

1 **STATE OF NEW HAMPSHIRE**

2 **SITE EVALUATION COMMITTEE**

3 **April 19, 2017 - 9:05 a.m.**
4 49 Donovan Street
5 Concord, New Hampshire

DAY 5
 Morning Session ONLY

6 *{Electronically filed with SEC on 04-28-17}*

7 **IN RE: SEC DOCKET NO. 2015-06**
8 **Joint Application of Northern**
9 **Pass Transmission, LLC, and**
10 **Public Service Company of**
11 **New Hampshire d/b/a Eversource**
 Energy for a Certificate
 of Site and Facility.
 (Hearing on the merits)

12 **PRESENT FOR SUBCOMMITTEE/SITE EVALUATION COMMITTEE:**

13 **Chrmn. Martin P. Honigberg** Public Utilities Comm.
14 *(Presiding as Presiding Officer)*

15 **Cmsr. Kathryn M. Bailey** Public Utilities Comm.
16 **Dir. Craig Wright, Designee** Dept. of Environ. Serv.
17 **Christopher Way, Designee** Dept. of Resources &
 Economic Development
18 **William Oldenburg, Designee** Dept. of Transportation
19 **Rachel Whitaker** Alternate Public Member

20 **ALSO PRESENT FOR THE SEC:**

21 Michael J. Iacopino, Esq., Counsel to the SEC
22 Iryna Dore, Esq.
23 *(Brennan, Caron, Lenehan & Iacopino)*

24 Pamela G. Monroe, SEC Administrator

(No Appearances Taken)

COURT REPORTER: Steven E. Patnaude, LCR No. 052

I N D E X

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 [Resumed] **WILLIAM H. BAILEY**
 DOUGLAS H. BELL

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EXHIBIT NO.	D E S C R I P T I O N	PAGE NO.
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[WITNESS PANEL: Johnson~Bailey~Bell]

1 **P R O C E E D I N G**

2 CHAIRMAN HONIGBERG: All right. Good
3 morning, everyone. We're here for Day 5.
4 We're continuing with the panel that has Dr.
5 Johnson, Dr. Bailey, and Mr. Bell. The next
6 questioner is from the Ashland to Deerfield
7 Non-Abutting Property Owners Group. Ms. Quinn,
8 you may proceed.

9 MS. QUINN: Thank you, Chairman. Is
10 that better? Is that working? Okay. Great.
11 Good morning, SEC. Good morning, Drs. Bailey,
12 Johnson, and Mr. Bell.

13 *(Cross-examination of the*
14 *Witness Panel of **Gary Johnson,***
15 ***William Bailey, and Douglas Bell***
16 *resumes.)*

17 **CROSS-EXAMINATION (resumed)**

18 BY MS. QUINN:

19 Q. I'd like to begin my questions for you, Dr.
20 Bailey. In your prefiled testimony, you state
21 that the purpose of that testimony would be "to
22 assess whether EMF, or electromagnetic fields,
23 associated with the Project would result in an
24 unreasonable adverse effect on public health

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1 and safety". Correct?

2 A. (Bailey) Yes.

3 Q. Would an association with or the possibility of
4 an increased risk of detrimental health effects
5 not tribute in some part to the calculation of
6 "unreasonable"?

7 A. (Bailey) If the scientific evidence does not
8 support a causal relationship, then the
9 question about effects are hypothetical. But,
10 as we discussed in testimony yesterday,
11 awareness of some uncertainty in the research
12 has caused the WHO and other organizations to
13 suggest lower no-cost measures to minimize
14 magnetic fields.

15 Q. Okay. Thank you. In your Report, Appendix 8
16 [Table 8?] of Applicant Exhibit 1, on Page 50
17 you present a table of basic restrictions and
18 reference levels for electromagnetic fields
19 from ICNIRP and ICES. I could try to bring
20 that up, but I think everybody might have that.
21 The ICNIRP --

22 A. (Bailey) What's the page number again?

23 MS. QUINN: It is Page 50.

24 CHAIRMAN HONIGBERG: And what was the

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1 exhibit you're talking about?

2 MS. QUINN: It's Appendix 38 of
3 Applicants' Exhibit 1, the Application.

4 BY MS. QUINN:

5 Q. So, on that table, there are a couple of
6 different reference levels and basic
7 restrictions provided. The ICNIRP reference
8 level is listed as "2,000 milligauss", while
9 the ICES reference level is "9,040 milligauss".
10 That's a rather large discrepancy between these
11 two standards, is it not?

12 A. (Bailey) It's a difference in terms of the
13 reference levels. If you actually look at the
14 basic restrictions, they're much more similar.
15 That is the actual limit that's specified in
16 the two standards are much more similar. And,
17 in fact, the basic restriction, in terms of
18 tissue electric fields, are lower than -- of
19 the ICES standard than they are for the ICNIRP
20 standard.

21 So, the difference between the reference
22 levels has to do with the way in which the
23 relationship between external fields and
24 internal electric fields is calculated, and

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1 some frequency-specific adjustments, which are
2 different for the two standards.

3 Q. Right. But the variation between the two
4 different basic restriction standards is even
5 more dramatic, right?

6 A. (Bailey) The basic -- not in terms of the basic
7 restrictions. The underlying restrictions, the
8 "basic restriction" refers to an electric field
9 in the tissue of the body.

10 Q. Internal, right.

11 A. (Bailey) And I'm saying, the differences in
12 those basic restrictions in tissue are much
13 more similar and not as great appearing as they
14 are in terms of the reference levels.

15 Q. Okay. Thank you. This is my Exhibit 24. This
16 is the ICNIRP Guidelines. And, on Page 818 of
17 those Guidelines, it states: "The restrictions
18 in these guidelines" --

19 CHAIRMAN HONIGBERG: Slow down. Slow
20 down.

21 MS. QUINN: Oh. Sorry.

22 WITNESS BAILEY: One moment. I'm
23 just going to pull up my --

24 MS. QUINN: Okay.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 WITNESS BAILEY: -- copy of your
2 filing. I'm sorry. Go ahead.

3 BY MS. QUINN:

4 Q. Okay. So, on Page 818 of the ICNIRP Guidelines
5 it states: "The restrictions in these files
6 were based on established evidence regarding
7 acute effects". And, also: "These guidelines
8 will be periodically revised and updated as
9 advances are made in the scientific knowledge
10 concerning any aspect relevant for limiting
11 exposure of low frequency time-varying electric
12 and magnetic fields."

13 So these ICNIRP Guidelines could change in
14 the future with regard to acute and chronic
15 effects, could they not?

16 A. (Bailey) In theory, yes. And, in fact, the
17 ICNIRP Guideline in 1998 had a level that was,
18 for magnetic fields, the reference level was
19 1,000 milligauss. And, in 2010, it was
20 increased to 2,000 milligauss. So, yes.
21 Periodically, they can make changes.

22 Q. And, as they might increase, they could also
23 decrease the level, right?

24 A. (Bailey) Depending upon the scientific basis

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1 for any action.

2 Q. Sure. Right. I understand that. Thanks. The
3 paragraph there on the right, you see the
4 passage "Compliance with the present guidelines
5 may not necessarily preclude interference with,
6 or effects on, medical devices such as metallic
7 prostheses, cardiac pacemakers, implanted
8 defibrillators and cochlear implants.
9 Interference with pacemakers may occur at
10 levels below the recommended reference levels."
11 Right?

12 A. (Bailey) That's as you're reading, yes.

13 Q. This is my Appendix 15 -- or, Exhibit 15. This
14 is a Google Earth map of an area of Deerfield
15 known as "Deerfield Town Center". You can see
16 the right-of-way there at the top left. Where
17 the Google Earth dot is is the driveway that
18 leads to Sherburne Woods, which is an elderly
19 housing complex in Deerfield. This housing
20 complex is 35 feet from the right-of-way. So,
21 even if the proposed Northern Pass Project
22 complies with these Guidelines, there could be
23 interference with or effects on medical devices
24 that the residents of Sherburne Woods or

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1 potentially any other residents along the
2 right-of-way might experience. Isn't that the
3 case?

4 A. (Johnson) As far as the field -- electric field
5 and magnetic field level, once you go beyond
6 the right-of-way, or I think even within the
7 right-of-way, we're looking at magnetic fields
8 that are well below, I believe, off the top of
9 my head, 500 milligauss, and electric fields
10 that are at most, even at the peak levels
11 within the right-of-way, around 5 kV per meter.

12 I'll defer to Dr. Bailey for exact
13 effects, but I don't believe that those would
14 impact at those levels for implanted cardiac
15 devices.

16 Q. But, in the passage of the ICNIRP document, it
17 says "Interference with pacemakers may occur at
18 levels below the recommended reference levels",
19 right?

20 A. (Bailey) Why don't you turn back to that
21 passage.

22 Q. Sure.

23 A. (Bailey) Because you didn't read the last
24 sentence of it. Following the paragraph that

[WITNESS PANEL: Johnson~Bailey~Bell]

1 you read, the last sentence says: "Advice on
2 avoiding these problems is beyond the scope of
3 the present document but is available
4 elsewhere."

5 Q. Okay.

6 A. (Bailey) And the IEC has guidelines that says
7 that compliance with the ICNIRP standards does
8 provide protection against interference with
9 implanted medical devices.

10 And, in the case of magnetic fields, the
11 lowest level that I have seen recommended
12 guidance for not exceeding exposure, in terms
13 of implanted medical devices, is a thousand
14 milligauss. So, the magnetic field levels on
15 the right-of-way and outside the right-of-way
16 are well below a thousand milligauss. And, so,
17 the magnetic field would not be an issue.

18 With regard to the electric field, as Dr.
19 Johnson indicated, the electric fields are
20 within the levels that are allowed on the
21 right-of-way. And, even in the right-of-way,
22 there is considerable shielding by trees and
23 shrubs that would lower the electric fields in
24 an area where someone decided to hike. So,

[WITNESS PANEL: Johnson~Bailey~Bell]

1 it's not at all clear that people would
2 encounter electric fields at levels that would
3 be interfering with pacemakers.

4 Q. Perhaps. Although, I believe that there are
5 plans to take down trees and other vegetation
6 in this area around Sherburne Woods to create
7 the capacity for the new towers.

8 A. (Bailey) Well, even if trees were taken down on
9 the right-of-way, that would not -- that would
10 not involve cutting down of trees off the
11 right-of-way.

12 Q. Well, vegetation.

13 A. (Bailey) And it doesn't really take a lot of
14 vegetation to cause a reduction in the electric
15 field. It doesn't have to be, you know, a
16 60-foot tree.

17 Q. Uh-huh.

18 A. (Bailey) So, I don't see that that's a likely
19 problem. Also, I would point out that the U.S.
20 Government maintains a database called the
21 "MAUDE" database. And we have searched the
22 MAUDE database for reports of interference with
23 pacemakers and implanted cardiac devices. And,
24 while you can find many reports in the database

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1 about interference with pacemaker function,
2 from stereo speakers, a man picking up his
3 stereo speaker and carrying it across the room
4 causing interference, security systems at book
5 stores and convenience stores, and many other
6 sources of interference, we have not found any
7 reports in this database of interference with
8 cardiac pacemakers and implanted devices by
9 transmission lines.

10 Q. So, you would not agree that someone living
11 along the right-of-way, such as a resident of
12 the Sherburne Woods, is at an increased risk of
13 device malfunction or physical injury due to
14 exposure of increased levels of EMF?

15 A. (Bailey) I don't think, from a practical
16 standpoint, that there's any substantial
17 likelihood of adverse effects from people in
18 that area living near the right-of-way.

19 Q. So, even though that's listed as an effect of
20 EMF exposure in this Exhibit 5, the Scientific
21 Committee of Emerging and Newly Identified
22 Health Risks' opinion on potential effects of
23 exposure to electromagnetic fields?

24 A. (Bailey) It's an issue that has been under

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1 study, and we have guidance that has been
2 issued on it. And there is considerable
3 research --

4 Q. Okay.

5 A. (Bailey) -- indicating that usually, even in
6 cases where a device shows some kind of
7 response to the field, it does not produce a
8 change that would effect the performance of the
9 device, in terms of its desired function.

10 Q. That will afford them great comfort, no doubt.
11 On Page 819 of the ICNIRP Guidelines, it reads:
12 "Exposure to low-frequency electric fields may
13 caused well-defined biological responses,
14 ranging from perception to annoyance, through
15 surface electric-charge effects. The only well
16 established effects in volunteers exposed to
17 low frequency magnetic fields are the
18 stimulation of central and peripheral nervous
19 tissues and the induction in the retina of
20 phosphenes, a perception of faint flickering
21 light in the periphery of the visual field."

22 So, Dr. Bailey, the occurrence of retinal
23 phosphenes could cause confusion, distress, or
24 perhaps even safety issues in someone

[WITNESS PANEL: Johnson~Bailey~Bell]

1 experiencing them, particularly someone of
2 advanced age, would it not?

3 A. (Bailey) Potentially, but it's not an issue
4 that --

5 Q. Potentially?

6 A. (Bailey) -- could occur here.

7 Q. Okay.

8 A. (Bailey) Because the --

9 CHAIRMAN HONIGBERG: Dr. Bailey, the
10 question was "would that condition cause
11 distress?" Not whether it's likely to happen
12 here.

13 WITNESS BAILEY: Okay.

14 MS. QUINN: Right.

15 CHAIRMAN HONIGBERG:

16 WITNESS BAILEY: Okay.

17 CHAIRMAN HONIGBERG: So, that may or
18 may not be within your area of expertise.

19 WITNESS BAILEY: No, it is.

20 **BY THE WITNESS:**

21 A. (Bailey) The answer is, no, it would not cause
22 distress. One can reproduce the visual
23 sensation of a magneto phosphene by closing
24 your eye and placing your finger against your

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1 eyelid, and you will experience a faint visual
2 sensation. That is what a magneto phosphene
3 is.

4 The other thing why you would -- this
5 would not be something that would be relevant
6 to this situation, or even in an occupational
7 environment, is that the threshold for
8 eliciting a magneto phosphene in a laboratory
9 is approximately 100,000 milligauss. I do not
10 know of any source, even in the electric
11 utility system, that would be capable of
12 producing a magnetic field high enough to
13 induce magneto phosphene.

14 BY MS. QUINN:

15 Q. Okay. Is it okay if I move to my next
16 question?

17 A. (Bailey) Certainly.

18 CHAIRMAN HONIGBERG: You don't have
19 to ask his permission to do that.

20 MS. QUINN: Thank you, Chairman.

21 (Short pause.)

22 MS. QUINN: Sorry, I'm getting there.
23 Sorry for the delay.

24 BY MS. QUINN:

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1 Q. Based upon yesterday's testimony, it's safe to
2 say that you are familiar with the 2007 World
3 Health Organization publication entitled
4 "Extremely Low Frequency Fields"?

5 A. (Bailey) Yes.

6 Q. Do you recall the statement on Page 5 of the
7 WHO document that states "There is some
8 evidence suggesting the existence of
9 field-dependent effects on reaction time and on
10 reduced accuracy in the performance of some
11 cognitive tasks"?

12 A. (Bailey) Yes.

13 Q. Would you agree that decreased reaction time or
14 reduced accuracy in the performance of some
15 cognitive tasks could increase threats to the
16 safety of a person, particularly an elderly
17 person, who may already be experiencing some
18 reduction in reaction time or cognitive changes
19 associated with advanced age?

20 A. (Bailey) The conclusion of the agencies that
21 have reviewed this literature has not
22 determined that these --

23 Q. Can you just answer the question please?

24 A. (Bailey) Can you ask it --

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1 Q. Would you not agree that decreased reaction
2 time or alterations in the accuracy in the
3 performance of cognitive tasks could increase
4 the threats to safety of someone at advanced
5 age?

6 A. (Bailey) Yes, if they were --

7 Q. Thank you. That's --

8 A. (Bailey) -- occurred. But the fact is that the
9 agencies that have reviewed this body of
10 research --

11 CHAIRMAN HONIGBERG: Okay.

12 Dr. Bailey, she asked you a simple question,
13 and you gave the simple answer, and then wanted
14 to answer a question she didn't ask.

15 MS. QUINN: Right.

16 CHAIRMAN HONIGBERG: So, right now,
17 you've given the answer. And, if your counsel
18 wants to ask you some additional questions that
19 will help contextualize that, that's fine, but
20 that happens later.

21 WITNESS BAILEY: Thank you.

22 MS. QUINN: Thank you, Dr. Bailey.

23 BY MS. QUINN:

24 Q. Do you recall the statement in this WHO

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1 document, also on Page 5, "Studies
2 investigating whether magnetic" --

3 *[Court reporter interruption.]*

4 MS. QUINN: Oh, I'm sorry. I'm
5 sorry. I'm nervous.

6 WITNESS BAILEY: Excuse me. When you
7 call out text, could you say where it is on the
8 page, because it's hard to locate them and
9 follow along with you as you read?

10 MS. QUINN: That helpful?

11 WITNESS BAILEY: Yes.

12 MS. QUINN: Great. I meant to do
13 that before.

14 BY MS. QUINN:

15 Q. Do you recall the statement in this WHO
16 document, also on Page 5, "Studies
17 investigating whether magnetic fields affect
18 sleep quality have reported inconsistent
19 results." "Inconsistent results" would mean
20 that some studies show an association while
21 others do not, correct?

22 A. (Bailey) That's correct.

23 Q. Thank you. Would you agree that diminished
24 sleep quality potentially caused by exposure to

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1 increased magnetic field levels could also have
2 a detrimental impact on the safety of those
3 residing close to such magnetic field levels?

4 A. (Bailey) If magnetic fields did have such an
5 effect, --

6 Q. Okay. Great.

7 A. (Bailey) -- it would be of concern.

8 Q. Thank you. Do you agree that there is the
9 statement in the WHO publication on Pages 8 and
10 9, which says "There is some evidence for
11 increased risk of miscarriage associated with
12 maternal magnetic field exposure"?

13 A. (Bailey) Yes.

14 Q. Thank you. This is Exhibit 5. Are you
15 familiar with data that have found an
16 association between residential electromagnetic
17 field exposure and childhood obesity?

18 A. (Bailey) Yes.

19 Q. Are you familiar with data that have identified
20 an association between maternal extremely low
21 magnetic field exposure during pregnancy and
22 the risk of asthma in their offspring?

23 A. (Bailey) Yes.

24 Q. Would you agree that the International Agency

[WITNESS PANEL: Johnson~Bailey~Bell]

1 for Research in Cancer has classified
2 electromagnetic fields as possibly carcinogenic
3 to humans? I believe we covered this
4 yesterday.

5 A. (Bailey) Yes.

6 Q. Thank you. The document on the screen is my
7 Exhibit 6. It's a medical journal article, by
8 Ahlbom, *et al*, published in 2000. I trust you
9 are familiar with the scientific analysis of
10 magnetic fields in childhood leukemia reported
11 by Ahlbom?

12 A. (Bailey) Yes.

13 Q. Is it the case that this study analyzes data
14 from nine pooled studies, studies conducted in
15 the U.S.A., Canada, the U.K., and several
16 northern European countries, collectively
17 representing 3,247 cases of childhood leukemia
18 and over 10,000 controls?

19 A. (Bailey) Yes.

20 Q. So, in Table 2 -- I'm sorry. My mistake. Not
21 Table 2, Table 3. Would you agree that the
22 range of relative risks reported in the
23 individual studies for acute lymphocytic
24 leukemia with exposure to greater than or equal

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1 to 0.4 microtesla was between more than one and
2 a half times to almost seven times the risk of
3 children not exposed to EMF?

4 A. (Bailey) Which column are you looking at?

5 Q. The one that's highlighted on the screen.

6 A. (Bailey) Okay.

7 Q. Relative risks for greater than or equal to 0.4
8 microtesla. We have "1.65", and the highest
9 being --

10 A. (Bailey) I see "6.21".

11 Q. Hang on. Okay.

12 A. (Bailey) Indeed. And after each of those
13 numbers gives what's called the "confidence
14 interval".

15 Q. Right.

16 A. (Bailey) And, so, in the case of "6.21", the
17 confidence interval ranges from an odds ratio
18 of 0.68, which would -- which is called a
19 negative association, and that would suggest
20 that magnetic fields, if there was a causal
21 relationship, would be protective. On the
22 other hand, "56.59" indicates a higher odds
23 ratio.

24 Q. But, because it's still within that confidence

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1 interval range, it's still possible that the
2 relative risk could be six times that of the
3 unexposed cases, yes?

4 A. (Bailey) The odds ratio would be six times
5 greater.

6 Q. Okay. Do you agree that Ahlbom had concluded,
7 after conducting his meta analysis of these
8 nine studies, that a statistically significant
9 relative risk of two, that is twice the risk,
10 exist for children with residential exposure to
11 EMF greater than or equal to 0.4 microtesla?

12 A. (Bailey) Yes.

13 Q. I trust you're familiar with this study,
14 another pooled analysis of magnetic fields in
15 childhood leukemia, conducted also in 2000, or
16 reported in 2000, by Greenland, *et al*, for the
17 childhood leukemia and EMF study group?

18 A. (Bailey) Yes. One of my former colleagues is
19 an author of this study.

20 Q. Lovely. Is it true that this analysis looked
21 at 15 cases, representing 2,078 childhood
22 leukemia cases and 5,516 controls?

23 A. (Bailey) I believe my recollection was 12. But
24 it's a large number of studies, yes.

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1 Q. Okay. Well, they started with many more, and
2 then they sort of ratcheted back based on
3 different criteria.

4 Is it also true that the conclusion drawn
5 from this pooled analysis was that little or no
6 association of fields below 0.3 microtesla, but
7 all studies, with cases and controls, in the
8 greater than 0.3 category exhibited positive
9 associations that is an increased risk? Is
10 that their conclusion?

11 A. (Bailey) One moment please. No, I would not
12 agree with that. And, if I turn to Table 5,
13 gives an example, where it gives the results of
14 the calculations of the odds ratio.

15 Q. Uh-huh.

16 A. (Bailey) And, if you examine the estimates,
17 let's say, for instance, at greater than 0.3
18 microtesla, if those numbers, at the confidence
19 intervals at the right, if the lower confidence
20 interval is below 1.0, then that association
21 cannot be statistically differentiated --

22 Q. Right. Yes. You covered that.

23 A. (Bailey) -- from no association. And, so,
24 there's only -- I see, in this table, I only

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1 see two studies, the first two, Coghill and
2 Dockerty, in which the lower confidence
3 interval is greater than 1.0.

4 Q. But, in every single study, the odds ratio is
5 greater than 1.0. So, it's pretty consistent
6 from study to study, is that correct?

7 A. (Bailey) There is a apparent consistency in
8 these results, yes.

9 Q. Great. Thank you. This is another study
10 published by Draper in 2005. Are there
11 magnetic fields associated with the AC portion
12 of the proposed Northern Pass that exceed the
13 0.3 microtesla?

14 A. (Bailey) Yes.

15 Q. And are there magnetic fields associated with
16 the AC portion of the proposed Northern Pass
17 Project that exceed the 0.4 microtesla level?

18 A. (Bailey) Yes.

19 Q. Can you please describe where these magnetic
20 field levels exist?

21 A. (Bailey) I think Dr. Johnson, since he did the
22 calculations, can give you that summary.

23 Q. Okay. I'm sorry. I'll ask that to Dr. Johnson
24 then, please.

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1 A. (Johnson) If you're talking beyond the edge of
2 the right-of-way, it would be, if you're close
3 to the edge of the right-of-way, because these
4 levels would decrease with distance, but are we
5 looking at just the AC section or the entire
6 line route?

7 Q. Just the AC portion please.

8 A. (Johnson) Just the AC portion?

9 Q. Uh-huh.

10 A. (Johnson) At the edge of the right-of-way or
11 beyond, for all the sections along the AC only
12 portion, S1-1 through S1-20, there would be a
13 certain distance as you go out away from the
14 right-of-way that would be exceeding or above
15 that 0.4 microtesla range. If you want to look
16 at it in milligauss, which is used in the
17 report, simply multiply by -- or, actually,
18 divide the report levels by 10, that gives you
19 the microtesla equivalent. So, if we have 40
20 milligauss, that's 4 microtesla. Anything
21 above 4 milligauss would be equivalent to being
22 above 0.4 microtesla.

23 Q. While we're conversing, Dr. Johnson, I think
24 I'll just ask you a couple questions and shift

[WITNESS PANEL: Johnson~Bailey~Bell]

1 from Dr. Bailey for a second. This is my
2 Exhibit 25. And, on the topic which you were
3 just talking, is there a reason why the Table
4 A-4 that's in Appendix 38 is expressed in
5 milligauss and not microtesla, when all of the
6 scientific guideline documents or most of the
7 guideline documents, and all of the medical
8 literature around EMF exposure in leukemia are
9 all expressed in microtesla?

10 A. (Johnson) There's no particular reason. In
11 general, though, in the United States,
12 milligauss and gauss have generally been used
13 to describe EMF or magnetic field.

14 Q. But, when you're thinking about health effects
15 and potential risk to populations related to
16 exposure to EMF, would it not be easier to draw
17 those conclusions when looking at the
18 information in the same measurement unit?

19 A. (Bailey) Scientists use and interconvert terms
20 all the time. We use inches, feet, and yards
21 and interconvert them. And, in North
22 America, --

23 Q. Yes. But we're pretty familiar with those
24 forms of measurement.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Bailey) In North America, for instance, the
2 standards in Florida and New York are specified
3 in milligauss, and not in microtesla.

4 Q. Okay.

5 A. (Bailey) In general, studies that are published
6 in Europe use microtesla units, and studies
7 published in the U.S. use milligauss units.

8 Q. So, if we look at the converted table that I
9 provided in Exhibit 25, and you look at the
10 post-Project levels along the AC portion of the
11 Project, I would say, with the exclusion of
12 perhaps two, pretty much all of the magnetic
13 fields, at a distance of 300 feet from the edge
14 of the right-of-way, exceed the 0.3 microtesla.
15 Not so much the 0.4, but medical studies
16 indicate some risk around the 0.3 microtesla
17 level as well. So, it's true that the magnetic
18 fields that are associated with the Project
19 would approach --

20 CHAIRMAN HONIGBERG: Whoa. Ms.
21 Quinn, this sounds an awful lot like you
22 testifying.

23 MS. QUINN: I'm sorry. I'm trying to
24 get to the question.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 CHAIRMAN HONIGBERG: Well, but you're
2 making a bunch of statements that I think are
3 based on what you pulled up on your screen.

4 MS. QUINN: Yes.

5 CHAIRMAN HONIGBERG: Do you want to
6 establish what's on the screen?

7 MS. QUINN: I'm sorry.

8 CHAIRMAN HONIGBERG: Because it might
9 help all of us understand where you're going to
10 end up with the question.

11 MS. QUINN: Sure. So, this table is
12 a complete conversion of the table that's in
13 Appendix 38 of the Applicant's Application,
14 Exhibit 1. That all of the magnetic fields
15 along the Project in the Application are
16 expressed in milligauss, and this table
17 represents the conversion of those levels to
18 microtesla, for a better frame of reference for
19 the magnetic fields that are discussed in the
20 medical literature and in some of the
21 scientific guidelines.

22 CHAIRMAN HONIGBERG: And the screen
23 that you have -- or, the page that you have on
24 the screens doesn't have headings.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 MS. QUINN: Well, --

2 CHAIRMAN HONIGBERG: I know the
3 headings are about five pages before.

4 MS. QUINN: Right.

5 CHAIRMAN HONIGBERG: You probably
6 know what they are.

7 MS. QUINN: This is a complete
8 replication of the table as it exists in the
9 Application. And, actually, in the
10 Application, when you go page-by-page, it
11 doesn't have the headings either.

12 CHAIRMAN HONIGBERG: I understand
13 that. But tell us or help yourself get on the
14 same page as Dr. Johnson, so that he's going to
15 be able to answer your questions without having
16 to ask you for a lot of clarifications.

17 MS. QUINN: Okay.

18 BY MS. QUINN:

19 Q. So, this middle column is the center of the --
20 where the towers are, correct, Dr. Johnson?
21 That middle column --

22 MR. ROTH: You need the microphone.

23 BY MS. QUINN:

24 Q. The middle column --

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 WITNESS JOHNSON: We lost the
2 computer.

3 CHAIRMAN HONIGBERG: Hang on. Off
4 the record.

5 *[Brief pause.]*

6 BY MS. QUINN:

7 Q. So, this middle column, where every single
8 level is higher than the 0.4 microtesla, every
9 single one of these all along the line, these
10 are all the maximum, which is the centerline of
11 the Northern Pass Project proposed, correct?

12 A. (Bailey) True.

13 Q. Then, if you move to the column on either side
14 of that middle column, that's the negative and
15 positive edge of the right-of-way.

16 A. (Johnson) Yes. What you have done here is
17 basically taken the pages in Appendix 38, in
18 Table A-4, Pages A-13 through whatever the end
19 is, I think A-21.

20 Q. Uh-huh.

21 A. (Johnson) If you take all of those numbers that
22 are presented in the tables in Appendix 38,
23 simply divide by 10, --

24 Q. Right.

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Johnson) -- you get what's reproduced here.

2 Q. Right. That's the conversion factor for
3 milligauss to microtesla?

4 A. (Johnson) Correct.

5 Q. Okay. So, if you look at the AC portion
6 segments represented in this table, which are
7 S-1 to S-20 -- 1-20, post-project ratings,
8 pretty much, the ones that exceed 0.3 -- or,
9 actually, the ones that are highlighted exceed
10 0.4, there are some additional ones that exceed
11 0.3, if you want to have a slightly more
12 generous consideration, but pretty much all of
13 them exceed the 0.4 microtesla level. Is that
14 not correct?

15 A. (Johnson) That's correct. As shown in the
16 table, they will continue to decrease as you go
17 further away from the line.

18 Q. Right. Okay. I'm going to stick with the EMF
19 for right now. And, so, I would like to please
20 shift back to Dr. Bailey.

21 Would you agree that there are many health
22 issues, Dr. Bailey, for which the scientific
23 data regarding the safety of exposure of
24 humans, and children in particular, to

[WITNESS PANEL: Johnson~Bailey~Bell]

1 increased levels of electromagnetic fields are
2 inadequate or insufficient?

3 A. (Bailey) Yes. There are some areas that the
4 evidence was judged inadequate to determine if
5 there was any health risk.

6 Q. Right. Are you familiar with the concept
7 referred to as the "precautionary principle",
8 Dr. Bailey?

9 A. (Bailey) Yes.

10 Q. Thank you. On the screen is a publication that
11 was provided for the European Union from the
12 United Nations Educational, Scientific &
13 Cultural Organization. It provides a variety
14 of definitions for the "precautionary
15 principle". One of which was adopted by the
16 EU. And, as you can see here, it reads: "The
17 precautionary principle applies where
18 scientific evidence is insufficient,
19 inconclusive or uncertain, and where
20 preliminary scientific evaluation indicates
21 that there are reasonable grounds for concern
22 that the potentially dangerous effects on the
23 environment, human, animal or plant health may
24 be inconsistent with the high level of

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1 protection chosen by the EU." Does it not?

2 A. (Bailey) That's what it states.

3 Q. Would you agree that the World Health
4 Organization, in its report of 2007, entitled
5 "Extremely Low Frequency Fields", which we were
6 looking at earlier, also invokes the
7 precautionary principle in the section entitled
8 "Protective Measures", where it states that
9 "when there are" -- "Where there are
10 uncertainties about the potential health risk
11 an agent poses for society, precautionary
12 measures may be warranted in order to ensure
13 the appropriate protection of the public and
14 workers"?

15 A. (Bailey) Yes.

16 Q. And that that would relate to the precautionary
17 principle, right?

18 A. (Bailey) Yes.

19 Q. Thank you. I just have a couple of questions
20 for you, Dr. Johnson, on the audible noise
21 issue. Are you familiar with the World Health
22 Organization's recommendations for setting
23 limits on community noise?

24 A. (Johnson) If -- do you have a specific

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1 document?

2 Q. Sure.

3 A. (Johnson) I'm aware of their nighttime and
4 suggested levels.

5 MS. QUINN: My apologies to the
6 Committee. This document, the World Health
7 Organization Report on Community Noise I
8 thought was part of my exhibits. I'll submit
9 it as an amendment to the exhibit list.

10 CHAIRMAN HONIGBERG: But you're
11 showing him something right now. What you just
12 said is what you're about to show him, you
13 thought was going to be an exhibit, you thought
14 you had made it an exhibit, but you're going to
15 do it later?

16 MS. QUINN: That's correct.

17 CHAIRMAN HONIGBERG: Okay.

18 MS. QUINN: Yes. It's a WHO
19 document.

20 CHAIRMAN HONIGBERG: Understood.

21 ***(Exhibit AD-N-ABTR 26 reserved)***

22 BY MS. QUINN:

23 Q. So, in this document, I'm sorry, for some
24 reason it won't let me highlight just one

[WITNESS PANEL: Johnson~Bailey~Bell]

1 passage. So, I apologize. But the first full
2 paragraph on this document, on this page of the
3 document states "For a good night's sleep, the
4 equivalent sound level should not exceed 30 dBA
5 for continuous background noise, and individual
6 noise events exceeding 45 dBA should be
7 avoided." Right?

8 A. (Johnson) That's correct. That's the beginning
9 sentence of that first full paragraph shown
10 there.

11 Q. Subsequent to that, the WHO recommended setting
12 night noise limits to 40 decibels. Is that
13 correct?

14 A. (Johnson) That's correct, as shown.

15 Q. Are you familiar with the reported health
16 effects of excess noise, particularly in
17 relationship to nighttime noise?

18 A. (Johnson) I would say, probably in a general
19 sense, yes.

20 Q. Are you aware that, in this European Commission
21 News Alert, that it states "There is strong
22 evidence that night noise causes increased
23 heart rate, arousal, changes in sleep stage,
24 awakening, and the use of medicine"?

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1 A. (Johnson) I believe it discusses those at
2 certain levels of noise, yes.

3 Q. Are you aware that there is limited evidence
4 that night noise is related to hypertension,
5 heart attacks, depression, changes in hormone
6 levels, fatigue, and accidents?

7 A. (Johnson) At certain levels, yes.

8 Q. Are you aware that elderly people, pregnant
9 women, those with ill health, and shift workers
10 are at greater risk of experiencing negative
11 impacts from nighttime noise?

12 A. (Johnson) Yes. I believe it discusses that.
13 And that was the purpose of this 40 dB average
14 annual nighttime limit.

15 Q. All right. Are you aware that that elderly
16 housing complex, Sherburne Woods, I think you
17 must be by now, is located 35 feet from the
18 right-of-way?

19 A. (Johnson) Yes. That's been indicated.

20 Q. Great. Referring to Table A-6, in the Appendix
21 38 of the Application, Applicant Exhibit 1, the
22 "median audible noise levels". Would you agree
23 that it is possible that, if there were a
24 sustained rainstorm, without wind, or snowfall,

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1 that continuous noise levels could exceed the
2 WHO recommended limits?

3 A. (Johnson) It would have to extend every night,
4 since they talk about a 40 dB average annual
5 nighttime limit of 40 dB, to reach that level
6 you would have to have nine hours per night for
7 every night of the year, and heavy rain.

8 Q. Okay. Is it not possible that, if foul weather
9 causing the generation of audible noise were a
10 steady, quiet snowfall, without wind, or heavy
11 mist, there would be no masking of the noise
12 associated with the AC line as was posited in
13 the Application?

14 A. (Johnson) There would still be some minimal
15 background noise. What level of masking would
16 be impossible to determine without a specific
17 case.

18 Q. Great. Just one last question, to Dr. Bailey
19 first. Dr. Bailey, I, in a prior professional
20 stage of my life, was a pediatric oncology
21 nurse at the National Cancer Institute, in
22 Bethesda, Maryland. And I'm curious if you
23 have had any personal experience with children
24 experiencing the detrimental effects of acute

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1 lymphocytic leukemia?

2 A. (Bailey) Actually, I have two very close family
3 friends whose children have had ALL.

4 Q. Okay. And, Dr. Johnson, have you any personal
5 experience with anyone suffering from ALL?

6 A. (Johnson) It's been several years ago, but one
7 of our friends out in New England had a child,
8 yes.

9 MS. QUINN: Okay. Thank you. I'm
10 all set.

11 CHAIRMAN HONIGBERG: All right.
12 Circling back, Mr. Thompson?

13 MR. THOMPSON: Yes.

14 CHAIRMAN HONIGBERG: Anybody here
15 from NEPGA today?

16 *[No indication given.]*

17 CHAIRMAN HONIGBERG: Mr. Baker, are
18 you going to have questions?

19 MR. BAKER: I don't plan any
20 questions. Thank you, Mr. Chairman.

21 MR. THOMPSON: Good morning. My name
22 is Brad Thompson. I'm the spokesman for
23 Intervenor Group 1-North, I believe we're
24 called, of abutters and non-abutters of the

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1 Towns of Pittsburg, Clarksville, and
2 Stewartstown.

3 Most of my comments and questions
4 will be directed at you, Mr. Bell. And,
5 Mr. Bailey and Mr. Johnson, if you want to
6 chime in at any point with input would be
7 welcomed. But, pretty much, you can relax.

8 WITNESS BAILEY: Thank you, sir.

9 BY MR. THOMPSON:

10 Q. Speaking of relaxing, last night, when I was
11 watching the Celtics get beat, I supplemented
12 that entertainment by doing some research on
13 acoustical sounds. And it was pretty exciting.
14 The one interesting quote I had, from a
15 document called "Noise and Noise Measurements",
16 was the simple statement "Sound, there's sound
17 and there's unwanted sound, and unwanted sound
18 is noise."

19 And I was impressed, Mr. Bell, with
20 your -- when asked in your prefiled testimony
21 what the purpose of your testimony was, and you
22 mentioned three parts. The first part was
23 "conduct baseline sound surveys along the
24 Project route"; second thing was "develop

[WITNESS PANEL: Johnson~Bailey~Bell]

1 acoustical design goals" for the three
2 substations; and the third thing "reviewed
3 construction noise impacts". So, you got the
4 message that there's a difference between sound
5 and unwanted sound. Did a good job of defining
6 it. Congratulations.

7 Noise measurement, your first job was
8 to -- was to document the existing noise
9 situation at I think it was 15 different
10 locations across the route, is that correct?

11 A. (Bell) I believe it was 17.

12 Q. Okay. And how did you do that? What equipment
13 or you went about doing it? From reading, I
14 understand you had stationary equipment out
15 there, and then a short-term handheld maybe.
16 Go ahead.

17 A. (Bell) For the most part, the survey along the
18 route was conducted as observed measurements
19 with handheld equipment. And "handheld" is
20 sort of a colloquialism, it isn't actually
21 hand-held. The equipment is mounted on a
22 tripod and you observe it.

23 The survey consisted of short-duration
24 20-minute samples during selected time

[WITNESS PANEL: Johnson~Bailey~Bell]

1 intervals to assess typical daytime background
2 sound levels in the -- seasonally, in a
3 foliated season, the winter, and a defoliated
4 season, the summer. And a nighttime survey to
5 generally assess typical lowest background
6 sound levels that would occur when there's lack
7 of transportation activity, typically, one of
8 the major sources of background noise.

9 Q. One of the locations you did was 333 Wiswell
10 Road, in Clarksville. It seemed like you used
11 the word "sensitive receptors". Is that
12 another word for residence or business places
13 or something where people would be occupying?

14 A. (Bell) That's correct.

15 Q. Okay. Thank you. So, I'm correct in the
16 definition of "sound" versus "noise", that if
17 you're sitting at 333 Wiswell Road, you got
18 birds chirping or the wind blowing through the
19 balsam and fir would be "sound". But, if,
20 let's say, a dump truck went driving by, that
21 would be "noise"?

22 A. (Bell) It's a subjective evaluation.

23 Q. You use the standards of -- sometime yesterday,
24 the standard of 29 dBA, which stands for

[WITNESS PANEL: Johnson~Bailey~Bell]

1 decibels, correct, "dBA"?

2 A. (Bell) "dBA", A-weighted decibels, correct.

3 Q. Yes. In your prefiled testimony, on Page 8,

4 you talk about -- you mention that there's

5 no -- I think it's Page 8 -- in New Hampshire,

6 or in the location of our power line

7 construction up here, there is "no Federal or

8 State regulations", Page 8 of 8, Line 10 and

9 11. That leads me to have to ask you, in other

10 places, like, for instance, Massachusetts,

11 where you're from, or maybe Connecticut or New

12 York, are there standards in Federal or State

13 regulations for noise?

14 A. (Bell) In the State of Massachusetts, there is

15 a regulation for noise, which is interpreted by

16 the Department of Environmental Protection.

17 And they provide a policy as to what would be a

18 violation of that regulation.

19 Q. And the violation would be a case of the

20 difference between what the noise situation is

21 before the -- before the lines went up, for

22 instance, and what the dBA average would be

23 afterwards?

24 A. (Bell) In the State of Connecticut -- in the

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1 State of Massachusetts, the basis is -- well,
2 the State regulation is based on an incremental
3 increase, correct, above background.

4 Q. Also, on Page 8 of 8 of your testimony, Lines
5 11, 12, and 13, you mentioned "In the Antrim
6 Wind case, the SEC", which I assume is the Site
7 Evaluation Committee, "relied on the 2009 World
8 Health Organization Guidelines establishing a
9 level of 45 dBA." Is that fairly common, 45?
10 I know we were talking yesterday you mentioned
11 "29 dBAs".

12 A. (Bell) The 45 dBA and 40 dBA limits that are
13 established or guidelines that are established
14 by the WHO are consistent with many regulations
15 that I have seen.

16 Q. Okay. Mostly, I just wanted to try to
17 understand what the process was and the reason
18 for going through this process. And it's an
19 existing condition with the noise that's out
20 there. And it's just a matter of, I assume
21 what you're trying to establish, that the
22 noise -- possible noises coming off the lines
23 in different weather conditions would still be
24 well within an acceptable range by certain

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 standards that have been established?

2 A. (Bell) I'm sorry. I'm not sure what your
3 question is.

4 Q. The question, from all of this process, the
5 bottom line is that we're going to be within
6 acceptable standards of the dBA noise
7 conditions after the power line is built?

8 A. (Bell) That's correct.

9 Q. Yes. Yesterday, moving to a slightly separate
10 subject, but still noise, you made the
11 statement that you "have a great deal of
12 experience with construction sites". You've
13 been on construction sites and understand the
14 noise that comes from a construction site?

15 A. (Bell) That's correct.

16 Q. My concern is with what I call "excessive noise
17 production" from construction. And you're
18 willing to make the statement, and I think have
19 in your prefiled testimony, Page 8 of 8, Lines
20 22-24, the question: "What is your opinion
21 regarding construction noise?" And you said
22 "It is my opinion that if protocols are
23 observed, sound produced by construction of the
24 Project will not have an appreciable impact at

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1 sensitive receptors." Which "at sensitive
2 receptors" would be where people are there that
3 would hear it. Do you still stand by that
4 statement?

5 A. (Bell) I do.

6 Q. You're aware of the magnitude of the
7 construction, 192 miles?

8 A. (Bell) I am.

9 Q. You're aware of 49 HDD installations, that
10 require a continuous set up of construction
11 from two to five weeks at each one, according
12 to -- as testified by professionals from the
13 Applicant construction crew. Involve setting
14 up at the job site and involve a crane to
15 unload and move stuff around, involve an
16 excavator, involve different stages of drilling
17 and reaming, mixer pumps mixing bentonite.
18 This is two to five weeks, times 49 locations,
19 are you --

20 A. (Bell) I am aware of that.

21 MR. NEEDLEMAN: Mr. Chair?

22 BY MR. THOMPSON:

23 Q. And you're --

24 CHAIRMAN HONIGBERG: Hang on, Mr.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 Thompson. Yes, Mr. Needleman?

2 MR. NEEDLEMAN: I'm just going to
3 object, because I'm not entirely certain all
4 those characterizations are correct. But, to
5 the extent that Mr. Bell can answer, that's
6 fine.

7 CHAIRMAN HONIGBERG: Okay.

8 Mr. Thompson, you may proceed.

9 MR. THOMPSON: Thank you.

10 BY MR. THOMPSON:

11 Q. Dump trucks, every bit of excavated material
12 for 60 miles has to be hauled off in dump
13 trucks.

14 CHAIRMAN HONIGBERG: Is that a
15 question?

16 BY MR. THOMPSON:

17 Q. Are you aware?

18 CHAIRMAN HONIGBERG: So, the question
19 is "are you aware that" --

20 MR. THOMPSON: Yes.

21 BY MR. THOMPSON:

22 Q. You're aware of the magnitude of what's going
23 to happen there with dump trucks hauling all
24 that material off?

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Bell) I am.

2 MR. NEEDLEMAN: Again, same
3 objection.

4 BY MR. THOMPSON:

5 Q. You ever heard of a "Jake Brake"?

6 A. (Bell) Yes, I have.

7 Q. Very popular in the North Country to protect
8 the brakes of trucks. Let's take a step back
9 for a minute and talk -- and let's see. On
10 here I've got a -- I have a graph that kind of
11 shows different equipment and the projected
12 dBAs that they give off when they're operating.
13 I'd like to just put this up.

14 MR. THOMPSON: This is something that
15 I have not put a number on yet, but intend to.
16 Is there an issue with that?

17 CHAIRMAN HONIGBERG: Not yet. Sounds
18 like -- you want to use the ELMO for this?

19 MR. THOMPSON: The ELMO.

20 BY MR. THOMPSON:

21 Q. What I'd just like to show on the graph is
22 two-thirds of the way down the page, and it
23 shows a number of different operations. And
24 the lower pictures show a payload, a

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1 lawnmower, a grinder, a skill saw, and would be
2 a chainsaw. A chainsaw is at 110 decibels.
3 Payloader is at 85. My question to you is,
4 dump truck probably in the same area as a
5 payloader at 85. Would you call that
6 "excessive"?

7 A. (Bell) I'm sorry, but the nomograph or the
8 chart that you're looking at here is missing a
9 very important piece of information.

10 Q. And what would that be?

11 A. (Bell) The distance you are from -- the
12 distance from the source to the -- for those
13 levels. The chainsaw perhaps is 110 decibels
14 measured three feet from the chainsaw. I don't
15 know. I don't know what the distances are
16 given there.

17 Q. Makes sense.

18 A. (Bell) And, you know, the farther away you get
19 away from a source, the quieter it gets.

20 Q. Right. What -- so, it all depends on where the
21 sensitive receptor is, in respect to where the
22 noise is being made?

23 A. (Bell) Distance is certainly one of the more
24 significant factors in assessing a noise

[WITNESS PANEL: Johnson~Bailey~Bell]

1 impact. That's correct.

2 Q. I'm not quite sure how to follow up with that,
3 except that I have a great concern that there's
4 a large amount of noise that's going to be
5 produced.

6 Let's move to another step, which is the
7 excavation of ledge. There's two ways -- two
8 clear-cut ways to go about it. One is ram
9 hoeing, which is a hydraulic hoe with a ram and
10 you chatter away at the thing. And the second
11 one is blasting. Again, your concern is going
12 to be the distance away from these activities.
13 And I would have to take a stand that, at a
14 considerable distance, the noise is very
15 noticeable. Can you agree with that, with
16 blasting or backhoe ramming?

17 A. (Bell) Hoe ramming is a relatively loud noise
18 source. So that, yes, you would -- you need to
19 be farther away from it for it to drop down.

20 MR. THOMPSON: Page 28 of part of the
21 Application book, I have hard copy Volume I,
22 I'm not sure how that equates to, Mr. Chairman,
23 in terms of Appendix.

24 CHAIRMAN HONIGBERG: Me neither. Why

[WITNESS PANEL: Johnson~Bailey~Bell]

1 don't you describe what it is and we'll find
2 it.

3 MR. THOMPSON: It's an application
4 describing blasting and a lot of the other
5 activities in the Application.

6 CHAIRMAN HONIGBERG: Off the record.

7 *[Off-the-record discussion*
8 *ensued.]*

9 BY MR. THOMPSON:

10 Q. My questions and my point here is it talks
11 about blasting in the bottom, the bottom, where
12 I've scribbled around a lot and circled the
13 word "blasting". And it's talking somewhat
14 about foundations, but, in general, it's
15 referencing blasting to the point that it says
16 "small volume", and "blasting activity will be
17 limited to small volumes of material", and then
18 below it, "only small charges are required".

19 My question is, if they use small charges
20 and go easy on the blasting, is that less
21 noise? Do you know?

22 A. (Bell) The noise produced by blasting
23 activities is it partially involves many other
24 factors besides the size of the charge.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 Q. Uh-huh.

2 A. (Bell) However, often there's a
3 misunderstanding between, you know, production
4 blasting at a quarry or a large facility to
5 remove large amounts of materials, versus
6 blasting activities for removing/breaking up
7 small boulders and stuff like that, where blast
8 mats and controls are applied.

9 In most cases, my experience has been that
10 construction-related blasting, similar to
11 what's being described here, is a relatively
12 benign noise source. It's more of a thump that
13 occurs once, and it's over.

14 Q. True. Once and it's over. But once times many
15 times is really an issue. We've had testimony
16 that, and I've read --

17 MR. WALKER: Mr. Chairman, I'm going
18 to object to this. He's testifying at this
19 point.

20 CHAIRMAN HONIGBERG: Yes. And I
21 could give him a little leeway, if it's setup
22 to a question.

23 MR. THOMPSON: Yes. I understand
24 that. I'll work better.

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1 CHAIRMAN HONIGBERG: Mr. Thompson,
2 you and Mr. Bell are working pretty well
3 together. So, keep --

4 MR. THOMPSON: He's a nice guy.
5 Good.

6 BY MR. THOMPSON:

7 Q. You refer -- I'd like to refer back to the fact
8 that the concentration of your work is to try
9 to be where sensitive receptors are located.
10 In other words, people are living or located or
11 doing whatever they're doing. Most are along a
12 side of a road, and that happens to be, am I
13 correct, where, in the case of the underground
14 construction in Stewartstown and Clarksville is
15 buried under a road. My point being, and tell
16 me if I'm wrong, that the construction is
17 occurring right next to homes as you travel
18 these ways?

19 A. (Bell) That is a correct statement.

20 Q. So, that would lead me to be able to say that
21 all of this activity is in close proximity to
22 the residents and businesses in those two
23 towns.

24 A. (Bell) In areas where there are residences

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1 abutting the road. Similarly, they're noise
2 exposures to common traffic are also elevated.

3 Q. Yes. Well, in the same respect, when you did
4 your studies on the -- on the 17 different
5 locations, you picked homes that were right
6 near the road also, I would assume?

7 A. (Bell) We tried to pick times, especially the
8 nighttime surveys, when there wasn't traffic,
9 when construction wouldn't be occurring. We
10 tried to make that relationship there.

11 Q. Where the natural condition, acoustical
12 environment existed?

13 A. (Bell) Yes.

14 Q. Yes. Which is what you're trying to -- what
15 you're trying to measure as the beginning of
16 your study, before construction occurred?

17 A. (Bell) That's correct.

18 Q. Correct. So, in response, am I somewhat safe
19 in responding to your comment that it all
20 depends on how close you are to where the
21 noise -- to the noise being created that my --
22 my question would be, aren't, in fact, those
23 people pretty darn close, because they live in
24 the -- the ones that we're worried about are

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1 the ones that live in homes right next to the
2 road where the construction is.

3 A. (Bell) Well, your first statement was that
4 distance was the -- sort of implied that
5 distance is the only factor, and it's not.
6 There's the type of noise being generated, the
7 level of the noise from the activities, those
8 are other factors as well. And I'm sorry, I've
9 forgotten sort of the second part of your
10 question or statement there.

11 Q. So did I. It happens. But I know it was
12 important.

13 Part of my exploration last night was, in
14 reading up on acoustical sound, I happened to
15 visit your website. And I was impressed with
16 the fact that there's quite a bit on your
17 company's website having to do with vibrations.
18 Can you explain a little bit about that part of
19 your business and what you do?

20 A. (Bell) For the most part, our vibration work is
21 associated with assessment of sensitive --
22 spaces where sensitive equipment may go.

23 "Vibration-sensitive equipment" meaning MRI,
24 tools for medical, microscopes that hang from

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1 ceilings, photolithography equipment. So, the
2 work would entail us to go out and measure
3 vibration before the installation of equipment
4 to assure that, when it is placed there, that
5 it would operate, you know, that it would meet
6 its design goals and would operate effectively.

7 Q. I'm impressed with some of the recent jobs that
8 you've been involved in, and four or five of
9 them, including the Dana Farber Cancer
10 Institute and Massachusetts General Hospital,
11 are exactly that, hospitals. And I imagine
12 that vibration is a key issue?

13 A. (Bell) That's correct.

14 Q. Let's take a step back to our job sites up in
15 Clarksville and Stewartstown. And heavy noises
16 from heavy equipment, redi-mix trucks moving
17 around delivering many times daily, the dump
18 trucks going up and down the road, cranes
19 coming in to set what will have to be
20 considered pretty huge splice pits, even more
21 so, blasting, and that relates to vibration.
22 Probably the only thing I can think of, and
23 would you agree, that's more drastic, I guess
24 is a good word, than blasting would be an

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1 earthquake, in terms of vibration of the earth?
2 Can you think of anything else that's
3 extreme --

4 A. (Bell) Well, I think there's, again, proximity
5 to a source and the activity that occurs could
6 generate vibration levels that are --

7 Q. Uh-huh.

8 A. (Bell) That I do not necessarily agree with
9 your characterization, would be the easiest
10 thing to say.

11 Q. Certainly, even a controlled small volume
12 dynamite going off, blast, blasting ledge, is
13 going to cause vibrations in the ground?

14 A. (Bell) That's correct.

15 Q. Correct?

16 A. (Bell) Yes.

17 Q. Does that have the potential to damage stuff,
18 things that might be buried under the ground?
19 Water lines? Veins of water? Springs?

20 A. (Bell) This is a much better question to be
21 directed to the construction teams. But that
22 my experience with blasting is is that there's
23 included with it includes monitoring and
24 assurances so that the damage is not produced

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1 by blasting activities.

2 Q. Could you repeat that?

3 A. (Bell) That the design of the blasting, the
4 size of charges, the controls are in place to
5 make sure that the blasting is generally
6 controlled, so that damage does not occur.
7 There are --

8 Q. So, it's part of the --

9 A. (Bell) When blasting occurs, there are
10 reconnaissance of surveys of the areas, and
11 distance and proximity is considered, so the
12 charges and designs that -- again, probably
13 speaking a little out of turn here, and you
14 would be better in talking to the blasting --
15 or, to the construction teams.

16 Q. That probably can be stated that the larger the
17 blast, the more potential there is for movement
18 of that ground, depending on how big a blast or
19 dynamite they want to put in.

20 MR. THOMPSON: Okay. That's all I
21 have. Thank you.

22 WITNESS BELL: Thank you.

23 CHAIRMAN HONIGBERG: Is anybody hear
24 from Whitefield/Dalton/Bethlehem abutters?

[WITNESS PANEL: Johnson~Bailey~Bell]

1 Mr. Van Houten?

2 *[No indication given.]*

3 CHAIRMAN HONIGBERG: Mr. Palmer?

4 While he's coming up, is Ms. Lee here? I don't
5 see her.

6 *[No indication given.]*

7 CHAIRMAN HONIGBERG: For the
8 Deerfield abutters, who is going to be asking
9 questions? Ms. Bradbury.

10 Mr. Palmer, you may proceed.

11 MR. PALMER: Thank you, Mr. Chair.
12 Good morning. My name is Walter Palmer. I'm a
13 spokesperson for the Intervenor Group of
14 Abutting Property Owners from Bethlehem to
15 Plymouth. We are abutting property owners
16 along the underground portion of the proposed
17 Project.

18 BY MR. PALMER:

19 Q. I wanted to first speak with Dr. Bailey quickly
20 about some points that were raised in testimony
21 yesterday. I believe you touched on the
22 question of risk perception and risk
23 communication with regard to EMF. And the
24 point that you made is that, because of a

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1 failure in good risk communication, risk
2 perception with regard to EMF, it's probably
3 worse than it is warranted by the scientific
4 data. Is that correct?

5 A. (Bailey) I don't think that the scientific data
6 have been oftentimes clearly communicated to
7 populations by agencies, yes.

8 Q. Okay. So, because of a failure in that
9 communication, risk perception is probably
10 greater than is warranted. Was that the point
11 that you were making?

12 A. (Bailey) Yes. From a scientific perspective,
13 yes.

14 MR. WARD: Microphone.

15 CHAIRMAN HONIGBERG: Off the record.

16 *[Brief off-the-record discussion*
17 *ensued.]*

18 BY MR. PALMER:

19 Q. Okay. So, even given the fairly troubling
20 scientific evidence which was brought out
21 earlier today and yesterday about the potential
22 risks of EMF to human health, the public
23 perception of potential EMF risk is actually
24 greater than is warranted by this fairly

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1 troubling scientific data. Is that what --
2 would you agree with that?

3 A. (Bailey) There are some people that, you know,
4 have accurately perceived what the consensus of
5 the scientific research is, and there are other
6 people who perhaps may not have consulted those
7 sources and looked elsewhere. So, I would
8 expect there's a variety of opinions in the
9 population.

10 Q. Okay. So, you're backing away from your
11 earlier statement that "public perception is
12 probably worse than is warranted by scientific
13 data"?

14 A. (Bailey) You know, it depends upon -- I mean,
15 the public is a large spectrum. And there's
16 some people that may have concerns that are not
17 consistent with the scientific evidence, and
18 there are other people who do not.

19 Q. All right. I may be straying into a topic area
20 that neither you or Dr. Johnson are conversant
21 in, but it is the topic area of public
22 perception of EMF that I wanted to ask about
23 just quickly. Have either of you studied the
24 risk -- I mean, the issue of EMF risk

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1 perception, and also the phenomenon known as
2 "EMF cancerphobia" or "EMF stigmatization of
3 properties", because of the fear of EMF? Have
4 you looked into these areas?

5 A. (Bailey) I have not done any studies in these
6 areas.

7 A. (Johnson) No. I have not specifically looked
8 at this. I'm aware that there are concerns out
9 there. We try and -- or, I try and present the
10 information as I see it and I understand it.

11 Q. Okay. So, I may be asking these questions of
12 the wrong people, and I'll probably wait till
13 later with other witnesses. But what you're
14 saying is that neither one of you are familiar
15 with the body of studies showing dramatic
16 declines in property values of properties
17 abutting transmission installations as a result
18 of EMF cancerphobia or EMF stigmatization of
19 properties? Neither one of you are familiar
20 with those types of studies then?

21 A. (Bailey) That's not our area of research.

22 Q. Okay. I'll leave it at that then. Thank you.
23 I wanted to go now into noise, questions of
24 noise. And most of these questions would be

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1 directed at Dr. Bell.

2 A. (Bell) It's "Mr. Bell".

3 Q. Mr. Bell, sorry. Yesterday, you brought out
4 the point that your understanding and
5 assumption for some of your analysis was that
6 the Project construction in the underground
7 portion of the route would probably be moving
8 along at roughly a rate of 20 feet to 100 feet
9 per day, is that right?

10 A. (Bell) That was information that was provided
11 during my testimony, yes.

12 Q. Okay. But, I mean, this is really the case in
13 ideal situations, where everything is clear and
14 straight and smooth, and there are no problems.
15 But there are going to be a lot of areas in the
16 underground portion of the Project where
17 construction will not be moving at that rate.
18 Is that correct?

19 A. (Bell) I can't speak to that at all.

20 Q. Well, for example, as was mentioned earlier
21 today, the horizontal directional drilling
22 sites, that process involves drilling a hole, a
23 preliminary hole, going back in and drilling a
24 secondary wire hole, pulling in cable, pulling

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1 cable through, etcetera. So, basically,
2 without going into any great detail, these
3 hydrological -- these horizontal directional
4 drilling sites are going to involve
5 construction for weeks and weeks. Would you
6 find that surprising if I -- would you disagree
7 with that statement?

8 A. (Bell) I not only don't find it surprising, I
9 indicated that there would be sites like this
10 in my testimony, --

11 Q. Okay.

12 A. (Bell) -- my prefiled testimony.

13 Q. All right. So, there will be places,
14 including, I would represent, on my farm,
15 locations where receptors are going to be
16 subject to construction noise for weeks at a
17 time, and possibly for an entire construction
18 season or even more than one construction
19 season.

20 Now, in your -- the study, how much did
21 you focus on the underground route or were
22 you -- had you been informed that the Project
23 was going to be adopting this underground
24 portion of the route when you were conducting

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1 your study?

2 MR. WALKER: Mr. Chairman, I think
3 Mr. Bell was asked this extensively yesterday
4 and answered it.

5 CHAIRMAN HONIGBERG: You are correct.
6 Mr. Palmer.

7 BY MR. PALMER:

8 Q. Okay. If I remember the answer yesterday
9 correctly then, your response was that you were
10 not aware of the underground portion of the
11 route?

12 A. (Bell) At the time of my study, yes.

13 Q. I'm sorry?

14 A. (Bell) At the time of the study, I was not.

15 Q. At the time of the study, right. Okay. So,
16 fair enough. So, then, you were not able to
17 assess some of the potential construction noise
18 impacts that would have occurred during -- in
19 the installation of an underground project.

20 I wanted to turn to, specifically, two
21 sites in the underground route, two areas in
22 the underground route that I am particularly
23 concerned about. And those are the small towns
24 in which the Project right now proposes to

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1 install underground cable right down the main
2 streets of these small towns. And that's in
3 Franconia and Plymouth. Are you familiar with
4 those two areas?

5 A. (Bell) In general terms, yes. In general, yes.

6 Q. Have you visited those towns? I'm sorry?

7 A. (Bell) Over the course of my life, I have.
8 Somewhere along the line I've been in both,
9 yes.

10 Q. Okay. All right. So, just if I can describe
11 them to you quickly. These are small towns,
12 very busy little North Country towns.
13 Plymouth, more so than Franconia, in which
14 there are residences and businesses lining the
15 street, as you might expect on the main street
16 of a town. There are schools and other
17 facilities, there are retirement homes,
18 *etcetera*, fairly close to the construction
19 route.

20 In Plymouth, in particular, there actually
21 are buildings on both sides of the road which
22 create, even though you would never probably
23 refer to Plymouth as a "city", these
24 buildings --

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1 MR. NEEDLEMAN: Mr. Chairman, we're
2 going to object. This is testimony at this
3 point.

4 CHAIRMAN HONIGBERG: Yes.

5 Mr. Palmer, what do you want to know?

6 BY MR. PALMER:

7 Q. Okay. My question is, are you familiar with
8 the fact that there are urban canyon -- an
9 urban canyon type of situation in Plymouth,
10 with buildings on both sides of the road,
11 which, as I understand, could cause
12 reverberation and an amplification of
13 construction noise?

14 A. (Bell) I'm sorry. I've never heard the term
15 "urban canyon" before. So, I'm sorry. But I
16 presume what you're discussing is that there's
17 buildings on both sides of the street?

18 Q. Yes. Right.

19 A. (Bell) Reverberation effects are generally not
20 significant amplifiers, particularly in an
21 environment like this, where there is still
22 plenty of space for sound to propagate. So, I
23 wouldn't anticipate any significant
24 amplifications or buildup of acoustic energy

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1 during construction activities in these types
2 of areas.

3 Q. Okay. But another issue with these two areas,
4 are you aware of the fact, I don't know how
5 much information you've been provided about
6 these two areas, but are you aware of the fact
7 that in both places there is a lot of
8 infrastructure under the roads, and therefore
9 it's going to be impossible for construction to
10 move along at 20 to 100 feet per day. In fact,
11 they're going to be working around a lot of
12 existing -- excuse me -- existing
13 infrastructure that's already under the roads?

14 A. (Bell) I'm sorry. I can't answer today.

15 Q. Okay. So, basically, did you -- again, these
16 may be questions that were asked yesterday, but
17 did you --

18 CHAIRMAN HONIGBERG: I think Attorney
19 Saffo went through with him a ton of things --

20 MR. PALMER: Right.

21 CHAIRMAN HONIGBERG: -- that he
22 doesn't know, because it's not his job to know
23 about that underground portion.

24 MR. PALMER: Okay.

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1 CHAIRMAN HONIGBERG: Are there things
2 that she didn't cover yesterday that you want
3 to cover today?

4 MR. PALMER: No. I'll just skip over
5 all my questions then and just come to my final
6 question.

7 BY MR. PALMER:

8 Q. Which is, given the limitations of your study,
9 or, basically, the lack of your study of the
10 underground portion of the route, would you say
11 that there really is no basis for your
12 conclusion, on Page 8 of your prefiled
13 testimony, that there's no impact of
14 construction, at least in the underground
15 portion of the route? There's no impact of
16 construction noise at least in the underground
17 portion of the route?

18 A. (Bell) I maintain or I stand by my opinion in
19 that I have a lot of experience with
20 construction activities for multiple, with
21 proximity to hospitals, buildings, all sorts of
22 construction activities. And I am confident
23 that there are means and methods to find a
24 symbiosis between construction and activity

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1 adjunct to it.

2 Q. But you didn't model, for example, the decibel
3 levels inside of a shop on the main street of
4 Plymouth, and whether or not it would be
5 possible to carry on a conversation over the
6 construction noise?

7 A. (Bell) There would be no basis to create a
8 model, since we don't know exactly the
9 activities that are occurring.

10 Q. So, I mean, a detailed impact assessment was
11 not actually conducted, is what you're saying?

12 A. (Bell) At this point, no.

13 Q. Bringing me back to my question is, is there
14 any basis for your conclusion, at least in
15 these -- this underground portion, is there any
16 basis for your conclusion that there's going to
17 be no impact?

18 A. (Bell) The basis for my conclusion is my
19 professional experience with over 27 years of
20 working in this field.

21 Q. Okay. Thank you. So, do you understand how
22 this leads back to the point that I raised
23 earlier with Mr. Quinlan, which is the
24 selection of this underground portion of the

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1 route was apparently done very precipitously
2 and without the benefit of appropriate study of
3 the underground route?

4 MR. NEEDLEMAN: Objection.

5 CHAIRMAN HONIGBERG: Sustained.

6 MR. PALMER: I'm sorry. What is the
7 basis for the objection?

8 CHAIRMAN HONIGBERG: Mr. Needleman.

9 MR. NEEDLEMAN: First of all, it's
10 testimony. Second of all, we've been over
11 this. Third of all, this is not the witness to
12 speak to that issue.

13 CHAIRMAN HONIGBERG: Would you have
14 added that it was argumentative as well?

15 MR. NEEDLEMAN: Yes.

16 CHAIRMAN HONIGBERG: So, pick a
17 ground, Mr. Palmer.

18 MR. PALMER: All right. Okay. All
19 right.

20 MR. PAPPAS: Mr. Chairman, I have
21 point.

22 CHAIRMAN HONIGBERG: Mr. Pappas.

23 MR. PAPPAS: I have a question. This
24 panel was presented by Attorney Walker, and not

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1 Attorney Needleman. So, are we going to allow
2 any lawyer to make objections?

3 CHAIRMAN HONIGBERG: I understand the
4 concern. And I was probably going to have
5 someone raise that off the record.

6 MR. PAPPAS: Okay.

7 CHAIRMAN HONIGBERG: Typically, we
8 would expect the attorney who presents a
9 witness to be the one speaking during that
10 testimony. I understand that occasionally
11 Attorney Needleman just can't resist, and I
12 know that Attorney Roth occasionally has the
13 same "just can't resist" urge.

14 As long as it doesn't get
15 overwhelming, we're probably not going to call
16 people on it. But I appreciate the reminder.
17 And I'm sure that Attorney Needleman and
18 Attorney Walker appreciate it as well.

19 MR. PAPPAS: That's fine. And I
20 didn't object previously, because it was a
21 limited amount. But I just wanted a
22 clarification.

23 CHAIRMAN HONIGBERG: Okay.

24 MR. PAPPAS: Thanks.

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1 CHAIRMAN HONIGBERG: Mr. Palmer.

2 MR. PALMER: Okay. I apologize

3 for --

4 CHAIRMAN HONIGBERG: You don't need

5 to apologize.

6 MR. PALMER: Okay.

7 CHAIRMAN HONIGBERG: Seriously, you

8 don't.

9 MR. PALMER: Okay. All right. I'll

10 just ask another question here.

11 BY MR. PALMER:

12 Q. Can you definitively state that during the
13 operation phase of the Project, after
14 construction is completed, there will be no
15 noise emanating from the underground portion of
16 the Project?

17 A. (Bell) The term "no noise" is a very broad or
18 very defined statement. So, I would qualify
19 that with there would be no -- noise would not
20 create an impact that would be adverse, be
21 perceived as an adverse impact.

22 Q. I would like to ask you specifically about the
23 proposed splice vaults, which have been
24 described as "30 feet long, 8 feet high, and

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1 8 feet wide vault", installed under the road,
2 with the cable running through and being
3 spliced at some point inside that vault.

4 A. (Bell) The vault itself contains a very large
5 lid on it also.

6 Q. I'm sorry?

7 A. (Bell) It's a contained --

8 Q. It is contained, yes.

9 A. (Bell) It is a contained space.

10 Q. Yes. It has a concrete lid. But it does
11 have -- I mean, the entrance to the vault is a
12 manhole cover, just a thin manhole cover. So,
13 I guess my question is, do you think there's
14 any potential for noise emanating from those
15 vaults, given that they might act as an echo
16 chamber and might amplify any splice-related
17 noises from the cable underneath?

18 A. (Bell) No.

19 Q. There's no chance?

20 A. (Bell) No chance.

21 Q. So, you're saying that, if I stood on that
22 manhole cover, I would have zero decibels of
23 noise coming from underneath from the cable?

24 MR. WALKER: Objection. Asked and

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1 answered.

2 CHAIRMAN HONIGBERG: He can answer.

3 BY THE WITNESS:

4 A. (Bell) "Zero decibels" would not be the right
5 term. But I do not anticipate that you would
6 perceive noise coming from that vault.

7 BY MR. PALMER:

8 Q. I'm sorry. I couldn't hear you.

9 A. (Bell) I do not perceive that -- I do not
10 anticipate that you would perceive noise coming
11 from that vault, "emanating from that vault",
12 as you described it.

13 Q. Okay. So, Northern Pass is on record, as of
14 today, stating that there will be no
15 perceptible noise coming from the vault -- from
16 the underground portion of the --

17 CHAIRMAN HONIGBERG: That objection
18 is sustained.

19 MR. PALMER: I thought that was what
20 we were doing here, is testifying to --

21 CHAIRMAN HONIGBERG: And he's said
22 it. Do you want him to say it a third time?

23 MR. PALMER: Okay.

24 CHAIRMAN HONIGBERG: I mean, really,

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1 do you want him to say it a third time?

2 MR. PALMER: I want to establish
3 that --

4 CHAIRMAN HONIGBERG: So, Northern
5 Pass is on record that, if he's standing on the
6 manhole cover, your testimony is that he won't
7 perceive noise from the vault, correct?

8 WITNESS BELL: Correct.

9 CHAIRMAN HONIGBERG: Do you have any
10 other questions, Mr. Palmer?

11 MR. PALMER: No. No further
12 questions at this time.

13 CHAIRMAN HONIGBERG: Ms. Lee is still
14 not here, correct?

15 *[No indication given.]*

16 CHAIRMAN HONIGBERG: Ms. Bradbury.
17 While she's coming up, is Mr. Bilodeau here or
18 anybody representing him?

19 *[No indication given.]*

20 CHAIRMAN HONIGBERG: I don't think
21 so. Anybody from the Sugar Hill Historical
22 Museum, and the other groups associated with
23 them, who wants to ask questions?

24 *[No indication given.]*

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1 CHAIRMAN HONIGBERG: All right. How
2 about the Pemigewasset River Local Advisory
3 Committee, any questions for these witnesses?

4 *[No indication given.]*

5 CHAIRMAN HONIGBERG: All right. Ms.
6 Bradbury, you may proceed.

7 MS. BRADBURY: Thank you, Mr.
8 Chairman. My questions are primarily for
9 Mr. Bell. Mr. Bell, are you ready?

10 WITNESS BELL: Yes, I am.

11 BY MS. BRADBURY:

12 Q. You would agree that the current substation in
13 Deerfield, that the equipment there causes a
14 significant level of noise?

15 A. (Bell) I would not.

16 Q. You would not. Okay. Well, would you agree
17 that it has been a source of complaint from the
18 nearby residents?

19 A. (Bell) I have read testimony to that effect,
20 yes.

21 Q. The sensitive receptors. Okay. I'd like to
22 put up, Jeanne, Deerfield Abutter 14 on ELMO.
23 Could you read the -- I don't know if you can
24 actually see it on your screen, can you read

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1 the yellow highlighted language from Ms.
2 Duchano, who lives on Bean Hill Road, in
3 Deerfield, near the substation.

4 A. (Bell) "The volume of the noise produced by the
5 existing substation is already extremely
6 annoying. Although I am aware that Eversource
7 has stated it intends to construct sound
8 barriers, it has done nothing to alleviate the
9 current noise problem which has existed for
10 years. Since the substation will be doubled in
11 size, it will certainly no longer be a peaceful
12 place to be."

13 Q. Okay. Thank you. Were you in attendance at
14 any of the public hearings in Deerfield?

15 A. (Bell) No.

16 Q. No? Okay. So, you did not hear the residents
17 stand up to speak about the noise, since you
18 weren't there. You're aware that Deerfield is
19 rural, right?

20 A. (Bell) I am.

21 Q. And do you agree that, given Deerfield's
22 remote, rural setting, that the noise level at
23 the substation is more noticeable than it would
24 be in an urban setting? You're in the country?

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1 A. (Bell) I would agree with that.

2 Q. Okay. Thanks. Okay. In terms of the -- well,
3 before I move on, I'd also like to put up
4 Deerfield Abutter 11, from Ms. Cruikshank, who
5 lives on Perry Road, in Deerfield, near the
6 substation. And if you would just read the
7 first sentence in the second paragraph, we'd be
8 grateful?

9 A. (Bell) "Additionally the hum from the
10 transformer station is already troublesome."

11 Q. Okay. And, Jeanne, would you put up Deerfield
12 Abutter 12. And if you would --

13 MR. WALKER: Mr. Chairman, I'm going
14 to object to that. If there's a question
15 related to these exhibits, then I understand
16 it. But she's just having him read particular
17 exhibits, with no foundation.

18 CHAIRMAN HONIGBERG: Ms. Bradbury.

19 MS. BRADBURY: I will ask him a
20 question.

21 BY MS. BRADBURY:

22 Q. So, you noted earlier that you do not believe
23 that the substation in Deerfield, as it
24 currently exists, is -- what was it? -- it was

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1 caused significant level of noise, is that
2 correct?

3 A. (Bell) That's correct.

4 Q. Okay. So, you then would disagree with Mr.
5 Malette, when he states in his letter about
6 the existing substation? Could you read that
7 part now.

8 CHAIRMAN HONIGBERG: Hang on, Mr.
9 Bell. Mr. Whitley?

10 MR. WHITLEY: Is there any way that
11 the ELMO can be blown up a little bit? It's
12 just difficult to see.

13 *(Short pause.)*

14 MR. WHITLEY: That's much better.
15 Thank you.

16 CHAIRMAN HONIGBERG: Sorry to break
17 your flow, Ms. Bradbury. Mr. Bell, do you
18 remember the question?

19 WITNESS BELL: I'm sorry, I don't.

20 CHAIRMAN HONIGBERG: Nor do I. Ms.
21 Bradbury, why don't you take a run at it again.

22 BY MS. BRADBURY:

23 Q. My question is whether you, given your
24 statement that you don't believe it's that

[WITNESS PANEL: Johnson~Bailey~Bell]

1 noisy, that you would disagree with the
2 statement made by Mr. Mallette, who lives on
3 Nottingham Road, in Deerfield? And if you
4 would be so kind as to read his statement
5 there.

6 A. (Bell) "Somewhere where I don't have to listen
7 to the hum of voltage."

8 Q. Okay. Thank you. All right. So, for the
9 proposed --

10 CHAIRMAN HONIGBERG: Well, wait.
11 Wait.

12 MS. BRADBURY: Yes.

13 CHAIRMAN HONIGBERG: So, I don't
14 think there's an answer to the question you
15 asked him, other than "would you please read
16 that."

17 MS. BRADBURY: Oh, sorry. You're
18 right. You're totally right.

19 BY MS. BRADBURY:

20 Q. So, you disagree with him?

21 A. (Bell) I don't disagree that he doesn't want to
22 listen to the hum of voltage. I don't disagree
23 with that. That's his personal position.

24 Q. Well, from the address he provided on the

[WITNESS PANEL: Johnson~Bailey~Bell]

1 letter, you can see that he lives on Nottingham
2 Road, in Deerfield. Correct?

3 A. (Bell) That's correct.

4 Q. And Nottingham Road is in proximity to the
5 existing substation, correct?

6 A. (Bell) That is correct.

7 Q. And that he has had occasion to hear the
8 substation every day during his life there,
9 correct?

10 A. (Bell) That I can't speak to. I don't know
11 that he's heard the substation every day for
12 his entire life there.

13 Q. Okay. All right. So, moving on to the
14 proposed expansion of the Deerfield Substation.
15 The Northern Pass Project calls for a major
16 expansion of that Deerfield Substation, is that
17 correct?

18 A. (Bell) There's an expanded area, yes.

19 Q. Okay. And that expanded area is how big?

20 A. (Bell) I don't have the dimensions.

21 Q. Okay. Does it sound familiar if it was
22 15 acres of clearing? Have you heard? Have
23 you been informed of that by the Northern Pass
24 or the Eversource people?

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1 A. (Bell) I'm sorry, I don't have specifics to
2 that level.

3 Q. Okay. All right. And, so, you don't know
4 that -- anything about the 8-acre expansion --
5 the additional substation that's another 8
6 acres? They didn't tell you that?

7 A. (Bell) I'm aware that there's an expanded area,
8 as I've observed it in terms of the size
9 relative to the other station. But, as to the
10 exact acreage, I would not be able to speak to.

11 Q. Okay. So, I can represent to you that, from
12 reading the portions of the Application that
13 there is proposed an 8-acre new substation next
14 to existing substation. Okay.

15 CHAIRMAN HONIGBERG: Why don't you
16 assume that for the purpose of --

17 WITNESS BELL: I'm fine with that.

18 CHAIRMAN HONIGBERG: Okay.

19 BY MS. BRADBURY:

20 Q. So, the expanded substation will house a
21 greater amount of equipment, correct?

22 A. (Bell) There are several pieces of equipment
23 involved in the facility, yes.

24 Q. Okay. And you would agree that the additional

[WITNESS PANEL: Johnson~Bailey~Bell]

1 equipment in this, assuming it is 8 acres of
2 additional substation, will be a louder source
3 of noise than the current station's equipment,
4 is that correct?

5 A. (Bell) It will not be a louder source of noise
6 than the current station, no.

7 Q. Okay. So, you don't agree with that. So, you
8 don't believe that the neighbors will hear more
9 noise?

10 A. (Bell) We define very, very stringent acoustic
11 design goals for the design of the expanded
12 substation such that the impacts would be
13 minimal. That's correct.

14 Q. Okay. So, are you saying that the increased
15 noise levels would warrant some sort of
16 soundproofing at the expanded substation?

17 A. (Bell) There will be a lot of consideration in
18 the acoustic -- in the design of the substation
19 to minimize off-site sound emission, yes.

20 Q. So, you agree that, at the public hearings,
21 Eversource addressed this? Well, I guess you
22 weren't there.

23 A. (Bell) I was not present.

24 Q. So, I withdraw that question. But you have

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1 been informed by Eversource that soundproofing
2 measures should be used at the expanded
3 substation, right?

4 A. (Bell) There would -- it would be my
5 expectation that there will be significant
6 considerations to the equipment selection,
7 layout, and planning of the facility to control
8 off-site sound emission, to meet the goals that
9 we've specified.

10 Q. Okay. So, is it your understanding that
11 Eversource intends to install soundproofing at
12 the expanded substation?

13 A. (Bell) The term "soundproofing" is too generic
14 for me to agree to, as there's many options for
15 mitigation, that involves equipment selection,
16 equipment layout, placement of buildings.
17 There's many factors. But the design will
18 consider all of those, again, to achieve a very
19 stringent set of acoustic design goals for that
20 facility.

21 Q. Can you tell us which measures will be used at
22 the expanded substation in Deerfield?

23 A. (Bell) I believe it's still in the process of
24 design. No, I cannot.

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1 Q. Okay. So, all right. And do you -- so, if
2 it's in the process of design, at this time you
3 would have to agree that those measures have
4 not been included in the plans yet?

5 A. (Bell) I'm sorry. I'm not aware of what plans
6 are available to you, no.

7 Q. So, you don't know that whether -- that the
8 sound mitigation plans have been included in
9 the Application for the permits?

10 A. (Bell) What I believe has been included in the
11 Application is that the Project will be
12 designed to the acoustic design goals
13 stipulated in my reports.

14 Q. All right. So, would you agree that, without
15 the additional measures, that the sound level
16 will remain unreasonably elevated from the
17 substation?

18 A. (Bell) No.

19 Q. No. Okay. All right. So, I'm moving onto
20 some weather questions. High voltage AC lines
21 cause a louder level --

22 *[Court reporter interruption.]*

23 BY MS. BRADBURY:

24 Q. High voltage AC lines cause a louder level of

[WITNESS PANEL: Johnson~Bailey~Bell]

1 noise than 150 -- 115 kV lines, is that
2 correct?

3 A. (Bell) I think this would be best directed to
4 Dr. Johnson.

5 A. (Johnson) And could you restate the question,
6 because I didn't quite understand.

7 Q. High voltage AC lines, let's say, it's a 345 kV
8 AC line, they are louder than 115 kV AC lines,
9 is that correct?

10 A. (Johnson) Yes. In general, a 115, what I would
11 call a 115 kV transmission line, is fairly
12 quiet both in fair weather and foul weather.

13 Q. Okay.

14 A. (Johnson) And a 345 kV line, or a higher
15 voltage line, 500 kV, will have more noise,
16 generally, in its design, will have more noise
17 associated in foul weather than the lower
18 voltage line.

19 Q. Yes. So, the high voltage AC lines cause
20 louder noise in damp weather, rain, fog, heavy
21 dew, snow, freezing rain, they get loud. Is
22 that correct?

23 A. (Johnson) Yes. As I indicated yesterday, when
24 you have rain drops on the conductor.

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1 Q. Yes. And thank you for that. Are you familiar
2 with the southern New Hampshire UNH weather
3 study that recently came out? Jeanne, could
4 you put the -- actually, if you would -- I've
5 got Page 5 of the Executive Summary there. And
6 if you will -- if you can see bullets 4 and 5,
7 you will -- it wouldn't surprise you then that
8 they have reached a conclusion that there is --
9 there's been an increase in precipitation
10 events in southern New Hampshire, bullets 4 and
11 5 of that?

12 A. (Johnson) I don't see or don't recognize a
13 bullet 4 and 5.

14 Q. Okay. Yes, you're on the wrong page, Jeanne,
15 sorry. The second page there. That's it.

16 MS. BRADBURY: Can everybody see
17 that? Is it legible from the screens?

18 BY MS. BRADBURY:

19 Q. Bullet point -- would you read it. Can you
20 read it from your screen or would you prefer if
21 I read it?

22 A. (Johnson) I can read it.

23 Q. Just 4 and 5.

24 A. (Johnson) Okay. Hang on just a second. Let me

[WITNESS PANEL: Johnson~Bailey~Bell]

1 make sure I get at the right place here.

2 Bullet 4 and 5. Okay. Bullet 4 is "Annual
3 precipitation has increased 12 to 20 percent."

4 Bullet 5 is "Extreme precipitation events have
5 increased across the region. This increase has
6 been dramatic at some sites in southern New
7 Hampshire. The exact of this increase in large
8 precipitation events is evident in the several
9 large floods that have occurred across New
10 Hampshire over the last decade."

11 Q. Thank you. So, in light of that, you would
12 agree that there would be an expected increased
13 level of noise from the HVTL power lines, given
14 that the rain makes them louder?

15 A. (Johnson) From this study, yes. As this study
16 is indicating, if there is a increase in the
17 amount of precipitation and the frequency of
18 those occurrences, then the frequency that you
19 would have the foul weather noise levels would
20 increase.

21 Q. Okay. Thank you. And it would certainly be
22 greater than the noise from the existing 115 kV
23 AC lines, correct?

24 A. (Johnson) As indicated, yes, as is indicated in

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1 the appendices.

2 Q. Okay. Thank you. Thank you. I'm going back
3 to Mr. Bell now. Did you evaluate the sound
4 levels at Bean Hill Road, in Deerfield, and
5 Stevens Hill Road, in Nottingham?

6 A. (Bell) I'm sorry. I don't know those exact
7 locations. Can you point to them on a map for
8 me? Are they listed in --

9 Q. They're on the -- they're on virtually every
10 map that has been produced in respect of
11 Deerfield, both the wetlands and the alteration
12 of terrain. Well, not the road -- not Stevens
13 Hill Road, but Bean Hill Road, yes, I believe.

14 A. (Bell) Let me try to be more specific. With
15 respect to Deerfield, the measurement locations
16 that we conducted were conducted along Cates
17 Road, Nottingham Road, and in the proximity of
18 the substation. And, then, I believe we had
19 one location in Deerfield, which I will check
20 to see about where that was. Hold on just a
21 moment.

22 CHAIRMAN HONIGBERG: Off the record
23 while he's doing that.

24 *[Brief off-the-record discussion*

[WITNESS PANEL: Johnson~Bailey~Bell]

1 *ensued.]*

2 CHAIRMAN HONIGBERG: Mr. Bell, I
3 think now we're ready to go back on the record
4 now.

5 WITNESS BELL: All right.

6 **BY THE WITNESS:**

7 A. (Bell) I don't believe we have taken
8 measurements at those locations.

9 BY MS. BRADBURY:

10 Q. Okay. All right. Well, would you -- would it
11 be accurate to say that, depending on which way
12 the wind is blowing, you might hear more noise
13 from the substation than if it was blowing it
14 away from where you are situated?

15 A. (Bell) Wind itself can be a factor in the
16 propagation of sound over distances.

17 Q. Okay. Thank you. In respect of buildings,
18 would you agree that increased noise levels are
19 problematic where the AC high voltage lines are
20 close to homes or buildings, they're close to
21 where those buildings are?

22 A. (Bell) Based on the data that I've reviewed for
23 this Project, no.

24 Q. So you wouldn't. Okay. Are you -- I know you

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1 must be, at this point, familiar with Sherburne
2 Woods, a senior housing project, located at 1
3 Upham Drive, in Deerfield Center. You're
4 familiar with that?

5 A. (Bell) I am.

6 Q. Okay. Jeanne, can you put up Exhibit 24?
7 Okay. So, you can see the right-of-way there,
8 correct?

9 A. (Bell) I can.

10 Q. And, roughly, just slightly to the left of
11 center, in a circular area, you will see
12 Sherburne Woods, where the old folks live. Do
13 you see that?

14 A. (Bell) I do.

15 Q. And it's right up next to the right-of-way,
16 correct?

17 A. (Bell) Correct.

18 Q. And are you aware that the proposed high
19 voltage line is just an additional 35 feet from
20 the very edge of the right-of-way? They're
21 putting it right on the edge of the
22 right-of-way, very close to it?

23 A. (Bell) That I am aware of that.

24 Q. Okay.

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1 A. (Bell) I think, just to save time here, this
2 might be better directed to Dr. Johnson, if
3 you're going to be discussing noise from the
4 lines.

5 Q. Okay. Jump in. Are you aware of it? That
6 it's close to the edge of the right-of-way?

7 A. (Johnson) For this cross section, yes.

8 Q. Okay. And you can see that there are no trees
9 between their buildings, their homes, and the
10 lines and the towers, where they're proposed to
11 go, correct? I don't have the proposed lines
12 in there. But we agree that it is right on the
13 edge of that -- the southern part of that
14 right-of-way? Actually, that's eastern, but --

15 A. (Johnson) Yes. From the photograph that's
16 shown here, the aerial photo, the one portion
17 of this circular drive, sort of in the
18 middle, --

19 Q. Yes.

20 A. (Johnson) -- right along the edge of the
21 right-of-way, it appears that there's little
22 tree there.

23 Q. And would you agree that Sherburne Woods
24 residents would have a significant noise level

[WITNESS PANEL: Johnson~Bailey~Bell]

1 from the proposed lines, being that they're so
2 close to the right-of-way?

3 A. (Johnson) No. I would not characterize it as
4 "significant". The levels are reported in
5 Appendix 38.

6 Q. Okay. All right. Okay. But we do agree that
7 the 345 kV AC lines are louder than the 115 kV
8 AC lines that are there now?

9 A. (Johnson) In foul weather, yes.

10 Q. Yes. And we are aware also that the -- I'll
11 leave it at that. Okay. I'm just going to ask
12 you some questions about some -- well, we've
13 talked a lot about implanted medical devices.
14 And would you agree that the folks that live at
15 the Sherburne Woods are a fluctuating group of
16 clients that live there? It's changing? It
17 changes all the time?

18 MR. WALKER: Objection.

19 CHAIRMAN HONIGBERG: Grounds?

20 MR. WALKER: She's asking whether
21 he's aware of the fluctuations of the residents
22 at Sherburne Woods. I think that's outside of
23 his knowledge base.

24 CHAIRMAN HONIGBERG: Ms. Bradbury.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 MS. BRADBURY: Yes. It is a senior
2 housing project. And I think it's a very good
3 assumption that they are not always going to be
4 there, because they are old.

5 CHAIRMAN HONIGBERG: Would you like
6 him to assume that --

7 MS. BRADBURY: Yes.

8 CHAIRMAN HONIGBERG: -- for purposes
9 of the next question?

10 MS. BRADBURY: Yes, please. Yes.
11 Okay.

12 BY MS. BRADBURY:

13 Q. So, and that -- also assume that some old
14 people have pacemakers and other implanted
15 medical devices, correct?

16 A. (Johnson) Yes.

17 Q. Okay. And that there is concern that the EMF
18 associated with the AC high voltage lines can
19 impact those devices, like pacemakers and
20 defibrillators?

21 A. (Johnson) Yes. There is concern that, at
22 certain levels, these devices can be impacted
23 by electric and magnetic fields.

24 Q. Okay.

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Johnson) At certain levels.

2 Q. Okay. And we've already -- you've, either Mr.
3 Bell or you, acknowledged that the Sherburne
4 Woods residents live right next to it without
5 the benefit of tree cover, correct?

6 A. (Johnson) Correct.

7 Q. Okay. So, if -- moving away from Sherburne.
8 If you have a road contractor who has an
9 implantable device, that works directly under
10 the lines on, for example, Thurston Pond Road,
11 would you agree that he is at risk of physical
12 harms from working directly under the 345 kV AC
13 lines, right under them?

14 A. (Johnson) For my understanding, if he's within
15 the right-of-way, underneath the line, no, I
16 would not be concerned. Not at these field
17 levels that are projected for these lines.

18 Q. Okay. I have some questions about some
19 meteorological phenomena. Are you aware that
20 meteorologists have confirmed that Mount
21 Washington has roughly 97 inches of rain on
22 average a year, and that Concord has 40.61
23 inches of rain on average per year?

24 MR. WALKER: Objection. Relevance.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 MS. BRADBURY: I'm going to get to
2 that. It relates to noise and --

3 CHAIRMAN HONIGBERG: Okay. You can
4 proceed.

5 MS. BRADBURY: Okay.

6 CHAIRMAN HONIGBERG: So, the question
7 was "are they aware of the numbers at Mount
8 Washington and Concord?"

9 MS. BRADBURY: Right.

10 **BY THE WITNESS:**

11 A. (Johnson) I am not aware specifically of the
12 numbers, no.

13 BY MS. BRADBURY:

14 Q. Okay. But would you be aware that
15 meteorologists attribute that difference to the
16 difference in altitude?

17 A. (Johnson) I would accept that.

18 Q. Okay.

19 A. (Johnson) Yes.

20 Q. Would you agree that the surface onto which
21 rain falls can vary from solid ice, which is
22 very reflective of sound, to a soft snow
23 surface, which is a very good absorber of
24 sound?

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1 A. (Johnson) Yes.

2 Q. Okay. And a wetted surface is also highly
3 reflective of sound? I believe that's what you
4 already told us.

5 A. (Johnson) It can be, yes.

6 Q. Okay. Okay. So, here are the specific
7 questions about that. Now, this goes to Mr.
8 Bell, because you were the one -- you didn't
9 take the measurements, did you, on sound? It
10 was Mr. Bell that took the sound measurements?

11 CHAIRMAN HONIGBERG: Ms. Bradbury,
12 tell you what. Just ask the question.

13 MS. BRADBURY: Okay.

14 CHAIRMAN HONIGBERG: Whoever up there
15 is qualified, --

16 MS. BRADBURY: Okay.

17 CHAIRMAN HONIGBERG: -- or if any of
18 them is, will give you an answer.

19 MS. BRADBURY: Okay.

20 BY MS. BRADBURY:

21 Q. Did you determine whether the sound depended on
22 the altitude of your station?

23 A. (Bell) The measurements we conducted were all
24 generally at 5 feet above ground level.

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 Q. Okay. Did you determine whether the sound that
2 you measured depended on the time of year?

3 A. (Bell) We conducted surveys during both the
4 summer and the winter periods.

5 Q. Okay. And did you find differences based on
6 whether it was summer or winter?

7 A. (Bell) In general, the summer data exhibited
8 higher levels, typically due to other
9 indigenous sources of noise, mainly insects.

10 Q. Uh-huh. Okay. Did you determine whether the
11 sound depended on the time of day when you took
12 the measurements?

13 A. (Bell) We took surveys both during a daytime
14 period, to try to characterize sounds during
15 normal activity when traffic is at its normal
16 patterns, and not -- again, tried to stay away
17 from extremes, such as rush hours, --

18 Q. Uh-huh.

19 A. (Bell) -- and then late at night, when traffic
20 is generally at a minimum.

21 Q. So, are you saying that you stayed away from
22 measuring at night or that you did that?

23 A. (Bell) No, we did.

24 Q. Okay.

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Bell) We purposely conducted at night. That
2 was one of the most important parts of our
3 survey, was to try to conservatively identify
4 the lowest background sound levels that occur
5 in these areas.

6 Q. Did you determine whether the sound levels
7 depended on the underlying surface where you
8 were making the measurements?

9 A. (Bell) The measurements are what they were.
10 They are just data. They are the sound levels
11 that we measured there. They're a function of
12 all the characters around them.

13 Q. And did you --

14 A. (Bell) The traffic on the roads, the surface,
15 the materials, everything, every part of the
16 environment had some influence.

17 Q. So, you recorded what the surface was where you
18 were taking the measurement?

19 A. (Bell) Not in a direct fashion. We have
20 photographs of the measurement locations we
21 could go back and look at. But, in most cases,
22 they were at the edge of roads.

23 Q. Okay. Did you include in your report whether
24 it was raining or snowing when you took the

[WITNESS PANEL: Johnson~Bailey~Bell]

1 measurement?

2 A. (Bell) For all of the measurements that were
3 conducted, observed measurements, we
4 specifically stayed away from periods of high
5 precipitation, simply again to avoid -- avoid
6 contaminating our estimate of lowest background
7 sounds with noise produced by wind and/or
8 precipitation.

9 Q. Okay. So, if you were taking a measurement
10 near a 345 kV AC line or a 115 kV AC line, and
11 it was raining hard, you would expect the noise
12 level to be greater because of what Dr. Johnson
13 has explained to us about why it gets louder
14 when it's raining?

15 A. (Bell) We would expect that background levels
16 would be louder in almost any -- in any
17 location that we measure when there's rain.

18 Q. Okay.

19 A. (Bell) Traffic noise, tire noise increases,
20 rain against the foliage, rain splashing on the
21 ground, all of those factors.

22 Q. Okay. All right. So, did you obtain any
23 measurements that exceeded 40 decibels when you
24 were taking measurements?

[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Bell) Oh. Across the entire route?

2 Q. Yes.

3 A. (Bell) Of the intermittent samples, there's
4 several occurrences of that.

5 Q. Okay.

6 A. (Bell) And, then, during the continuous
7 monitoring, there's significant data to support
8 that it goes above 45.

9 Q. Uh-huh. And what was the weather at the time
10 you took those measurements that were higher
11 than 40 decibels?

12 A. (Bell) On the intermittent measurements, we
13 would have to go back and look at every
14 specific measurement and time, which is --
15 there are tables which do that. But, again,
16 there was no precipitation, as I stated before.
17 The wind speeds were generally below six miles
18 per hour. If we went -- and, again, I'm trying
19 to generalize here. But --

20 Q. So, were you measuring -- you were measuring
21 near the 115 kV AC lines, right?

22 A. (Bell) In some cases.

23 Q. And, so, there was no precip [sic] there when
24 you took those measurements, didn't you say

[WITNESS PANEL: Johnson~Bailey~Bell]

1 that, sir?

2 A. (Bell) That's correct.

3 Q. Okay. Thank you. I have a few more. I'm
4 almost done. A question for Dr. Johnson. Can
5 you confirm for us that you did your EMF
6 calculations placing the Northern Pass
7 transmission line in the center of the
8 right-of-way?

9 A. (Johnson) I would answer that it was within the
10 right-of-way. It wasn't always exactly at the
11 center. So, no. There would be some cross
12 sections, as indicated in the appendices, where
13 it was not at the exact center of the
14 right-of-way.

15 Q. But sometimes it was, correct?

16 A. (Johnson) In general, it was, I know in most of
17 the cross sections, where possible, it was
18 placed more toward the middle or in -- more
19 toward the middle of the right-of-way than
20 toward the edges.

21 Q. Thank you. So, would you agree then that, in
22 Deerfield, with the proposed Northern Pass
23 transmission lines located on the southern edge
24 of the right-of-way, that the EMF levels will

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1 be greater than in the middle of the
2 right-of-way where it's not located, it's going
3 to be on the southern edge?

4 A. (Johnson) You're going to have to try and
5 define that question or make it a little bit
6 more specific.

7 Q. Well, if --

8 A. (Johnson) I mean, if the new -- maybe the
9 easiest way to answer, if the new Northern Pass
10 transmission line, the AC line, is located more
11 toward one edge of the right-of-way or the
12 other, one of the two edges, the fields at the
13 nearest edge of the right-of-way are going to
14 be greater than most, and it depends on the
15 other lines that are on the cross section, but
16 they would be somewhat greater than if that new
17 line was further away from the right-of-way,
18 more toward the middle.

19 Q. Okay. So, you can see there, you still have up
20 on your screen Sherburne Woods?

21 A. (Johnson) Yes.

22 Q. That you can see that they are right up against
23 the right-of-way, correct?

24 A. (Johnson) That development, yes.

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1 Q. And you also are aware that the new 345 kV AC
2 line will be right on the southern edge of
3 that, the lower part of that right-of-way?
4 That's actually east, but it's the lower part
5 of that?

6 A. (Johnson) It would be on the lower part of the
7 right-of-way. I wouldn't characterize it
8 "right on the edge".

9 Q. Okay.

10 A. (Johnson) But it will be more toward that lower
11 side from the middle than in the middle.

12 Q. And it is at those locations where the EMFs
13 would be higher, right under the -- right under
14 the line?

15 A. (Johnson) I'd have to look at the profiles, but
16 I would expect that for the line.

17 MS. BRADBURY: Okay. Thank you very
18 much. That's all I have.

19 CHAIRMAN HONIGBERG: All right.
20 We're going to take our break, and try and come
21 back 25 minutes after 11:00.

22 (Recess taken at 11:11 a.m. and
23 the hearing resumed at 11:25
24 a.m.)

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1 CHAIRMAN HONIGBERG: And I think we
2 confirmed before the break that there were no
3 other intervenors that had questions for this
4 panel. And I think we're ready to have the
5 Committee ask its questions.

6 I think we're going to start with
7 Mr. Wright.

8 DIR. WRIGHT: Thank you, Mr.
9 Chairman. Again, my name is Craig Wright. I
10 serve as the Director of the Air Division for
11 the Department of Environmental Services. I
12 don't know if you guys were in the room when we
13 first introduced ourselves, so...

14 BY DIR. WRIGHT:

15 Q. Dr. Johnson, as somebody in my profession, I'm
16 used to using models to determine environmental
17 outcomes. So, if you don't mind, I'd like to
18 ask you a few questions focusing on magnetic
19 and electric field modeling that you did.

20 A. (Johnson) Okay. Fine.

21 Q. For the purposes of your study, you divided the
22 power -- the Northern Pass line into four
23 general configurations, is that correct?

24 A. (Johnson) I guess it depends on what you mean

[WITNESS PANEL: Johnson~Bailey~Bell]

1 by "four general configurations"?

2 Q. I think you identified areas where there was DC
3 only, DC underground, AC/DC, and only AC.

4 A. (Johnson) Okay. Yes.

5 Q. Okay. So, that's consistent with --

6 A. (Johnson) Yes. Four general characterizations
7 of the line, --

8 Q. Okay.

9 A. (Johnson) -- DC only, underground, --

10 Q. Do you do that because you use certain models
11 for each one of those configurations or the
12 models -- different models get used for
13 different configurations of the line, in terms
14 of AC/DC?

15 A. (Johnson) In this case, for the section that
16 was totally AC, there is one very commonly used
17 model, that's from Bonneville Power
18 Administration for monitoring, measuring or
19 calculating the electric and magnetic fields,
20 the audible noise, radio noise. In the
21 sections of the line where you I had overhead
22 both AC and DC lines, the BPA model does not
23 accommodate DC lines. So, you switch to a
24 model I use from EPRI, that was developed by

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1 EPRI/GE, and takes DC overhead lines, along
2 with AC lines. For the underground
3 configuration, there you're really only looking
4 at the magnetic field. There you could
5 actually use either model and they would give
6 similar -- or, do you give similar results.

7 Q. Okay. So, you basically say you use two
8 different models --

9 A. (Johnson) Two models.

10 Q. -- to model all of the configurations?

11 A. (Johnson) Yes.

12 Q. Okay. And who is Bonneville Power Association?

13 A. (Johnson) They are a -- or, were a government
14 utility administration. They, along with a few
15 other active research groups in the U.S., in
16 the '50s, '60s, and '70s, did a large amount of
17 research and development of modeling techniques
18 to predict electric and magnetic fields,
19 audible noise and radio noise from transmission
20 lines.

21 Q. Okay. Thank you. How long ago were these
22 models developed, do you know?

23 A. (Johnson) The --

24 Q. And I don't mean to speak over you, but really

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1 what I'm interested in, are they periodically
2 updated to reflect new science or new
3 understandings of how these fields may be
4 generated?

5 A. (Johnson) Well, in these cases, both models
6 were developed probably starting back in the
7 late '50s, and took into account information,
8 on like audible noise and radio noise, up
9 through probably the '70s and '80s, when a
10 large amount of studies were done looking at
11 like the 500 kV and 345 kV lines.

12 Other than that, for the electric field
13 and magnetic field, it's basically dependent on
14 first -- what I would call "first principles
15 of physics". So, that's a pretty hard -- what
16 I would call a "hard calculation" of electric
17 and magnetic field. The audible noise and
18 radio noise, since it's a corona statistical
19 phenomena, there you had to depend and it was
20 based on input from a number of measurement
21 studies and papers that were done in the '70s
22 and '80s. The basic physics and the techniques
23 have not really changed since then. So, I
24 think the last periodic look and update was

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1 probably in the '90s.

2 Q. So, is it fair to say there are official
3 versions of the models?

4 A. (Johnson) Yes.

5 Q. Okay. And what you used here was the latest
6 and greatest version?

7 A. (Johnson) The most current available.

8 Q. You would agree with me that, when it comes to
9 modeling, you have a series of input data that
10 goes into the model, obviously?

11 A. (Johnson) Correct.

12 Q. And you would agree that they are critical to
13 the accuracy and validity of the models, in
14 terms of the output, is very critical as to
15 what goes on the input?

16 A. (Johnson) That's correct.

17 Q. Could you describe for me what various inputs
18 go into the models you used?

19 A. (Johnson) The input information consists of, in
20 a broad sense, the geometry of the cross
21 section, basically, the X and Y, or the
22 positions, the coordinates, of the conductors
23 that are going to be on a cross section. And
24 by "cross section", I mean from one edge of the

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1 right-of-way to the other edge of the
2 right-of-way. If you think of standing there,
3 looking up at the line, you would see the
4 position across that corridor of the various
5 conductors.

6 So, you have the coordinates and
7 positioning of those conductors. You have the
8 diameter or the size of each individual
9 conductor or wire that's up there. The voltage
10 that is on that wire is an input variable, the
11 current that's running through it. And, then,
12 in addition to that, you take into conditions
13 of time of year, that's not so -- that really
14 isn't an input for the AC calculations, but it
15 is for the DC, because you'll have some
16 seasonal variation in the amount of corona
17 activity that you'll have on the DC line.
18 That's not the case for an AC line.

19 So, in this case, assumptions that it was
20 going to be during the summer season, when you
21 had the highest level of insect activity,
22 relatively warm, humid conditions. And, then,
23 also generic weather conditions, basically, you
24 look at the fair weather conditions, when

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1 there's no precipitation on the conductors, and
2 foul weather conditions.

3 So, location of conductor, voltage on the
4 conductor, current in the conductor, size of
5 the conductor, and then for conditions of fair
6 and foul weather, and, because of the DC line,
7 heavy insect contamination on the line, which
8 would occur during the summer months.

9 Q. I think I said in your report and in your
10 prefiled testimony that most of the input data
11 was supplied by Northern Pass Transmission?

12 A. (Johnson) Yes.

13 Q. Okay. Do you -- did you do any sort of QA/QC
14 check on that input data?

15 A. (Johnson) Yes. Yes. I reviewed all the data.
16 If, the simplest way to say it, if something
17 looked unusual or out of line, as far as the
18 size of the conductor or the positioning, oh,
19 phasing of the line, that was then sort of
20 double checked or QC'd back with Eversource to
21 see if that was correct or if they had
22 verification of that.

23 Q. Okay. Thank you. I think yesterday somebody
24 nicely described the line can be divided into

[WITNESS PANEL: Johnson~Bailey~Bell]

1 62 segments, and you were able to break it down
2 into 27 representative segments. Is that
3 accurate?

4 A. (Johnson) That sounds about right, yes.

5 Q. So, it's accurate to say that those 27
6 sections, within each one of those sections you
7 contain sufficient consistency on the levels of
8 inputs to the model that it would be
9 representative of all those other sections. Is
10 that an accurate way of stating that?

11 A. (Johnson) Yes. It would be representative
12 where the calculated levels would, for those
13 other sections, would be the same or less.

14 Q. Okay. So, in order to get some things in the
15 certain segments, did you need to make certain
16 worst-case assumptions to get something to fit
17 within a segment?

18 A. (Johnson) Well, the --

19 Q. In other words, could you get -- so, did you
20 have to make -- if you had a choice, you could
21 make some revision to one of the inputs that
22 would be more conservative, in terms of making
23 your calculations, than you were able to bring
24 that into one of those segments?

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1 A. (Johnson) I think the answer to what you're
2 asking is "yes". The type of things that we,
3 in some cases, that you look at the various
4 cross sections, and, in some cases, they're
5 identical, they just occur at a different
6 position along the route. In some cases, only
7 the current that's in the conductor. So, the
8 configuration/geometry stay the same, but the
9 amount of current or the phasing of the voltage
10 on a particular conductor changed -- well, not
11 so much the phasing, but let's say the current
12 changed from one segment to another. If there
13 was not a significant difference, that might be
14 grouped.

15 Q. Okay.

16 A. (Johnson) If the right-of-way, say, changed,
17 but everything else stayed pretty much --
18 stayed the same, but it was just a wider
19 right-of-way, we would then incorporate that
20 right-of-way or that cross section in with a
21 cross section that was similar geometry, but
22 just a narrower, it's a positioning of the
23 lines in reference to each other are all the
24 same, it's just, in one case, you might have a

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1 150-foot right-of-way corridor, but then, in
2 another case, you might have a 200-foot wide
3 corridor.

4 Q. In that example, I think what you're saying is,
5 if you had a 300 -- if everything else was
6 equal, and you had a 300-foot right-of-foot
7 versus a 150-foot right-of-way, --

8 A. (Johnson) You would use the 150.

9 Q. -- you could bring the 300-foot -- you could
10 use the 150-foot to be representative of the
11 300, but not vice versa?

12 A. (Johnson) Right.

13 Q. Okay. There's various lengths represented by
14 each one of your segments. Is there any
15 limitation, in terms of the modeling, as to how
16 long of a section it could be representative --
17 a segment could be representative of?

18 A. (Johnson) No. Because you're basically looking
19 at a two-dimensional situation. Again, it's
20 the geometry of the line as you go across the
21 cross section.

22 Q. Okay. The model results that you -- that you
23 produce are predicted at what elevation above
24 the ground?

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1 A. (Johnson) For the electric and magnetic fields,
2 it's at a basically standard height in the
3 guidelines of roughly 1 meter, or about
4 40 inches above ground, basically waist level.

5 Q. Okay.

6 A. (Johnson) For the audible noise, it's at a
7 height of 5 feet, or 5 feet two inches,
8 roughly considering ear level. And, then,
9 radio noise is at -- I think that's at 1 meter.

10 Q. Okay. So, basically, at 1 meter, that would be
11 generally where --

12 A. (Johnson) Forty inches.

13 Q. -- where a person within the right-of-way or
14 somebody being subject to the frequencies would
15 be?

16 A. (Johnson) Correct.

17 Q. Okay. Under the modeling, you made the
18 assumption, or I think Northern Pass provided
19 to you, your modeling was based on an
20 assumption that the DC lines would operate at
21 1 percent over voltage?

22 A. (Johnson) There were conservative assumptions
23 taken for all the cases, basically, to give the
24 highest levels that might be anticipated. For

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1 the DC line, I think you're correct, it was
2 1 percent. For the voltage on the AC lines, it
3 was 5 percent over the nominal voltage. So,
4 345 would actually be modeled at 5 percent over
5 345 kV.

6 Q. Are those percentages consistent with other
7 models you've done? Is there any standard
8 there?

9 A. (Johnson) Generally, when I do modeling for,
10 and accepted through the industry, for AC
11 lines, the variation could be from nominal
12 voltage generally to about 5 percent over
13 voltage. Other conservative assumptions was we
14 took the line heighth, more or less at the
15 bottom of the sag, where it's close -- the
16 conductor is closest to ground. So, the fields
17 in the other levels, as you go toward the
18 actual structure towers would actually
19 decrease. So, the assumption was long,
20 basically, long, flat lines.

21 Q. Okay. If we were to take your modeling results
22 and go out into the field with measurement
23 equipment, what would you expect to see, in
24 terms of the difference between what was

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1 modeled and what you had measured in the field?

2 A. (Johnson) I would characterize it as "fairly
3 good agreement", particularly for the magnetic
4 field. The electric field is probably going to
5 be highly variable, where it may be less than
6 the conservative assumptions that were modeled,
7 because of the electric field being shielded by
8 trees, shrubs, other objects in and around the
9 area.

10 Also, as you move away from, again, the
11 lowest point in the conductor sag, the levels
12 would decrease, because you're coming closer to
13 the towers and the line height above ground
14 increases.

15 Q. Okay. Are you aware of any recent studies
16 where we may -- where somebody may have looked
17 at doing a modeling analysis and actually doing
18 field measurements?

19 A. (Johnson) I believe, as part of the Merrimack
20 Valley Project, there was modeling results, and
21 there are follow-up measurements being done.
22 That's probably the most recent one I'm aware
23 of.

24 Q. Okay. I'll shift gears a little bit. Dr.

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1 Bailey, I'm looking at your prefiled testimony,
2 on Page 5.

3 A. (Bailey) Yes.

4 Q. On Line 18, and I know this has been mentioned
5 more than once, but there are no currently
6 federal standards available for electric or
7 magnetic fields. Is that accurate?

8 A. (Bailey) That's correct.

9 Q. Okay. I believe yesterday we saw maybe there
10 were some states that had adopted some policies
11 or regulations related to electric fields, is
12 that correct?

13 A. (Bailey) Yes. Several states have.

14 Q. Okay. And in here, you also mention the ICNIRP
15 and the ICES standards that you evaluated
16 against?

17 A. (Bailey) That's correct.

18 Q. How do the standards you evaluated against
19 compare to those standards from those other
20 states, do you know?

21 A. (Bailey) There's two distinctions that I would
22 make. The first is that the standards were
23 developed by ICNIRP and ICES were based upon
24 assessments of the body of evidence and

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1 determining, based upon that health evaluation,
2 what were appropriate exposure limits that
3 would provide adequate protection against
4 established adverse effects. By and large, the
5 standards that have been developed by states
6 have not been developed as a result of a
7 comprehensive risk assessment process.

8 So, for example, in the State of New York,
9 in late 1980s and early 1990's, they did a
10 survey of all of the transmission lines in the
11 state. And they determined from that survey
12 that the maximum field -- magnetic field at the
13 edge of the right-of-way for these lines under
14 a variety of operating conditions would be 200
15 milligauss. And, so, the standard was set so
16 that, if any new transmission lines were
17 constructed in the state, that the field levels
18 would be no higher than from the existing
19 transmission lines, which the highest voltage
20 at that time was 345,000 volts.

21 So, it was not based upon a determination
22 and review of all of the health literature and
23 research. It was based upon maintaining the
24 *status quo*. And a similar procedure was

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1 followed in Florida for setting their
2 standards.

3 Other states have developed standards for
4 electric fields, but not magnetic fields. And,
5 in some cases, there was some review of a
6 potential for annoying micro-shocks as the
7 basis for those electric field standards. In
8 other cases, the number seems to have been
9 pulled out of a hat. So, for instance, in New
10 Jersey, there was an interim guideline that was
11 set of 3 kV per meter at the edge of the
12 right-of-way. And there is absolutely no
13 evidence, it was issued in a press release, and
14 there's no evidence anywhere as to how that
15 number was arrived at or what factors was
16 considered at all.

17 Q. Okay. Continuing on your -- on Page 5 here, on
18 Line Number 29, you're talking about the
19 standards, I believe, that ICNIRP and ICES has
20 established. Is that correct?

21 A. (Bailey) Yes.

22 Q. You use the term here the "acceptable exposure
23 limit" -- or, sorry, "they use a number" --
24 "the number they used to reduce the adverse

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1 effect level to an acceptable exposure level is
2 called a safety factor." Can you describe what
3 a "safety factor" is for me? Or is it, you
4 know, a factor of 2? A factor of 10? A factor
5 of 100? Or --

6 A. (Bailey) Okay. In setting up a standard, the
7 first task is to determine what is the lowest
8 level of exposure where you encounter any
9 adverse effect. Having determined what that
10 adverse effect is and what level of exposure
11 produces that adverse effect, then you want to
12 go and set the exposure, whether it's for the
13 general public or for workers, at a level below
14 that. So, that you -- so, the standard
15 prevents the possibility of having adverse
16 effects.

17 So, for example, in the ICNIRP standard,
18 the guideline for electric fields is 10 kV per
19 meter for occupational exposure. I'm going off
20 the levels that they have at 50-hertz. I have
21 not done the conversion. But -- and then that
22 drops at 50-hertz to 5 kV per meter for the
23 general public. So, that is an example of a
24 two-fold safety factor that was put in there to

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1 account for the fact that the general public in
2 walking around their environment may not be
3 aware of a strong electric field source. And,
4 so, if you were, for instance, working at the
5 utility, and you were working on a high-voltage
6 transmission line and climbing up a tower, you
7 would be aware that you were approaching much
8 closer to a high-voltage source and the
9 electric field would be higher, and you would
10 not be surprised if you perceived that electric
11 field. Something -- though, the concern in the
12 occupational situation is that someone may be
13 distracted from their work and have some
14 secondary accident subsequent to that
15 distraction. So, to lessen this problem of --
16 issue of people being startled or distracted by
17 an exposure, a lower level is set, in this
18 case, for the general public. So, that's an
19 example of the kind of safety factor that's put
20 in. It also covers a range, in the case of
21 magnetic fields, magnetic fields, depending
22 upon the orientation of the field to the body,
23 can induce greater or lesser electric fields
24 within the body. So that the modeling that's

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1 done is to calculate what they would be for the
2 maximum configuration. And, so that, if there
3 was some other local configuration that might
4 enhance the field beyond what had been
5 considered, that that safety factor would take
6 that into account.

7 Q. But there's not a general rule of thumb, it's a
8 factor of two or a factor of 5 or anything like
9 that?

10 A. (Bailey) No. It very much depends upon the
11 amount of the database and how much information
12 is available, and what are the factors that are
13 uncertain.

14 Q. I think just one more question. On Page 14 of
15 your testimony, I believe on the last two
16 lines, you state it's "in [your] judgment, the
17 weight of the scientific evidence clearly
18 supports the conclusion that the Project would
19 not pose an unreasonable adverse effect to
20 public health and public safety." Is that
21 correct?

22 A. (Bailey) Yes.

23 Q. Obviously, we're talking about effects, not
24 only on the edge of the right-of-way, but

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1 within the right-of-way itself, obviously,
2 correct?

3 A. (Bailey) Yes.

4 Q. Obviously, people -- these right-of-ways are
5 not fenced off.

6 A. (Bailey) Right.

7 Q. People recreate within the right-of-way.
8 People hike, hunt, walk within the
9 right-of-way. Does that impact your statement
10 at all?

11 A. (Bailey) No.

12 Q. Okay. I think yesterday, I think it was
13 Attorney Pacik showed us a picture of what
14 appeared -- what was reported to be a
15 playground within the right-of-way. Does that
16 cause you any pause at all?

17 A. (Bailey) No. There are a variety of
18 recreational uses that are -- that are made on
19 the right-of-way. And, you know, I didn't see
20 anything in that picture that would indicate
21 that there was any adverse effect expected for
22 people playing on those structures.

23 Q. All right. I'll shift gears, just a couple
24 questions for Mr. Bell. I know it's already

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1 been discussed a lot about your pre-chosen 17
2 sites for measurements along the corridor.
3 That's right?

4 A. (Bell) There has been a lot of discussion on
5 it, yes.

6 Q. Yes. So, I won't beat it to death. But, at
7 the time you did your study, there was not as
8 much underground portion, and I believe you
9 stated that four of your locations that were
10 originally located would be now underground, is
11 that correct?

12 A. (Bell) That's correct.

13 Q. Okay. If you were redesigning your survey
14 today, would you do anything different in terms
15 of the location of the monitors -- the balance
16 of the monitors across the aboveground portion?

17 A. (Bell) That's hard for me to speculate at this
18 moment. But there was no magic, we didn't say
19 we needed to set it up, we had 17 locations.
20 We took what were representative samples along,
21 in both spatial and geographic -- or, I should
22 say "geographic ranges". So, it's not clear to
23 me that I would make any changes.

24 Q. So, there's not a general rule of thumb, you

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1 want one site for every five miles or anything
2 along those lines?

3 A. (Bell) That wasn't the purpose here, no.

4 Q. Okay. Turning to Page 4 of your prefiled
5 testimony, just a quick question. When you
6 look at the top of Page 4, what you're talking
7 about is the continuous monitoring at your
8 stationary facilities, and then your continuous
9 monitoring at the Project Route Survey. Do you
10 see those two areas?

11 A. *[No verbal response.]*

12 Q. I notice looking at the dates, at the
13 stationary facilities, you conducted the
14 continuous monitoring for seven consecutive
15 days. But, at the Project Route Survey, it
16 looks like you only did it for three days. Is
17 there any reason there's a difference between
18 the amount of time you spent at either one of
19 those locations?

20 A. (Bell) Yes. The goals were different for those
21 types of -- for those measurements. The goals
22 for the continuous measurements at the
23 stationary facilities were associated with
24 establishing absolute lowest background sound

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1 levels that could occur in those areas in order
2 to establish acoustic design goals for the
3 stationary facilities.

4 With respect to the Project Route Survey,
5 the reason for -- these surveys were conducted
6 over several days at a time. There was an
7 individual that actually traversed the route
8 and made these measurements. And so that we
9 installed continuous equipment, more or less to
10 just assess a pattern of acoustic levels on a
11 day-to-day basis during that survey period.
12 Again, not to -- we didn't need a large dataset
13 for establishing acoustic design goals, but
14 only just to characterize the time variation of
15 sound at those -- at that location for just a
16 brief period, generally to see diurnal patterns
17 that occur. Traffic's high, levels go up;
18 traffic drops, levels go down.

19 DIR. WRIGHT: Okay. Thank you. I
20 think I'm all set for the moment, Mr. Chair.

21 CHAIRMAN HONIGBERG: Mr. Oldenburg.

22 MR. OLDENBURG: Thank you, Mr. Chair.

23 For introduction purposes, my name is Bill
24 Oldenburg, Assistant Director of Project

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1 Development at the Department of
2 Transportation. Basically, highway bridge
3 design and construction, that's what I deal
4 with.

5 BY MR. OLDENBURG:

6 Q. So, my first question for Mr. Bell, in your
7 prefiled testimony, under "Construction Noise
8 Impacts", Page 7, make sure I have the right
9 spot. You basically, on Line 27 you begin by
10 saying "However, as a starting point, the
11 following noise abatement measures will apply
12 throughout this project". And there's four
13 bullets there. I'll paraphrase, just to be
14 brief.

15 Basically, the first one is keeping the
16 truck noise within federal regulation limits.
17 So, keeping the trucks within spec. The second
18 bullet is keeping the mufflers on the vehicles.
19 The third one is "majority of the potential
20 noise construction will be performed within
21 daytime hours". Is that really a noise
22 abatement or a noise mitigation?

23 A. (Bell) Well, it's considered -- I look at it as
24 a mit -- well, in terms semantically, I guess

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1 they're similar. But, to me, it's -- the
2 intent of that control or that effect is just
3 to try to minimize impacts when people are most
4 sensitive to noise.

5 Q. That's not going to reduce the noise. It's
6 just going to --

7 A. (Bell) That's correct.

8 Q. -- change when people would hear the noise.

9 A. (Bell) It changes perception to the noise.

10 Q. Then, the third [fourth?] one is communicate
11 with the communities when noisy operations
12 could occur. So, I guess I'd also classify
13 that as not an "abatement" issue, but more of a
14 mitigation, an awareness.

15 And the term that is used is "as a
16 starting point". So, I'm assuming that's the
17 baseline, and that other measures, noise
18 abatement measures are going to come into the
19 future. My interpretation is, maybe during
20 design or construction?

21 A. (Bell) That would be my expectation, yes.

22 Q. All right.

23 A. (Bell) Again, once you establish means and
24 processes, you look at them and see "how will

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1 they impact the community?" And you develop
2 controls as the Project moves forward, as you
3 develop it.

4 Q. Under the "Conclusion" of that same section, so
5 it's Page 8, starts with Line 22. And the
6 question is "What's your opinion regarding
7 construction noise?" And your answer is "In my
8 opinion that, if the protocols are observed,
9 noise produced" -- or, "sound produced by the
10 construction of the Project will not have an
11 appreciable impact at sensitive receptors."
12 When you use the phrase in your opinion "if the
13 protocols are observed", what protocols?

14 A. (Bell) Well, those first two that are listed
15 first, and then more associated with the
16 approach of maintaining communication with the
17 community, and keeping a close contact with
18 them to assess and to understand and to make --
19 work with the community to develop controls as
20 you go. These are processes that you're
21 probably very familiar with.

22 Q. Right. Right. So, really, this is probably
23 more of a question for the construction panel
24 that's going to come forward, because they're

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1 going to know what the other protocols that
2 they plan on using, if there are other
3 protocols?

4 A. (Bell) That's correct.

5 Q. Okay. Thank you. I think my next question is
6 for Dr. Bailey, might be Dr. Johnson, I'm not
7 sure.

8 Any idea when we started in this country
9 using high-voltage transmission lines? I'm
10 seeing a blank stare. I don't know that
11 question either. But, just for the purposes of
12 the question, is it like 100 years? Over 100
13 years?

14 It's not a really important answer, but --

15 A. (Johnson) Actually, a few years ago William
16 Stanley, I'm sorry to digress, but it's --
17 William Stanley, about a 105 years ago,
18 electrified the street lights for Great
19 Barrington, Massachusetts. And that was the
20 first use of AC -- commercial use of AC
21 electricity. And he used a five- or six-mile
22 line to get it from his AC generator to the
23 street lights in Great Barrington. So, right
24 around the turn of the century was really the

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1 advent of AC electricity usage.

2 By "transmission lines", if I now jump up
3 and assume, let's say, about 115 kV
4 transmission lines, off the top of my head, I
5 wanted to say those started coming into use
6 around the 1920s.

7 Q. Okay.

8 A. (Johnson) The 345 kV transmission lines was
9 more the '40s and '50s. Probably more
10 information than you wanted.

11 Q. Well, that was really more. About 100 years.

12 A. (Johnson) Yes.

13 Q. Did we -- was it recognized that there was EMF
14 100 years ago when we started using those
15 lines?

16 A. (Bailey) Yes. And, in fact, I mean, some of
17 the phenomena today that we consider in setting
18 standards for exposures to magnetic fields was
19 discovered in the 1890s. So, there, if you go
20 back to a treatise in that period of time,
21 you'll see pictures of a man standing within a
22 large coil of wire, and that was filled -- the
23 current was very, very large, and they
24 produced -- the observers saw magneto

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1 phosphenes when they were standing within the
2 coil. So, that was -- and that, today, that
3 phenomena of magneto phosphenes is a replicable
4 biological response to extremely strong
5 magnetic fields that is the basis for the
6 setting of the ICNIRP and IEEE standards. So,
7 that's going back into the previous century
8 that that observation was made and has been
9 followed through since.

10 Q. So, at what point did people or studies or
11 started to get concerned about health effects
12 of EMF?

13 A. (Bailey) I mean, in terms of working around
14 electricity, there's -- from the very early
15 days, there was concern about strictly
16 electrical safety. In the 1960s, at a large
17 international convention, some Russian
18 engineers came to a meeting and talked about
19 symptoms in some of their workforce that they
20 had attributed to electric fields exposure of
21 workers in high-voltage switch stations of
22 their 500 kV lines. And that sort of surprised
23 people. And utility people went back, and both
24 in Europe and the U.S., began doing surveys to

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1 find out if any of their employees had similar
2 kinds of complaints. And, then, a number of
3 years later the Russians came back and said
4 "Sorry, fellas. We determined that this had to
5 do with the ingestion of alcohol, the symptoms
6 that were reported, and not to the electric
7 fields." But that started people looking at
8 the question about whether exposure to electric
9 and magnetic fields might have health effects.

10 And, then, in 1979, Ed Leeper and Nancy
11 Wertheimer published a study in which they
12 looked at the proximity of almost entirely
13 distribution lines, and some substations, to
14 communities. And what they observed is that
15 there seemed to be more transformers outside
16 the residences and distribution lines outside
17 residences that appeared to be capable of
18 carrying greater load than were around the
19 houses of children without cancer.

20 And so that -- they looked for several
21 explanations for this. Another explanation
22 that they considered at the time was that there
23 appeared to be a relation -- a association
24 between high traffic density and childhood

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1 cancers. And, so, they put forth these two
2 sort of hypotheses to explain the statistical
3 association. And then, from there, lots of
4 research came out in subsequent decades.

5 Q. So, really, this has been researched and been
6 an issue, talked about, with no clear consensus
7 for 40 or 50 years, correct?

8 A. (Bailey) Well, I think there's been a lot of
9 research on this. The WHO has commented that
10 there's been more research on EMF than most of
11 the 50,000 or so chemicals that have in
12 everyday use. We were talking about
13 standard-setting before and safety factors.
14 And oftentimes, for chemicals, there are no
15 human studies at all, and we're trying to set a
16 safe exposure level for humans based solely
17 upon animal studies. So, here, in the case of
18 EMF, we have a wealth of animal studies and we
19 also have a wealth of human studies. So, we
20 have a lot of information.

21 What has emerged from this research is not
22 that we have found that electric or magnetic
23 fields cause health effects, but the
24 recognition that everyone in our modern

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1 environment has exposures, whether or not they
2 live near a transmission line or not.

3 So, when a national survey was done of
4 magnetic fields in residences, the source that
5 most often produced the highest levels in
6 residences was not outside power lines, but it
7 was currents flowing on wiring and water pipes
8 in the home.

9 So, there's been a lot of research done.
10 A lot of scientific panels have reviewed this
11 evidence. And none of these panels have
12 concluded that there is a causal relationship.
13 But, because, since everybody is exposed, we
14 want to make absolutely sure that even the
15 smallest possibility of a risk is not
16 overlooked. Because even a very tiny risk,
17 given the numbers of people exposed in the
18 world, would be a important public health
19 impact.

20 Q. And that's why a lot of these studies that were
21 shown had statements in them or guidelines for
22 "limiting exposure to EMF". I noticed in a
23 couple of them that were shown there was, you
24 know, guidelines or recommendations on how to

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1 limit the exposure. I mean, that's -- if you
2 don't know, is it precautionous --

3 A. (Bailey) Well, the safety factor is put in
4 there. I mean, electric and magnetic fields,
5 like everything else in life, at some level can
6 become harmful, you know?

7 You know, I touch my jaw like this, it's
8 not harmful. But somebody hits me with a
9 hammer with much more force, it's going to
10 cause harm. And, so, what has been done with
11 EMF, as we do for other things in life, is to
12 determine at what level harm occurs, and then
13 to set a standard to prevent that harm from
14 occurring. And the standards have evolved over
15 time to deal with the body of evidence as it is
16 developed. And these standards have been
17 fairly consistent, you know, since standards
18 have been developed for electric and magnetic
19 fields.

20 Q. So, in your opinion, is the Applicant following
21 those standards and guidelines to limit EMF
22 exposure?

23 A. (Bailey) Our assessment demonstrated that the
24 electric and magnetic fields from the proposed

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1 Project would meet these standards.

2 Q. In reading your prefiled testimony, on the
3 purpose of your testimony, I understood what
4 the purpose was. Were you also -- is your
5 role, did you offer guidance on how the Project
6 might limit that exposure?

7 A. (Bailey) When it came to certain topics about
8 whether Dr. Johnson and I had discussions with
9 the Company when they were considering the
10 placement of the new line on the right-of-way,
11 and that, you know, what would be the effect of
12 moving the line towards the center of the
13 right-of-way, as opposed to placing it where it
14 was maybe more convenient always on the edge of
15 the right-of-way. And, so, that was addressed
16 through modeling to determine that, in fact,
17 placing the new line at closer toward the
18 center of the right-of-way would tend to
19 minimize the magnetic fields.

20 Q. And I guess my last question is, do you believe
21 that there's a link between EMF and illness in
22 people, adults, children?

23 A. (Bailey) I understand that some of the research
24 indicates a statistical association. And by

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1 that is kind of like a layman's term for
2 "link".

3 Q. Uh-huh.

4 A. (Bailey) But the evidence does not show that
5 this statistical association or link is causal.
6 And, in fact, the example of the kinds of
7 reason why we're conservative in our
8 assessments is exemplified by the Draper study
9 that I talked about. Where, when they first
10 published their analysis in 2005, they reported
11 this association in which the odds of a child
12 with leukemia being -- living within several
13 hundred meters of a transmission line was about
14 twice as likely as the odds of a control child.

15 But, when they continued their research
16 and expanded it to all of Wales and Scotland,
17 and they included lower voltage lines as well
18 and followed this over time, they discovered,
19 in the recent publications, that the
20 association that they had reported in 2005 has
21 entirely disappeared. There is now no
22 association in their data between the distance
23 that a child lives from a overhead transmission
24 line and whether or not they have leukemia.

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1 And, so, what they have identified in their
2 research that, yes, there was an association in
3 the early 1980s and early 1990s, and over time
4 that diminished, despite the fact that more
5 transmission lines and more electricity is
6 being used in the country. And they have
7 identified that there was something about this
8 period of time that is associated with a --
9 they suspect some kind of geographical or
10 social factors that account for how people live
11 in certain areas. That accounts for this
12 difference. But they could not attribute this
13 to magnetic fields.

14 So, that's an example about "Yes, there
15 are associations that are reported in
16 literature", as an example of why scientists
17 have not concluded that these associations
18 reflect exposure to magnetic fields that causes
19 them.

20 MR. OLDENBURG: And that truly was my
21 last question.

22 CHAIRMAN HONIGBERG: Commissioner
23 Bailey.

24 CMSR. BAILEY: Thank you, Mr.

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1 Chairman. Good afternoon.

2 BY CMSR. BAILEY:

3 Q. Dr. Bailey, first, for the record, can we
4 establish that you and I are not related in any
5 way?

6 A. (Bailey) Correct.

7 Q. And that the only time that we have ever
8 interacted is in an SEC proceeding?

9 A. (Bailey) Yes.

10 Q. Thank you.

11 A. (Bailey) I guess we could say we're
12 statistically associated by name.

13 Q. Okay. Yes, I married into mine. That's what
14 the Chairman said.

15 I thought that I heard you testify earlier
16 that, although there's no scientific evidence
17 about a causal relationship, and you just even
18 clarified that further, about child leukemia
19 and EMF, that, because there is some concern
20 and there -- it's still under study, is that
21 correct? It's still being looked at, even
22 though the testimony that you just gave would
23 suggest there is no relationship?

24 A. (Bailey) We haven't concluded that there is a

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1 causal relationship. But, as I said just a
2 moment ago, since everyone in the developed
3 world has exposures to these fields, we want to
4 make absolutely sure that nothing has been
5 overlooked.

6 Q. Okay.

7 A. (Bailey) And, so, we have questions about why
8 it was that associations were reported in some
9 studies, and we don't know whether it's due to
10 bias or confounding or other factors.

11 Q. And for those reasons, while we're still making
12 sure there is no causal effect, I think you
13 said we should look at low-cost measures to
14 minimize any possible EMF exposure. And you
15 talked a little bit with Mr. Oldenburg about
16 that and placement of the line in the middle of
17 the right-of-way, correct?

18 A. (Bailey) Yes. That was -- that's the WHO
19 recommendation.

20 Q. Okay.

21 A. (Bailey) So, for instance, that was implemented
22 in Great Britain. They held a considerable
23 discussion about electric and magnetic fields,
24 particularly around transmission lines, that

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1 extended over a number of years. And, based
2 upon the recommendations of the Health
3 Department, their conclusion of their policy,
4 as a precautionary policy, was to ensure good
5 communication to everyone in society about
6 fields, particularly regarding facilities like
7 transmission lines. And, also, where
8 transmission lines were constructed on
9 rights-of-way, where there is more than one
10 line, that they would optimally phase the
11 transmission lines to maximize the mutual
12 cancellation of the magnetic fields from
13 adjacent lines.

14 So, in some cases, adding a second line to
15 a corridor can actually reduce the field levels
16 as to the edge of the right-of-way.

17 Q. But I didn't see anything in Mr. Johnson's
18 measurements that showed a reduction in the
19 fields after construction, did I? I mean,
20 generally, the measurements that you calculated
21 indicate that there will be an increase in the
22 fields in general, after construction?

23 A. (Johnson) I'd have to go back and look at each
24 specific cross sections to check that. But, in

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1 general, that is probably a fair statement,
2 they will increase. But phasing of the new
3 line going in was considered to, wherever
4 possible, minimize the magnetic field that
5 would result at the edge of the right-of-way.

6 Q. So, the phasing has been taken into
7 consideration, but it didn't reduce the -- or,
8 it didn't cancel EMF from the other lines, but
9 it still increased?

10 A. (Johnson) There was still some level of
11 increase. There may be, I'd have to go back
12 and check specifically, but the tables are
13 there, we can look at them. I guess a way to
14 put it is, if there had not been optimal
15 phasing, the magnetic field levels would have
16 been higher.

17 Q. Okay. So, you know for sure that optimal
18 phasing is what's planned -- is planned?

19 A. (Johnson) Yes. I mean, that's the information
20 that was -- there's a discussion we had for the
21 phasing of the line that will be going in in
22 relation to the other lines.

23 Q. Okay.

24 A. (Bailey) Excuse me one second. I had a

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1 particular example in my mind when I spoke, and
2 I'll just explain it to you so not to have
3 confusion.

4 If you have a single transmission line on
5 a right-of-way, and you now take that
6 transmission line and rebuild it as a double
7 circuit line, so now you have one transmission
8 line on one side of the tower, and one side of
9 the -- and another transmission on the other
10 side of the tower, you can sometimes get a
11 dramatic -- and you optimally phase each of
12 those lines, you can get a reduction at the
13 edge of the right-of-way on the order of about
14 30 or 40 percent.

15 Q. I understand that.

16 A. (Bailey) So, that's the concept of what I was
17 trying to explain in that example. Here, the
18 spread of the lines is over a much greater
19 distance. And the conductors -- the phase
20 conductors are not as close as if they were on
21 a single structure, and so the cancellation
22 effect is less.

23 But what Dr. Johnson said is correct that,
24 without phase cancellation, that the magnetic

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1 field levels would have been higher.

2 Q. Would the type of structure that the conductor
3 is attached to maybe help with that? I'm
4 thinking about the difference between a
5 monopole structure and some of the lattice or
6 H-frame structures. Would use of more monopole
7 structures help with cancellation?

8 A. (Johnson) The structure type doesn't have an
9 impact. It's the physical positioning of the
10 conductors. So, what's holding the conductors
11 up there is not going to matter, not in the
12 modeling.

13 A. (Bailey) But the position of the wires does
14 have an effect. So, for instance, in the
15 horizontal configuration, field levels under
16 horizontal configured lines tend to be higher,
17 all other things being equal, than for lines
18 that are in a vertical configuration, where the
19 conductors are stacked one above the other, or
20 in a triangular, so called "delta"
21 configuration. And those configurations, you
22 can see why, in a vertical configuration, the
23 higher the conductors are up off the ground,
24 the lower the field levels are going to be at

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1 ground level. So, you would tend to see lower
2 magnetic fields with a vertical configuration
3 of a line than as if the conductors were all at
4 the same height and all closer to the ground.

5 Q. And did you take that into account in your
6 model, the actual towers in each location, or
7 did you just assume a standard tower?

8 A. (Johnson) No, no. It was the -- well, what we
9 did to provide conservative, basically, highest
10 estimates of the field, we took the positioning
11 of the lines for like horizontal configuration
12 of the line, vertical configuration, or a delta
13 configuration of the line, where those
14 conductors would be closest to the ground.

15 Q. Okay.

16 A. (Johnson) So, the fields actually would reduce
17 as you went toward the structure, simply
18 because the line is sagging. It's going up as
19 you go toward the conductor.

20 One thing I'll add to Dr. Bailey's
21 comment, the positioning of the conductors will
22 matter. As he pointed out, with a vertical
23 structure, the highest field directly
24 underneath the conductors will tend to be

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1 lower, because you have them stacked one on top
2 of the other. But, in terms of the impact of
3 that, as you go further away from the line, out
4 toward the edges of the right-of-way, that that
5 change will tend to drop off. So, at the edges
6 of the right-of-way, you won't see as dramatic
7 a difference as you might directly underneath
8 the conductors within the right-of-way.

9 The other thing is, when you go to a
10 vertical configuration, since you now have to
11 put the conductors on top of each other, you're
12 going to a much higher tower. So, the line
13 itself is much more visible, much higher above
14 the ground.

15 Q. Okay. So, what other low-cost measures to
16 minimize EMF can we talk about? We have
17 position of the conductor in the middle of the
18 right-of-way, and we have phasing. What are
19 some other low-cost measures for mitigation
20 strategies?

21 A. (Bailey) Well, simply constructing lines at
22 higher voltages has an impact in reducing
23 magnetic fields. To deliver the same amount of
24 power, if the voltage is doubled, you only need

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1 half as much current flow to deliver the same
2 amount of power.

3 Q. Right. But we can't do anything about that in
4 this Project.

5 A. (Bailey) Right. But I'm just saying that, if
6 the Company had proposed to construct lower
7 voltage lines, it would have taken many more
8 lower voltage lines in order to carry the same
9 amount of power into the state.

10 Q. And the magnetic fields would have been
11 greater?

12 A. (Bailey) And the magnetic fields would be
13 higher from many more sources.

14 Q. Okay. Can you think of any other mitigation
15 strategies?

16 A. (Bailey) I think -- I can't, and perhaps Dr.
17 Johnson could correct me if I'm wrong, but I
18 think in almost every case where there was an
19 opportunity to have the phase conductors on one
20 side of the tower or the other, that the phase
21 conductors were moved towards the center of the
22 right-of-way than facing outward. So, this is
23 particularly the case where you have vertical
24 structures on the right-of-way. If you have

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1 the arm supporting the conductors facing the
2 center of the right-of-way, the fields will be
3 lower than as if they were turned in the other
4 direction.

5 Q. Okay. Anything else, Dr. Johnson?

6 A. (Johnson) I think Dr. Bailey sums it. It comes
7 up to a matter of positioning of the conductors
8 --

9 Q. Okay.

10 A. (Johnson) -- and particular line design.

11 MS. WHITAKER: Can I ask -- Sorry.
12 Can I ask a follow-up question to that?

13 WITNESS BAILEY: Sure.

14 BY MS. WHITAKER:

15 Q. I had in my notes, Dr. Bailey, that you had
16 something about "vegetation being able to block
17 magnetic fields". Is that the case?

18 A. (Bailey) Vegetation does not block magnetic
19 fields.

20 Q. Okay.

21 A. (Bailey) But vegetation can be quite effective
22 in blocking or shielding the electric fields.

23 MS. WHITAKER: Okay. Okay, thank
24 you.

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1 CMSR. BAILEY: Actually, I had a
2 question about that.

3 BY CMSR. BAILEY:

4 Q. In the picture in Deerfield that the
5 right-of-way is very close to the Sherburne
6 Village, I think it's a retirement home or
7 something, would it make sense to add
8 vegetation there to reduce the electric fields
9 for patients that may have medical devices
10 implanted? Or, would that only -- well, let me
11 ask you that question first.

12 A. (Bailey) Shrubbery, trees, whatever, awning,
13 whatever you want to put up, would, of course,
14 have an effect in reducing the electric fields
15 from any source. But whether -- I don't see
16 that that is something that is necessary, given
17 the low levels of fields that we have in this
18 environment associated with the Project.

19 Q. So, there's no concern about the level of
20 electric field near the Sherburne Village
21 retirement home?

22 A. (Bailey) Not specifically. I would point out
23 that, in the DEIS, there's a table, Table 2,
24 where the electrical -- the EMF technical

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1 report lists the state limits for such states
2 that have limits on electric fields. And you
3 look at this and you can see what levels are
4 allowed by those states that do have limits on
5 electric fields.

6 So, on the right-of-way, in Florida, the
7 field levels that are allowed, the limit is
8 from 8 to 15 kV per meter, depending upon the
9 voltage of the line. "15 kV per meter" being
10 what is permitted for lines at 500 kV or above.

11 In Minnesota, the limit on the
12 right-of-way for electric fields, the maximum
13 level permitted is 8 kV per meter.

14 In New York, the maximum permitted
15 electric field on the right-of-way is 11.8 kV
16 per meter.

17 In Oregon, the maximum electric field
18 permitted is 9 kV per meter.

19 So, these levels are all considerably
20 higher, in some cases twice as high, the
21 permitted level -- that the permitted level is
22 twice as high as the maximum calculated
23 electric field on the right-of-way of this
24 line.

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1 Q. Okay. Thank you. Mr. Bell, can you confirm
2 for me that you took sound measurements at
3 sensitive receptors near the Deerfield
4 Substation?

5 A. (Bell) Yes.

6 Q. Can you tell me where that is in the record?
7 It's probably attached to your testimony. I
8 know I saw it somewhere, but --

9 A. (Bell) Certainly in my reports, which would be
10 Appendix 39, Sound Report 3.

11 MR. WALKER: I can help you. I think
12 it's Page 170 of the PDF, that contains Sound
13 Report 3. It's Appendix 39, Figure 1, in Sound
14 Report 3, I believe.

15 CMSR. BAILEY: Thank you.

16 BY CMSR. BAILEY:

17 Q. Would vegetative screening around that area
18 help block sound?

19 A. (Bell) Vegetative screening has some effects on
20 reducing the propagation of noise. They
21 diminish with respect to the frequency of the
22 sound. So, sound can come in high pitches, low
23 base sound. General vegetative screening is
24 relatively ineffective for low-frequency sound.

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1 Most expectations for vegetative screening
2 are that you don't expect to see significant
3 reductions until you're talking of hundreds of
4 feet of dense vegetation versus a row of
5 shrubs.

6 Q. Is there another kind of screening that can be
7 used to reduce sound?

8 A. (Bell) Well, the most common one that you see
9 on a regular basis are sound barrier walls,
10 which you'll see alongside highways regularly.

11 Q. Is that proposed for this Project?

12 A. (Bell) As to what are the means that are being
13 used to control sound from the expanded yard, I
14 can't speak to that at this point. It's still
15 in the design phase.

16 Q. Okay.

17 A. (Bell) That would be a control that certainly
18 would be considered, in terms of trying to
19 reach the very stringent acoustic design goals
20 that have been established for this facility.

21 Q. And does your engagement with the Company end
22 after you're finished with the testimony or are
23 you still retained to help with the final
24 design?

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1 A. (Bell) My engagement at this point ends with
2 the end of this testimony.

3 Q. Okay. And is that the same for you, Drs.
4 Bailey and Johnson?

5 A. (Johnson) I believe so, yes.

6 A. (Bailey) Yes.

7 CMSR. BAILEY: Okay. Thank you.

8 CHAIRMAN HONIGBERG: Ms. Whitaker.

9 MS. WHITAKER: Hello, gentlemen. I
10 apologize, my questions are a bit disorganized,
11 I think. But I'll start with Mr. Bell.

12 BY MS. WHITAKER:

13 Q. At one point you were talking about the winter
14 summary, where you had collected noise
15 measurements during the winter time frame. And
16 I'm wondering what was the point of collecting
17 those noise measurements during what you're
18 defining as "winter"?

19 A. (Bell) Well, there tends to be variations in --
20 seasonal variations in sound in the
21 environment. And these are affected by both
22 the sources of noise, indigenous sources of
23 noises, like insects, that would occur only
24 generally during the summer months.

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1 Q. Yes.

2 A. (Bell) And also the effect of foliage on the
3 propagation of sound. For example, as we just
4 were talking, you might have a measurement
5 location that's a distance from a highway. And
6 the difference of sound propagating that sound
7 from that highway may vary, it might lower in
8 the summer months and higher in the winter
9 months, simply because of lack of foliage.

10 Q. Does snowfall have anything to do with that?

11 A. (Bell) Well, the presence of snow --

12 Q. Or snow presence?

13 A. (Bell) The presence of snow as a ground surface
14 is -- can vary itself as whether it's -- how
15 absorptive it is. But, in freshly fallen snow,
16 then, as sound propagates across it, it tends
17 to be actually absorbed, and so it would
18 attenuate at a higher rate.

19 Q. Okay. So, the dates of those winter summary
20 data collections were late March, into early
21 April. And, so, I'm just curious why you
22 didn't do it earlier in the winter, when maybe
23 snow would have also been present, if that is a
24 factor?

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1 A. (Bell) That's a fair question. The
2 expectations for the sounds that we were
3 measuring in the environment I don't feel would
4 have been influenced much by the presence of
5 snow.

6 Q. Okay. More so by the lack of foliage and no
7 insects during that time?

8 A. (Bell) That's correct.

9 Q. Okay. Okay. Thank you. Also for you Mr.
10 Bell, I believe it was Mr. Whitley had asked
11 about the impact of sound levels on animals
12 other than humans. And I think your response
13 was that you were not qualified to answer that
14 question. And I'm just curious who would be,
15 do you have any idea --

16 A. (Bell) I believe there is an environmental
17 committee involved in this proceeding, and they
18 may have information with respect to noise and
19 its relationship with fauna.

20 Q. Okay. And that would be the same for impacts
21 of construction noise on animals, --

22 A. (Bell) Correct.

23 Q. -- the environmental team? Okay.

24 MS. WHITAKER: Actually, I think that

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1 that's it. I think my other questions have
2 been answered. Thank you.

3 CHAIRMAN HONIGBERG: Mr. Way.

4 MR. WAY: Good afternoon, gentlemen.
5 The good news is, a lot of my questions have
6 either been answered or they're probably going
7 to be directed to the construction panel, as
8 I've heard throughout the proceedings. But I
9 do have a few. And, Mr. Bell, I think most of
10 them are directed towards you.

11 BY MR. WAY:

12 Q. In listening to some of the testimony today,
13 the questions about, for example, "What will
14 the sound level be at the Scobie Pond
15 Substation?" Even the question that was
16 presented about "Is there a sound
17 after-the-fact from an underground portion?"
18 Do you know if there are any plans to do
19 post-monitoring of sound activity? I know it's
20 not going to be you, but -- and, if not, is it
21 something you would recommend?

22 A. (Bell) Well, in fact, as part of the contracts
23 for the fixed facilities, verification that
24 they meet the acoustical design goals is

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1 required. So, there will be post-construction
2 measurements performed to confirm that the
3 contract requirements have been met.

4 Q. Very good. And I thought I heard a couple
5 things in terms of the Scobie Pond Substation.
6 It sounded at one point like you said there
7 would be no changes in the audible noise at the
8 substation or is it just that it will meet a
9 certain level and that will be an acceptable
10 level?

11 A. (Bell) To be honest, I don't recall having
12 discussions specific to Scobie Pond in these
13 proceedings. But I can talk about the impacts
14 there. The expectation with respect to, again,
15 sound monitoring, extensive sound monitoring
16 was conducted at the Scobie -- at the adjacent
17 property lines of the Scobie Pond station to
18 characterize and quantify the existing acoustic
19 environment. Project acoustic design goals
20 have been set such that the impacts will be
21 negligible.

22 Q. Very good.

23 A. (Bell) My expectation is is that there will
24 be -- the acoustic impact to the neighboring

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1 properties will be small.

2 Q. Thank you. You mentioned you were, and I think
3 you demonstrated this, that you were quite
4 familiar with construction activities, and that
5 was part of your report. I think you also
6 mentioned, too, that the larger underground
7 portion was not a part of the scope of work
8 when you originally undertook this Project,
9 correct?

10 A. (Bell) It was not -- we didn't understand -- it
11 was not expected as part of the -- that section
12 of the route was not underground when we
13 undertook this Project.

14 Q. And I think you mentioned, when we talk about
15 "horizontal directional drilling", that was not
16 included in this Project -- in this report,
17 correct?

18 A. (Bell) Well, there was expectation of
19 horizontal directional drilling as part of this
20 project at a river crossing at least in the
21 northern section. So, yes. There was an
22 understanding that there would be some, at
23 least some horizontal drilling as part of the
24 underground for that 8-mile section that was

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1 underground in the stages that I evaluated.

2 Q. All right. And was that included in the sound
3 estimates?

4 A. (Bell) There were no sound estimates of the
5 construction activities, *per se*, with respect
6 to the transmission line activities. It was
7 more a general discussion of the types of noise
8 sources, and understanding that those noise
9 sources will need to be evaluated and assessed
10 as the Project develops to minimize impacts.

11 Now, when you talk about, and, very
12 clearly, it is indicated in the construction
13 noise section, is, when you have something like
14 a horizontal drilling site, which might last
15 for several weeks, months, for extended periods
16 of time, that there needs to be a better
17 understand at that time when you set the
18 process up as to "What are the adjacencies?
19 Where are the neighbors? What are the means
20 that we can use to mitigate sound impacts as
21 best as possible?" And that might mean
22 erecting temporary barriers around construction
23 activities. It may mean limited construction
24 hours. So, there's all sorts of administrative

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1 and physical controls that might be included
2 when -- as the Project gets into a deeper
3 understanding of the process and what they're
4 going to encounter.

5 Q. All right. And as someone who's a relatively
6 newbie to the horizontal directional drilling
7 world, what kind of sounds are we talking about
8 there? My understanding is it could be quite
9 loud, considerable vibration. Compared to some
10 of the other activities that you're seeing at
11 the construction site, how does that rate?

12 A. (Bell) I don't know that that's a fair
13 characterization. I think that the equipment
14 that's used in horizontal drilling is a lot of
15 it is similar to what's used in vertical
16 drilling, in terms of the diesel-driven
17 equipment. That, you know, again, usually it's
18 suppressed in the ground, so that there's a
19 horizontal action to the process, so that there
20 is some potential means for surrounding it.

21 The expectations of vibration are
22 generally very localized and not significant
23 off the -- off-site. It takes -- it would be
24 the forces associated on the equipment itself

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1 would damage the equipment, if it was able to
2 propagate at great distances. So, that would
3 be my expectation. And, again,
4 generalizations here at this point.

5 Q. Certainly. And when we -- when you take a look
6 at vibrations, I think, from where you come
7 from, you look at the noise that's generated
8 from the vibration, correct? And not as much
9 the impacts of the vibration itself or --

10 A. (Bell) Well, our studies have focused entirely
11 on acoustic energy noise, which comes from
12 radiating surfaces, which are vibrating
13 generally to produce that noise. So that, to
14 answer your question, our focus was on acoustic
15 expectations and not vibration with respect to
16 human response to it.

17 Q. And, so, I probably would be correct in saying
18 that, if we want to discuss the vibration
19 impacts, the vibration impacts themselves,
20 that's probably a discussion with the
21 construction panel?

22 A. (Bell) I think that they would be best
23 qualified to discuss that, yes.

24 Q. I had one question in terms of -- and I think

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1 it was in some of the areas where you looked at
2 the impacts of audible noise. And I think I
3 heard you say -- well, I know I heard you say
4 that you did not consider unoccupied residence
5 or unoccupied structures in your study?

6 A. (Bell) No. The criteria established for
7 acoustic design goals for the facilities
8 considered occupied residences as the property
9 boundaries of concern.

10 Q. And, so, when you look at a definition of what
11 you considered to be "occupied", what did you
12 look at? I mean, was it simply that, you know,
13 you knock on the door and someone wasn't there
14 or is it you could tell that it's a structure
15 that's not occupied or --

16 A. (Bell) With respect to the sites that we are
17 evaluating, they're just -- you drive around a
18 little bit and you can see, is this, you know,
19 is there activity at the residence. I didn't
20 observe any boarded up structures, for example.

21 Q. That's --

22 A. (Bell) That would be maybe an unoccupied
23 structure. But I wouldn't even, you know, that
24 wasn't really considered at this point.

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1 Q. But if you saw a house for sale, for example?

2 A. (Bell) That would be an occupied -- I would
3 consider that an occupied residence certainly.

4 Q. All right. Very good. In terms of the SEC
5 regulations for regulating noise levels, and
6 that really only speaks to wind structures at
7 this point, correct?

8 A. (Bell) That's correct.

9 Q. And, you know, as we've talked about in sort of
10 the previous panels, we sometimes tend to
11 forget what happens north of us, in Canada.
12 And they're having the exact same discussion,
13 at the exact same -- similar table, right now
14 probably, with, you know, a companion to
15 what -- this body here. How are they
16 addressing those sound levels? Do they -- I
17 understand that they do not have the federal
18 regulations, you mentioned that. But how are
19 they addressing sound on their side of the
20 border?

21 A. (Bell) I'm not familiar with it at all.

22 Q. All right. Discussions of property values
23 would not obviously be for your panel, as I
24 think I've heard said before.

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1 MR. WAY: All right. I think I'm
2 good.

3 BY CHAIRMAN HONIGBERG:

4 Q. Dr. Bailey, the studies that have identified
5 associations between exposure to EMF and
6 leukemia, what's the nature of the exposure
7 that they have determined is associated with
8 elevated levels? Is it every day for ten
9 years? Is it once? Do you know?

10 A. (Bailey) In these studies, the exposure was
11 estimated in a variety of ways. Sometimes it
12 was just based upon simple distance from a
13 visible overhead structure.

14 Q. But when you -- let me interrupt you. When you
15 say that, it's that someone lived there for an
16 extended period of time? Or just was there one
17 day, and then later had leukemia?

18 A. (Bailey) The studies are designed to compare
19 exposures of people in populations. And, so,
20 you identify those -- if you're interested in
21 child leukemia, you identify all the cases of
22 child leukemia in that region. And then you
23 identify similar controls, from the same area,
24 same age, same -- matched on sex and so on, and

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1 then you compare their exposures.

2 In some cases, those exposures were
3 estimated by simple distance from the line.
4 Did a case -- did the address of the case, how
5 many meters away or how many feet away was it
6 from an overhead or an underground transmission
7 line? And the same thing for the controls who
8 were selected. And then you compare those
9 distances.

10 In other cases, it was done by so-called
11 "wire codes". Where the distance to the
12 residence, and the number of wires hanging off
13 the structure, and their apparent thickness
14 were put into kind of a rating system, so you
15 could rate the likelihood that higher magnetic
16 fields might be coming from that source, even
17 though you had no idea what the current flow
18 was.

19 Another way is to calculate what the
20 magnetic fields were in the past, and perhaps
21 even up to today at a residence, based upon
22 methods similar to what Dr. Johnson has used to
23 calculate the field levels here. So, you could
24 calculate, based upon the -- in some cases,

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1 estimates of what were the current flows on the
2 lines in the 1950s, to the 1970s, and then
3 calculate what the magnetic fields were at
4 different distances from the line. And,
5 therefore, you could estimate the magnetic
6 fields at the residences of children with and
7 without cancer.

8 And, then, finally, there are some studies
9 that have gone on and identified these
10 populations of adults or children, and then had
11 members of those populations wear a recording
12 magnetic field meter. And wearing that
13 recording magnetic field meter, go about their
14 activities at home, at school, what have you,
15 and then compare those recorded magnetic field
16 levels from children in these two groups. So,
17 these are all different ways of trying to
18 compare the exposure of these people.

19 Now, coming more to the specific nature of
20 the time period, in some cases, with distance,
21 you just know that this is the birth address of
22 a child, and you don't know whether they
23 necessarily lived there for one week, one
24 month. People change residences often. So,

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1 you don't know how many years that exposure may
2 have lasted. It could have been for their
3 entire lifetime, it could have been for a
4 shorter period of time.

5 In the cases where calculations were made,
6 the epidemiologists attempt to get from the
7 utilities or the national authorities what were
8 the annual estimated loadings on the lines, and
9 use that to compare over a long period of time
10 what those exposures would have been.

11 In the case of people wearing magnetic
12 field meters that recorded their exposure, it
13 would only record the exposure during that 24
14 or 48 hours that they wore the meter. And then
15 some studies have gone on to have people wear
16 their meters at other times of the year and
17 assess the degree to which the measurements
18 were similar.

19 So, these are all the types of
20 measurements that have been used in these
21 studies to estimate exposure. And, in some
22 cases, that exposure period started at the date
23 that someone was diagnosed with a disease. And
24 then you would start looking at the control

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1 subjects' exposure at that same day going
2 forward. In some cases, it was assessed at
3 multiple points in time, at birth, at the time
4 of diagnosis, and then -- and for three years
5 before they occupied the residence.

6 So, there's -- depending upon the study,
7 there's lots of different ways that the
8 exposure has been assessed and the time period
9 over which it applied was evaluated.

10 Q. Is there any association between the studies
11 that did find an association and the way that
12 they were measuring exposure?

13 A. (Bailey) There are indeed differences in the --
14 in the associations that are reported. But,
15 for instance, based upon the years of work
16 coming out of the University of Oxford in the
17 Draper study and follow-up studies on that, it
18 appears that other factors, other than just the
19 way of estimating exposure, is important, that
20 there are factors in all these studies that
21 have to do with the populations living in areas
22 around transmission lines that appears to play
23 a more important role.

24 Q. In response to a question this morning from Ms.

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1 Quinn about the buildings right near the
2 right-of-way in Deerfield Center, where the
3 elderly housing block is, she asked you a
4 question about interference with medical
5 devices. You gave an answer that both
6 Commissioner Bailey and I wrote down slightly
7 differently, but I'm going to read you her
8 version of it, because hers is more complete.
9 You said "It's not at all clear electric fields
10 would interfere with implanted medical
11 devices." That seems like a very cautious way
12 to answer that question. Can you elaborate at
13 all on that?

14 A. (Bailey) Well, if you take a pacemaker, for
15 example, into the laboratory, and expose it to
16 electric or magnetic fields at a wide range of
17 intensities, you can -- you can go to such high
18 levels that you could detect a change in some
19 aspect of its function. That change in aspects
20 of the function may or may not have any
21 significance for the health of the person
22 wearing it. That is, it may not -- you may
23 detect a change in the function of the device,
24 but it doesn't prevent the twice from doing

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1 what it's supposed to do. So, if your heart
2 stops beating and you're wearing a pacemaker,
3 the pacemaker would still appropriately deliver
4 the shock to your heart to keep you alive.

5 On the other hand, the question is, do
6 people in everyday life, whether they are
7 around transmission lines or not, encounter
8 fields that are sufficiently high that would
9 cause a device to malfunction and to cause a
10 problem for them? And, as I testified this
11 morning, going to the MAUDE database, there are
12 lots of devices, electrical devices in our
13 environment, that have been reported to cause
14 overt malfunctions of implanted medical
15 devices, but we don't see any reports in that
16 database that high-voltage transmission lines
17 cause such effects.

18 Q. So, you were not able to say, in response to
19 her question, at the levels we're talking
20 about, the distance from the line, and using
21 Dr. Johnson's numbers, you're not able to say
22 it won't cause malfunctions in the implanted
23 devices of the people living in that building?

24 A. (Bailey) Sir, I can't say that something will

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1 or will not happen. I can tell you that the --
2 there are guidelines that have been established
3 by organizations. And one of those guidelines
4 says that, so long as you conform to the ICNIRP
5 standards, there should not be a problem with
6 implanted medical devices. So, --

7 Q. Which is quite a bit different and quite a bit
8 more definitive than "it's not at all clear
9 that there would be problems". Which was so
10 cautious as to lead me to believe that you
11 actually think there might be, but you're not
12 sure.

13 A. (Bailey) I don't have an expectation that
14 anyone walking in the right-of-way will have a
15 problem with an implanted medical device. But,
16 you know, I can't foresee all of the
17 circumstances to make predictions. But, based
18 upon everything that I've read, I don't believe
19 that this is at all a likely outcome.

20 CHAIRMAN HONIGBERG: Okay. Thank
21 you.

22 Attorney Iacopino, you have some
23 questions I understand.

24 BY MR. IACOPINO:

[WITNESS PANEL: Johnson~Bailey~Bell]

1 Q. Dr. Bailey, let me start with you. I'm going
2 to jump off from the Chairman's first set of
3 questions to you. You've testified in this
4 proceeding, with respect to EMF and human
5 health, in particular with respect to magnetic
6 fields and childhood leukemia, that you've
7 testified consistent with the SCENIHR Report,
8 basically, which was Counsel for the Public
9 108. And, on Page 158, says "it remains
10 difficult to judge whether the apparently quite
11 robust empirical association is likely to be
12 causal or a result of methodological
13 shortcomings of the studies, such as
14 information bias, selection bias and
15 confounding." And I think you've testified
16 pretty much the same as that, is that correct?

17 A. (Bailey) Yes.

18 Q. Okay. I want to ask you this. Has there been
19 any study of the studies finding the
20 association to identify specific errors that
21 are being made or specific shortcomings or is
22 this just observational?

23 A. (Bailey) There hasn't been a study of the
24 study, *per se*, but science is a progressive

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1 process. So, the very first studies that were
2 done by Ed Leeper and Nancy Wertheimer had the
3 simple rating system of the number of wires
4 hanging from the poles and the apparent
5 thickness of the wires and the distance. And
6 that was their crude way of attempting to
7 estimate the magnetic field exposures at homes.

8 Other people looking at those studies, for
9 instance, David Savitz, when he did a study for
10 the New York State Power Lines Project, said
11 "well, that's a very crude way of estimating
12 exposure." And, so, in their study, they went
13 into homes and recorded magnetic fields. They
14 took measurements in the homes of the children
15 that were part of their study.

16 And, so, other people have looked at
17 studies and said "well, you know, there were
18 certain restrictions that Dr. Savitz had placed
19 upon the people who could participate in the
20 study. And, so, we're going to go, and instead
21 of restricting the potential participants in
22 the study in any way, we will examine an entire
23 population."

24 So, you have studies that have examined,

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1 essentially, the entire population of the
2 United Kingdom, of Denmark. And let's look and
3 see if we can improve upon this.

4 There are, you know, people who have
5 sought to improve upon taking spot measurements
6 in homes to estimate exposure, to going in and
7 having the children wear a recording magnetic
8 field meter. So, there was a study done in
9 five Canadian provinces, when they -- what they
10 did is they had children in the study wear
11 recording magnetic field meters in backpacks,
12 as they went about their life, and also took
13 measurements at their homes.

14 So, all these things, as time, people have
15 sought to improve upon or expand upon the
16 methods to assess exposure and to see if this
17 leads to any -- an increase or sharpening of
18 the association. And we have not seen that,
19 despite many methodological improvements that
20 have been made over the years, that there has
21 been a dramatic increase or change in the
22 associations that have been reported.

23 Q. Okay. And I guess my next question then is for
24 Dr. Johnson, or maybe it's for Dr. Bailey, I

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1 don't know. The levels that you report of
2 electrical and magnetic fields for the Project,
3 is it possible to compare them with exposure
4 that humans have to electrical and magnetic
5 fields in other areas, when they're not near a
6 high-voltage line, but in a home or in other --
7 other environments? And can you -- is it
8 possible to give us an idea of how that
9 compares?

10 A. (Johnson) I mean, the fields that you see
11 within the right-of-way, both electric and
12 magnetic field, are not unique to transmission
13 lines. Particularly, the magnetic fields, you
14 can come -- encounter those level of fields in
15 other activities and in other parts of your
16 life.

17 Q. Can you give us an idea of, like, where?

18 A. (Johnson) Not so much for me, but, if you use
19 like an electric hairdryer this morning, --

20 Q. Or me.

21 *[Laughter.]*

22 **CONTINUED BY THE WITNESS:**

23 A. (Johnson) Yes. Some of those who are follicly
24 challenged, and I'm definitely getting there.

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1 But, if you use a hairdryer, while you're
2 holding that hairdryer, the magnetic field,
3 the --

4 *[Court reporter interruption.]*

5 **CONTINUED BY THE WITNESS:**

6 A. (Johnson) -- the AC magnetic field with that
7 appliance can be easily in the range of a
8 thousand to 10,000 milligauss.

9 BY MR. IACOPINO:

10 Q. So, that would be in excess of what you're
11 following here?

12 A. (Johnson) Way, way in excess, even underneath
13 the line. I think the highest we saw here was
14 maybe 300 to 500 milligauss underneath the
15 line. So, in using this hairdryer, with the
16 electric current and you're in close proximity
17 to it, you can have fields much higher than
18 that.

19 Sitting in this room, I haven't made the
20 measurements, but, with the lighting and the
21 wiring, 1 to 2 milligauss would not surprise me
22 at all. Using the overhead projector there,
23 the ELMO, that particular device, again, I've
24 not measured, but levels of magnetic field

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1 between 10 milligauss to 200 milligauss is not
2 atypical. An older version of that that I'm
3 familiar with, which was more an incandescent
4 type light, the old overhead projector, that
5 those of us who are old enough may have seen it
6 before the LED lighting, measurements I have
7 taken around that are typically in the 100 to
8 150 milligauss. In that case, it was both the
9 high-intensity light, and typically the fan
10 that was operating in the overhead projector.

11 Grocery shopping, I've made measurements
12 of magnetic field as you go along and walk past
13 the coolers and the other appliances operating
14 there, and you can see fields between 10 to 100
15 milligauss. Again, similar to what we're
16 seeing within the right-of-way or at the edges
17 of the right-of-way for the proposed line.

18 Q. So, the most important factor, it seems to me,
19 with respect to the line is really the amount
20 of exposure and length of time of exposure that
21 people who live nearby or spend a lot of time
22 nearby these lines spend there?

23 A. (Johnson) And, even there, the fields do drop
24 off with distance. So, unless you're camping

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1 out underneath the line, you're not going to be
2 exposed on a continuous basis or long-term
3 basis to that 100 milligauss or 200 milligauss.
4 Even at the edge of the right-of-way, you're
5 down to 10 to 15 milligauss, if the line's at
6 that higher load level, and then you move 50 to
7 100 feet away, and if you look at some of the
8 graphs presented in Attachment B to Section 38,
9 it shows that profile as it drops off. And, in
10 many cases, it's similar to what's there
11 already for those particular sections.

12 Q. Thank you. Mr. Bell, let me switch to you.
13 The last question that you answered in your
14 direct -- in your prefiled testimony, Exhibit,
15 I believe it's "27", was "Have you seen the
16 DEIS released by the Department of Energy for
17 this Project?" And your answer was "Yes. The
18 findings are consistent with my testimony." Do
19 you recall that?

20 A. (Bell) Yes.

21 Q. Okay. I guess my first question to you is, are
22 you in agreement with the sound report --
23 technical sound report that is part of the
24 DEIS?

[WITNESS PANEL: Johnson~Bailey~Bell]

1 A. (Bell) I'm in agreement with their findings.

2 Q. Okay.

3 A. (Bell) Their conclusions.

4 Q. Okay. There are standards for construction
5 noise issued by the United States Department of
6 Transportation, correct?

7 A. (Bell) There are.

8 Q. And one of the things I understand that was
9 found in the technical report is that, within
10 50 feet of the construction on this Project,
11 generally, it hasn't gone to every area, they
12 anticipate that the noise will be above those
13 U.S. DOT standards. Is that your understanding
14 as well?

15 A. (Bell) I believe that some of their estimates
16 were above the 80 decibels that are the
17 standard -- or, 90 decibels, I believe, I have
18 to go back to the DOT standard. But I do
19 concur that there were, some of their estimates
20 were above those standards.

21 Q. And they actually have charts in there where
22 they showed that up to 800 feet away the
23 decibels do go down. Is that correct?

24 A. (Bell) That's correct.

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[WITNESS PANEL: Johnson~Bailey~Bell]

1 Q. Do you agree with those tables that are
2 contained in the report?

3 A. (Bell) Not entirely, no.

4 Q. Okay.

5 A. (Bell) In that the approach that's used to
6 create an estimate of sound impact from a
7 construction site for that -- that approach
8 that was used, in my mind, provides -- utilized
9 very simplistic assumptions of the number of
10 equipment on the site, the fact that they would
11 be operating simultaneously, and that their
12 durations are limited to, you know, minimums of
13 maybe only, you know, 50 percent of the time,
14 instead of maybe only once a day for hours --
15 or, for minutes.

16 For example, probably is one of the more
17 alarming numbers that you see in the analysis
18 would be associated with wire stringing and
19 cable stringing, where helicopters are in use.
20 And, so, one of the sources of noise that's
21 included in the table is the helicopter, which
22 we all are aware is a very loud noise source.
23 But the expectation as to that it would be in a
24 particular position for an extended period of

[WITNESS PANEL: Johnson~Bailey~Bell]

1 time is perhaps incorrect.

2 Q. Well, you're aware that those tables, Tables 10
3 through 14, in the Technical Noise Report for
4 the DEIS, which I understand the Applicant is
5 going to introduce as an exhibit, it has a
6 usage factor. Is that correct?

7 A. (Bell) I am aware of that, yes.

8 Q. And just to take your example, for instance,
9 for a helicopter during construction, noise
10 from wire stringing, it has a 50 percent usage
11 factor. What does that mean?

12 A. (Bell) That means it would be in one position
13 for 30 minutes of an hour.

14 Q. And is that inconsistent with your experience
15 on these construction sites?

16 A. (Bell) That may exist for one particular hour,
17 but not certainly for four hours in a day.

18 Q. Okay. Have you ever measured sound at
19 construction sites?

20 A. (Bell) I have.

21 Q. On how many occasions?

22 A. (Bell) Countless.

23 Q. Okay. And, so, when you testified previously
24 that, you know, your conclusion that there

[WITNESS PANEL: Johnson~Bailey~Bell]

1 would not be an adverse -- unreasonable adverse
2 impact from construction noise is based upon
3 your countless times being at construction
4 sites and measuring the sound?

5 A. (Bell) Measuring the sound, working on noise
6 mitigation programs in the development of
7 construction projects, that -- yes.

8 Q. And just so that, because I know there's folks,
9 they've probably already seen it, but I believe
10 that the average -- the estimated composite
11 noise level in that technical sound report for
12 all construction activities, at 50 feet -- I've
13 lost the detail. It's in the 90 dBA range, is
14 that correct?

15 A. (Bell) I'd have to see the table that you're
16 looking at. I'm sorry.

17 MR. IACOPINO: All right. Well, we
18 will have it. So, we'll have to consider it.
19 Thank you. No further questions.

20 CHAIRMAN HONIGBERG: All right. Does
21 anyone else on the Committee have any
22 questions, any further questions for the panel?

23 *[No verbal response.]*

24 CHAIRMAN HONIGBERG: All right. Mr.

[WITNESS PANEL: Johnson~Bailey~Bell]

1 Walker, do you have any redirect for the panel?

2 MR. WALKER: I do. It's probably
3 less than a half hour, but --

4 CHAIRMAN HONIGBERG: If it's more
5 than three minutes, then I think we're probably
6 going to break.

7 All right. Let's go off the record.

8 *[Brief off-the-record discussion*
9 *ensued.]*

10 CHAIRMAN HONIGBERG: We're going to
11 break now. We'll be back at ten minutes after
12 2:00.

13 (Lunch recess taken at 1:09 p.m.
14 and concludes the **Day 5 Morning**
15 **Session**. The hearing continues
16 under separate cover in the
17 transcript noted as **Day 5**
18 **Afternoon Session ONLY**.)

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C E R T I F I C A T E

I, **Steven. E. Patnaude**, a Licensed Shorthand Court Reporter, do hereby certify that the foregoing is a true and accurate transcript of my stenographic notes of these proceedings taken at the place and on the date hereinbefore set forth, to the best of my skill and ability under the conditions present at the time.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action; and further, that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Steven E. Patnaude, LCR
Licensed Court Reporter
N.H. LCR No. 52
(RSA 310-A:173)