airport do  
11 operate in -- are significantly -- actually a  
12 different type of interference, If you're looking at  
13 evaluation of the standard.

14 But if you go -- the idea is that all the  
15 medical manufacturers that I'm familiar with, and I  
16 don't know the manufacturer you're working with,  
17 diligently evaluate what are the common sources of RF  
18 exposure, and design a device to protect it and do  
19 very rigorous testing to verify it.

20 **Proceeding Time 4:56 p.m. T81**

21 And as a result of this, they're trying to  
22 -- they produce a list of recommendations in the  
23 insert to the pacemaker and last time I checked, the  
24 common recommendation was to keep six inches away from  
25 an antenna of the device, which for a device like --  
26 and this is not on the other side of the smart meter

1           where there's a shielding by meter panel, but in  
2           front. And also it's from antenna. And antenna is  
5           actually itself a few inches inside the devices.

4                        So the exposure, you know, yes, it is  
5           prudent to keep a distance away from the front of  
6           smart meter as to will the distance to greater than  
7           six inches, but the scenario of being on the other  
8           side of the wall and other distance scenarios. While  
9           not being a medical professional, being a medical  
10          device company representative, I can't say that it's  
11          risk free, but it is some of the information that is  
12          provided when he had the device installed.

13 MR. ATAMENENKO:   Q:   Okay. Thank you. Fortis, do you  
14          have a comment?

15 MR. LOSKI:        A:   Yes, I'd like to start by going to a  
16          response that we had to information requests and this  
17          on the topic of pacemakers. So it's in Exhibit B-11  
18          and it's in response to CSTS IR No. 1 and question  
19          34.5 and I'll read it out for the benefit of folks.  
20          So the question was:

21                     "Is FortisBC aware that there have been  
22                     concerns about the potential impact of RF  
23                     communication technology on pacemakers and  
24                     other medical equipment?"

25          And our response is,

26                     "Medical equipment such as pacemakers are

1           designed to operate in 900 megahertz and 2.4  
2           gigahertz RF environments. Since these are  
5           common frequencies for baby monitors,  
4           cordless phones, and WiFi routers, for  
5           example. These are the same frequencies on  
6           which advanced meters transmit and receive,  
7           so FortisBC believes any concerns would be  
8           unfounded."

9                        Secondly, we had another response in the  
10           same exhibit and this is to SKCC IR No. 1 in question  
11           7. And here we -- similar question put to us and I'll  
12           just get to the nub of it, and we here referenced in  
13           this question-- oh, this is question 7, pardon me,  
14           reference a document that we located from B.C.  
15           Children's Hospital, which is an agency of the  
16           Provincial Health Services Authority, and it describes  
17           a number of -- it says:

18                        "Your child can be safely exposed to most  
19                        household appliances and tools that are in  
20                        good repair and properly grounded  
21                        including..."

22           Pardon me, I forgot to mention this is a document  
23           entitled "Care of Your Child With a Pacemaker". So  
24           then it goes on to say:

25                        "Your child can be safely exposed to most  
26                        household appliances and tools that are in



1           this BCUC Fortis oral hearing, as Mr. Bailey  
2           has probably not talked to anyone with EHS  
3           and has questionable first-hand experience  
4           with EHS research. An EHS witness might  
5           bring a dose of reality to this present  
6           discussion. I have EHS. And I have had  
7           permanent damage to my nervous system. In  
8           1995 and 1996 I had a very specific and  
9           controlled high exposure in a very  
10          controlled environment in my workplace. And  
11          I was the unknown specimen. This damage  
12          continues when I am exposed to any high  
13          levels of the stimuli. My nervous system is  
14          constantly experiencing a strong burning  
15          sensation that requires a medication  
16          prescribed by my doctor, Robert Macintosh,  
17          to make the sensation pain manageable.  
18          Exposure to any EMF wireless stimuli will  
19          cause a marked reaction in my nervous  
20          system. I have had this damage to my body  
21          since reacting to a very high level of EMF  
22          in my work environment in a laboratory at  
23          the South Okanagan General Hospital.  
24          Hospital labs have very high levels of EMFs.  
25          This is not an allergy. It began when I  
26          returned to work after a session with a

1 viral infection and had a weakened and  
2 compromised body as a result of the viral  
3 infection. Symptoms of reaction to the EMFs  
4 began within three weeks. After five  
5 months, my symptoms were extreme. An  
6 environmental workplace specialist that I  
7 saw in Vancouver identified this condition  
8 as EHS and told me that no doctors or  
9 scientists that she knew in Canada were  
10 interested in questioning or examining a  
11 person with EHS. Unfortunately she refused  
12 to put this on paper. She has been employed  
13 with the W -- [that's the Workmen's  
14 Compensation Board] for eight years.

15 I appreciate that I may be too late to  
16 be a witness but feel I want to express my  
17 thoughts to you at this time anyway. I and  
18 other EHS people will probably be affected  
19 by smart meters. Please ask Dr. Bailey  
20 where I should move to be free of this  
21 exposure. My best wishes to all -- to you  
22 and the appreciation for the stress and hard  
23 work that you have. Thank you, Judy  
24 Nicholas."

25 So, that's the question.

26 Where could a person like Ms. Nicholas



1 argument is then rebutted by Mr. Carpenter.

2 They say that EHS comes from anxiety and  
3 not the effect of microwaves on the body. So these  
4 are scientists, Quebec, that have stated basically  
5 exactly what you have stated, Mr. Warren, and yet if  
6 we look at Dr. Carpenter who will be before the  
7 Commission next week, he's saying in his rebuttal that  
8 it's scientifically unacceptable to deny this, and  
9 that in response he's also saying that -- I'll see if  
10 I can find it here. Is that the statement -- and this  
11 is in his rebuttal, the statement that there is no  
12 established mechanism by which a radio wave could  
13 induce an adverse effect on human tissue other than  
14 heating is incorrect and reflects a lack of awareness  
15 and understanding of the scientific literature on the  
16 subject.

17 In fact, he goes on to say, there are more  
18 than 1000 studies done on low intensity, high  
19 frequency, non-ionizing radiation going back to at  
20 least 50 years, and they show some biological  
21 mechanisms of effect that do not involve heat. And  
22 we've discussed this over the last few days.

23 **Proceeding Time 5:06 p.m. T84**

24 The radiation sends signals to living  
25 tissue to stimulate biochemical change, which can  
26 generate various symptoms and may lead to diseases

1           such as cancer.

2                           But what we are seeing with Ms. Nicholas is  
3           that she is definitely convinced that this radiation  
4           is in fact what's causing her condition. So I'm just  
5           wondering, how is Fortis prepared to address her  
6           concerns other than just dismissing them and saying  
7           that it's basically not a concern? I'd like to answer  
8           that.

9 MR. LOSKI:    A:    Yes, again I'll respond here and  
10           certainly express my sympathy for our customer. First  
11           of all there was something that you mentioned with  
12           respect to describing this when responding to Mr.  
13           Warren, and with respect, he did not say that in  
14           agreement with someone -- as someone in Quebec said  
15           that it was caused by anxiety.

16 MR. ATAMENENKO:   Q:    Okay.

17 MR. LOSKI:    A:    So we're not making that point. But the  
18           point that Mr. Warren made were based on our -- based  
19           on the best evidence available to us is that there's  
20           no scientific basis to link the EHS symptoms to EMF  
21           exposure. And that is something that has been stated  
22           by the WHO, and that's in evidence in Exhibit B-15 and  
23           our response to B.C. Hydro IR No. 2, question 2.6.  
24           And further, it is also something that is stated by  
25           Health Canada, and this was included in Exhibit B-11,  
26           our response to BCSEA IR No. 1, question 63.1 and I'll

1 just read the quote that's embedded in that response,  
2 which was:

3 "In summary, there is no scientific evidence  
4 that the symptoms attributed to EHS are  
5 actually caused by exposure to EMS."

6 And again that was Health Canada.

7 And then finally we go to an IR response,  
8 and this was actually the question from BCSEA IR No.  
9 1, question 9.1 to Dr. Carpenter, and the question  
10 that they put to Dr. Carpenter was:

11 "Please confirm that Dr. Carpenter's  
12 definition of EHS is that symptoms are  
13 reported to be associated with EMF exposure,  
14 not that symptoms are caused by EMF  
15 exposure."

16 And the answer:

17 "This is correct."

18 So again, our view, based on all of the --  
19 on all, you know, this evidence and other evidence --  
20 or based on this evidence is there is no scientific  
21 link and as between EHS symptoms and EMF.

22 And so, again, as Mr. Warren said, in our  
23 view we're -- we do not believe that the advanced  
24 meters are going to exacerbate health condition based  
25 on this.

26 **Proceeding Time 5:09 p.m. T85**

1 MR. ATAMANENKO: Q: So, if I read that correctly, what  
2 you're saying is that it's psychosomatic, is that  
3 correct? In other words, if it's associated but it  
4 doesn't -- there's got to be some -- there is some  
5 kind of a link, so the link must be based on anxiety,  
6 or some -- if it's not -- do you understand what I'm  
7 saying? I'd just like some clarification.

8 MR. LOSKI: A: Right. I have no way to be able to  
9 state what is causing the condition with this  
10 individual.

11 MR. ATAMANENKO: Q: Okay. Well, thank you. I'm going  
12 to move on. I think this will be brought up a bit  
13 later in the hearing.

14 THE CHAIRPERSON: I think I'll just ask you to pause for  
15 a moment.

16 MR. ATAMANENKO: Sure.

17 THE CHAIRPERSON: It is just coming up to quarter after  
18 five. I don't know what progress you've made through  
19 your questions. If you're towards the end, we could  
20 continue. If you're -- still have some time to go, I  
21 think what we may do is start with you tomorrow  
22 morning.

23 MR. ATAMANENKO: Sure, that may be the best. I probably  
24 have a good half-hour.

25 THE CHAIRPERSON: Yeah. No, I think that if --

26 MR. ATAMANENKO: I'm ready to continue tomorrow morning.

1 THE CHAIRPERSON: If this is a good time to stop, I don't  
2 want to put you off pace.

5 MR. ATAMANENKO: No, it's right where that line is on the  
4 page.

5 THE CHAIRPERSON: Okay. Well, that sounds like a good  
6 time to stop, then. So we'll continue with you  
7 tomorrow morning, first thing.

8 Mr. Fulton, I think you do have a comment  
9 to make.

10 MR. FULTON: Yes, I do, Mr. Chairman. Just so that  
11 everyone is aware, Ms. Nicholas did speak at the  
12 Osoyoos Community Input Session. And her submissions  
13 began at page 52 of the transcript of that session.  
14 She also filed a letter which is Exhibit E-23 in these  
15 proceedings, and I just want to be certain that, going  
16 forward, when you're -- you dealt with the request  
17 this morning. It was in the context that if someone  
18 had spoken at a hearing, they weren't going to be  
19 allowed to speak again at this hearing.

20 Inadvertently, I suggest, we did get an  
21 additional statement from somebody who'd spoken at an  
22 earlier hearing. So I just surface that now to say  
23 that it is on the record. In future, if people are  
24 going to be referring to letters from people, I'd like  
25 to see the name first, because I don't want it to  
26 frustrate the intention of the Commission in terms of

1 multiple submissions.

2 THE CHAIRPERSON: Certainly. I understand that. And in  
5 fact I recall the presentation that this individual  
4 made and we certainly appreciated her input at that  
5 time. We heard from many people and I specifically  
6 remember the concerns that she expressed.

7 **Proceeding Time 5:12 p.m. T86**

8 Mr. Shadrack, you were making your way to  
9 the front. Did you have something that -- okay. We  
10 will then finish for the day and I've decided that we  
11 will begin at 8:30 tomorrow morning, that we didn't  
12 make quite the progress I had hoped to make.

13 MR. FULTON: No, I'm 0-2.

14 THE CHAIRPERSON: And so we'll look forward to seeing  
15 everybody then at 8:30 tomorrow morning.

16 MR. FULTON: And there will be the demonstration on the  
17 video conferencing shortly.

18 **(PROCEEDINGS ADJOURNED AT 5:13 P.M.)**

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