

In the Matter Of:

ADVACELL PTY LTD. vs SCIENCONS AS

PGR2025-00040

SAED MIRZADEH

January 21, 2026

SCIENCONS & ARTBIO - EXHIBIT 2004
AdvanCell Pty Ltd.v. Sciencons AS & ARTBIO, Inc.
PGR2025-00040



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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADVACELL PTY LTD.,
Petitioner,

v.

SCIENCONS AS and ARTBIO, INC.,
Patent Owner,

Case No. PGR2025-00040
U.S. Patent No. 12,249,437

DEPOSITION
OF SAED MIRZADEH
January 21, 2026
9:24 a.m.
La Posada de Santa Fe
Santa Fe, New Mexico

PURSUANT TO THE FEDERAL RULES OF CIVIL
PROCEDURE, this deposition was:

TAKEN BY: MICHAEL T. ROSATO
ATTORNEY FOR PATENT OWNER

REPORTED BY: PAUL BACA, CCR #112

A P P E A R A N C E S

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I N D E X

Examination By:

Page

Mr. Rosato ----- 4

Mr. Hale ----- 70

EXHIBITS

Page
Marked

Patent Owner	Description	Page Marked
Exhibit 1001	Patent 12,125,603	23
Exhibit 1002-00029	Declaration of Saed Mirzadeh, 12,125,603	
Exhibit 1002-00040	Declaration of Saed Mirzadeh, 12,249,437	
Exhibit 1003	JARI Volume 45, # 10	39

(Whereupon, the witness was sworn.)

SAED MIRZADEH,
after having been first duly sworn under oath,
was questioned and testified as follows:

EXAMINATION

BY MR. ROSATO:

Q. Good morning, Dr. Mirzadeh.

A. Good morning.

Q. Would you please kindly state your name
for the record?

A. Saed Mirzadeh.

Q. Have you been deposed before?

A. No.

Q. This is your first time?

A. Correct.

Q. Have you ever been an expert in a case
before?

A. Yes.

Q. What case was that?

A. I don't remember but I wrote my review of
the case, they settled out of the court so it never
got into the court.

So I never wrote -- completed the legal
document. It was only technical document that I
wrote and they took that and that was the end of it.

1 Q. Okay. So you, in that case, submitted a
2 written report?

3 A. Written report, uh-huh.

4 Q. But there was never a deposition? Okay.

5 A. Correct.

6 Q. Do you recall when that case occurred?

7 A. I would say it was at least 15 years ago.

8 Q. Okay.

9 A. It was a long time ago.

10 Q. A long time ago, okay.

11 Was that a patent case?

12 A. It was a patent case. Somebody was suing
13 a laboratory in Canada. It was a nuclear
14 laboratory.

15 And this person apparently filed a patent
16 and -- without letting his employee know about it
17 and that was the case.

18 Q. I see.

19 So somebody filed a patent, they didn't
20 tell their employer about it?

21 A. Right. And they should have at that
22 point.

23 Q. Were you working on behalf of the employer
24 in that case?

25 A. I assume so. I think so, yes.

1 Q. Do you recall the name of the company you
2 were working at?

3 A. The National Lab, is called the Canadian
4 Nuclear Lab in Chalk River.

5 Q. Does this involve a Canadian patent or a
6 US patent?

7 A. I think it was a US patent.

8 Q. Okay.

9 A. The topic was technician 99 for a medical
10 isotope in Chalk River, yeah.

11 Q. I see, okay.

12 So let's talk about a few formalities of
13 the deposition process before we really get into it,
14 okay?

15 A. Sure.

16 Q. Okay. The first reminder is that you are
17 providing testimony under oath and you are expected
18 to tell the truth, okay?

19 A. I understand.

20 Q. Is there any reason you cannot provide
21 complete and accurate testimony today?

22 A. Not at all.

23 Q. Okay. Hopefully my questions are clear.
24 I will try to speak loudly so you can hear them, but
25 if you don't, yeah, no problem. If you don't hear

1 or understand a question, you can feel free to ask
2 me to repeat it, okay?

3 A. Very good. Thank you.

4 Q. One of the things that is important for
5 this process is to provide verbal answers so the
6 court reporter can hear that, okay?

7 A. I understand.

8 Q. Okay. As opposed to -- you know, the
9 normal communication process for people is to nod
10 their head or shake their head but the court
11 reporter can't pick that up, so we will need verbal
12 answers, okay?

13 A. I will do my best here.

14 Q. Thank you.

15 And finally, we can take a break if you
16 need one. If you need a break, just let me know
17 that, okay?

18 A. Okay.

19 Q. I will just ask if there is a question
20 pending, you answer the question before we break,
21 okay?

22 A. I understand.

23 Q. Okay. I will do my best to arrive at a
24 break about every hour, okay?

25 A. Very good.

1 Q. Okay. If you need it sooner, just let me
2 know, not a problem.

3 A. I will, thank you.

4 Q. Thank you.

5 Are you being compensated for your
6 testimony in this proceeding?

7 A. I'm sorry?

8 Q. Are you being compensated --

9 A. Yes.

10 Q. -- for your testimony in this proceeding?

11 A. Yes.

12 Q. Okay. And there is actually two
13 proceedings, correct?

14 A. Yes. Two differences, yes.

15 Q. Two -- two ICO cases, right?

16 A. Yes.

17 Q. Excuse me. PGR cases?

18 A. PGR?

19 Q. Post-grant review they are called.

20 A. Yes, uh-huh.

21 Q. Okay. So if -- there is a lot of overlap
22 between the cases, so if there is a distinction in
23 your response to a question in one case or the
24 other, please let me know that, okay?

25 A. I will, sure.

1 MS. NALL: For clarification, this first
2 deposition though only is PGR2025-00029, correct?

3 MR. ROSATO: Are you asking me that
4 question?

5 MS. NALL: Yes.

6 Q (By Mr. Rosato) So we have the deposition
7 labeled for the PGR2025-0027 case. And we are going
8 to break -- sorry, excuse me, PGR2025-00029. We
9 will take a break after getting through
10 questioning -- the first set of questioning and then
11 we will turn and formally address the second case,
12 okay?

13 A. Yes.

14 Q. Okay. I asked you about compensation for
15 your testimony earlier, right?

16 A. Yes.

17 Q. Who is providing that compensation, do you
18 know?

19 A. AdvanCell.

20 Q. Do you submit your invoices to Advancell?

21 A. Correct.

22 Q. Do you have any relationship with
23 AdvanCell other than --

24 A. Not at all.

25 Q. Okay. Do you own any equity in AdvanCell?

1 A. No.

2 Q. So your compensation is all paid on an
3 hourly basis, correct?

4 A. Correct.

5 Q. You have mentioned having submitted
6 invoices to AdvanCell, right?

7 A. Correct.

8 Q. Do you recall at this point about how much
9 time you have invoiced them for?

10 A. It could be about -- so far, maybe about
11 50 hours.

12 Q. About 50 hours total?

13 A. So far, yes.

14 Q. That includes both of the cases we have
15 mentioned, correct?

16 A. Right, correct.

17 Q. Okay. When were you first retained as an
18 expert in these matters?

19 A. I think it was probably about a year ago.

20 Q. About a year ago?

21 A. Yes, uh-huh.

22 Q. Thank you.

23 Who approached you for your services?

24 A. Someone from the AdvanCell.

25 Q. Do you recall who it was from AdvanCell?

1 A. Offhand, I don't remember his name but he
2 found me and he contacted me through e-mail. And
3 then when I agreed to be a witness, then he put me
4 in contact with the legal team.

5 Q. Okay. Let's get you a copy of
6 Exhibit 1002 from PGR2025-00029.

7 Do you now have a copy of that in front of
8 you?

9 A. Yes.

10 Q. Do you recognize this document?

11 A. Yes.

12 Q. What is it?

13 A. It is my declaration of the patent '603.

14 Q. Okay. It is your declaration in the PGR
15 case involving US patent 12125603, correct?

16 A. Correct.

17 Q. Okay. I may refer to this as your '603
18 patent declaration. If I do, you will know what I
19 am talking about, right?

20 A. Yes, uh-huh.

21 Q. Let's look first at the cover page of this
22 '603 declaration, please, and let me know when you
23 are there.

24 A. Uh-huh. I'm here.

25 Q. Okay. Is that your signature?

1 A. That is my electronic signature, yes.

2 Q. And who added that signature to this
3 document, do you know?

4 A. When I received the document, about the
5 signing document, document sign or whatever, that is
6 where I signed it here.

7 Yeah, document sign or whatever it is
8 called, yeah.

9 Q. Okay. So you actually --

10 A. Electronically, yes. I electronically
11 signed it, yes.

12 Q. Using Docusign?

13 A. Docusign, yeah.

14 Q. Tell me about the process of preparing
15 this declaration, please.

16 A. I read the patent that is related to this
17 by Larson, whose patent is filed by Larson.

18 And then I went through the supporting
19 documents, references other patents that was listed
20 and also some other documents that I thought was
21 relevant to this case.

22 And I verify, familiar with the technical
23 aspects of this case. And that is how we started
24 the process.

25 Q. When you say supporting documents, are you

1 referring to the documents that are cited in the
2 declaration?

3 A. The document, yes, and document that
4 started, actually, with the references on the patent
5 itself and then gradually moved into the other
6 references that I know it would be relevant to this
7 case.

8 Q. Okay. Tell me about the process of
9 locating those documents.

10 A. As I said, I am well rehearsed on the
11 technical aspects of this and I know who else was
12 involved in this type of activity.

13 There were some documents that were
14 provided by the legal team and that is primarily
15 looking at some of the legal issues that I am not
16 familiar with. I am not a legal person.

17 Q. Okay. Fair enough.

18 Do you recall which documents -- which of
19 the supporting documents were provided by the legal
20 team?

21 A. They were documents related to definition
22 of theorems that they send me when we converted
23 these documents in the -- my original into the legal
24 document.

25 Then there was terms that had to be

1 clarified and they provided support for those terms.

2 One of the main cases I remember, there is
3 something called Case 112, you know, definition of
4 term, and they provided support for that, which is
5 listed here.

6 So we can go through, I can point out, you
7 know, which document it was.

8 Q. Okay. When you say the 112, they provided
9 that, are you referring to the content of your
10 declaration was being provided?

11 A. I wrote the -- my thoughts about the --
12 what I think is technically possible or impossible
13 or related to this. And then they provided some of
14 the legal terms, yeah.

15 Q. I see.

16 So the legal standards were provided to
17 you?

18 A. Right. The legal standard, which I'm
19 not -- I wasn't -- I am not familiar with it, still,
20 yeah. But I can read it and discuss it, but they
21 provided the original writing.

22 Q. Okay. And by "the original writing," you
23 mean what shows up in your declaration?

24 A. Right, yeah.

25 Q. Okay. And that legal writing provided to

1 you involved 112 issues, correct?

2 A. Correct.

3 Q. Okay.

4 A. And also, upfront, you know, there is a
5 description of what is obvious, what is not obvious
6 in the case of the filing of patent. And they
7 provided that documentation as well.

8 Q. They also provided the written content
9 regarding obviousness?

10 MS. NALL: Objection, misstates prior
11 testimony.

12 A. Yes.

13 Q (By Mr. Rosato) What exactly did they
14 provide to you in the context of obviousness?

15 A. Oh, it is in my declaration, so if you
16 look at the Table of Content, like page 2,
17 Background and Qualification, Legal Standards, Legal
18 Standard for Obviousness, all the way up to Page 8,
19 Section 3, which I described "Overview of the
20 Patent."

21 Q. Okay. So what we find written in your
22 declaration on those pages is content that was
23 provided to you. Is that correct?

24 A. Right, right.

25 Q. Are you still looking at the Table of

1 Contents?

2 A. Yes.

3 No, I am already on Page 8 but I can go
4 back and look at the Table of Contents.

5 Q. Okay. I want to ask you about different
6 sections, whatever you need to reference is okay.

7 I am looking at the Table of Contents, and
8 I see a section for Claim Construction, starting at
9 page 10 listed.

10 Do you see that?

11 A. Uh-huh. Go to page 10 or look at the
12 Table of Content?

13 Q. Whatever you want to look at. I just want
14 to make sure we are looking at the same thing.

15 A. Okay, I am in page 10.

16 Q. Okay. Now you mentioned content of your
17 declaration being provided to you, correct?

18 MS. NALL: Objection, form.

19 A. What section are you talking about?

20 Q (By Mr. Rosato) So first, earlier today you
21 mentioned that some contents of your declaration
22 were provided to you, correct?

23 A. Right, right.

24 Q. So looking at the section, Claim
25 Construction, starting at 10 --

1 A. Uh-huh.

2 Q. -- is that a section including content
3 that was provided to you?

4 A. No, this is based on what I have written
5 and they convert these -- my wording into the legal
6 terms. But this is all based on what I have read
7 originally.

8 Q. Okay. So you wrote the Claim Construction
9 section?

10 A. Yes.

11 Q. But you did that with help from the
12 lawyers?

13 A. Yes. My writing was primarily technical
14 and as you see here, statements are legal terms.

15 Q. Okay. Understood.

16 And earlier you mentioned the obviousness
17 content being provided to you, right?

18 A. Yes, yes.

19 MS. NALL: Objection, form.

20 Q (By Mr. Rosato) Okay. I am going to go
21 back to what you referred to as supporting
22 documents, okay?

23 A. Yes.

24 Q. You also mentioned some other documents, I
25 think.

1 What other documents were you referring
2 to?

3 A. There were some documents related to --
4 they said Section 112, and those documents and --
5 you mean -- ask me, again. Repeat the question,
6 again, please.

7 Q. My question is, are there any documents
8 that you relied on in forming your testimony that
9 are not found in this declaration?

10 A. No. Everything I have used in this
11 declaration is based on the references that I have
12 cited here in this document.

13 Q. Okay. So if you relied on a document for
14 your testimony, that document would be cited here in
15 this section?

16 A. Referenced here, yes.

17 Q. Okay. Great.

18 We will just mention one other thing that
19 would be helpful in our discussion.

20 This is very normal in conversation to go
21 back and forth. Depositions are weird in a sense
22 that it is being transcribed, so if you can try to
23 remember to let me finish a question, I will let you
24 talk and I will do my best not to interrupt you
25 because we very much appreciate what you are saying.

1 But we will try to keep that one at a time, okay?

2 A. Understood.

3 Q. Thank you so much.

4 MR. ROSATO: Let's hand you a copy of
5 Exhibit 1002 from PGR235-00040.

6 Q (By Mr. Rosato) Do you have that document,
7 sir?

8 A. Yes, yes, in front of me.

9 Q. Do you recognize this document?

10 A. Yes.

11 Q. What is it?

12 A. It is my declaration about patent '437.

13 Q. That is US patent 12249437, correct?

14 A. Correct.

15 Q. Okay. And this is your declaration in
16 that PGR case involving the '437 patent, correct?

17 A. Correct.

18 Q. Okay. I may refer to this as your '437
19 declaration.

20 If I do, you will know what I am talking
21 about, right?

22 A. Yes.

23 Q. Okay. Now, we just talked about the
24 process of constructing your declaration in the '603
25 case earlier. Do you remember that?

1 A. Yes, of course.

2 Q. Did you go through a similar process when
3 writing your '437 declaration?

4 A. Yes, exactly, the same process.

5 Q. Okay. Is it fair to say some content of
6 your '437 declaration was provided to you?

7 A. Yes.

8 Q. That content would include the legal
9 standards, for example?

10 A. Correct.

11 Q. Okay. And similar to your previous
12 declaration, such content would also include topics
13 like obviousness. Is that correct?

14 MS. NALL: Objection, mischaracterized his
15 prior testimony.

16 A. Definition of that, yes. Definition of
17 obviousness, yes.

18 Q (By Mr. Rosato) Okay.

19 A. Legal definition of obviousness.

20 Q. Okay. The legal definitions were provided
21 to you?

22 A. Right.

23 Q. Okay. And if you are looking at the
24 cover, can you verify that that is your signature?

25 A. Yes.

1 Q. And did you go through a similar process
2 with DocuSign to execute this document?

3 A. Correct.

4 Q. Okay. The '437 declaration cites to
5 various references, correct?

6 A. Correct.

7 Q. Okay. Other than the references cited in
8 this document, were there any other references that
9 you relied upon in rendering your opinion in this
10 case?

11 A. No, everything that I have said is
12 supported with the references that is cited in this
13 '437.

14 Q. Okay. Thank you.

15 What did you do to prepare for the
16 deposition today?

17 MS. NALL: Objection to the extent this
18 calls for attorney/client privileged communications.
19 I will instruct the witness not to answer.

20 To the extent you can answer without
21 revealing the content of any attorney/client
22 privileged communications, you may do so.

23 A. So I decline to answer, sir.

24 Q (By Mr. Rosato) Let me clarify just to help
25 counsel out.

1 I am not interested in the specifics of
2 what you talked about with counsel. So if any of
3 that, I don't want -- I am not asking about, okay?

4 Do you understand that?

5 A. Yes.

6 Q. So my question is, other than those
7 specifics, what did you do to prepare?

8 A. I have -- I read my declaration carefully
9 to be sure I am still -- this is, as you can see the
10 dates --

11 Q. Okay.

12 A. -- and so I have to remind myself what was
13 in the declaration after nine months.

14 And we reviewed the patent itself, both
15 patents, '437 and '603.

16 I reviewed references to those patents.
17 And -- also my legal team, they discussed how this
18 process is going to take place, the same question
19 that you asked about at the beginning.

20 MS. NALL: I am going to -- remember, I
21 instruct you not to reveal the content of any
22 communications.

23 THE WITNESS: Communications, right.

24 A. So I think I stop here.

25 Q (By Mr. Rosato) Okay. But you had meetings

1 with your legal team. Is that right?

2 A. Correct.

3 Q. I don't want to know specifics about those
4 meetings I would ask, but generally when did those
5 meetings occur and how long?

6 A. About two days. That included having
7 dinner, in a restaurant called Geronimo. It was
8 pretty good. And basically, that is all.

9 Q. Okay. So about two days' worth of
10 meetings. Is that correct?

11 A. Not full day, but partial day.

12 Q. Okay. I will take your restaurant
13 recommendations, when we go off the record.

14 A. Right.

15 Q. Thank you.

16 MR. ROSATO: Let's go off the record.

17 (A recess was taken.)

18 (Exhibit marked, 1001.)

19 Q (By Mr. Rosato) Okay. Let's hand you a
20 copy of Exhibit 1001 from the 029PGR, which is the
21 first case.

22 Do you recognize this document?

23 A. Yes.

24 Q. What is it?

25 A. It is the original patent by Larsen about

1 the production of the purified Lead-212
2 radioisotopes.

3 Q. This is the '603 patent, right?

4 A. Correct.

5 Q. For the record, I will just read the whole
6 patent number.

7 That is 12,125,603, correct?

8 A. Correct.

9 Q. I may refer to this as the '603 patent.
10 You will know what I am talking about,
11 right?

12 A. Yes.

13 Q. Did you read this patent in forming your
14 opinions in the 029PGR?

15 A. Yes.

16 Q. Did you read the patent in its entirety?

17 A. Yes.

18 Q. That includes all the figures?

19 A. Of course.

20 Q. And all the written description and
21 specification?

22 A. Correct, yes.

23 Q. If I refer to the specification of the
24 patent, you will know what I am talking about when I
25 say that?

1 MS. NALL: Objection, form.

2 A. Rephrase the question, please.

3 Q (By Mr. Rosato) Are you familiar with the
4 term "specification" when referring to a patent?

5 A. Specification? No. You have to remind me
6 what you are referring to.

7 Q. Well, my question is, do you know what
8 that means?

9 A. I can only guess what you are asking me.
10 I know what this patent is all about.

11 Q. Okay. So in our conversation today, I may
12 refer to the specification of the patent, okay?

13 A. Okay.

14 Q. And when I am referring to the
15 specification, you can look through this document
16 and look at the content to answer that question,
17 okay?

18 A. Yes.

19 Q. Okay. And while we are at it, let's hand
20 you a copy of Exhibit 101 in the 040PGR.

21 Do you have that document?

22 A. Yes, in front of me.

23 Q. Do you recognize this document?

24 A. Yes.

25 Q. What is that?

1 A. That is also related to production of the
2 purified Lead-212 for medical application.

3 Q. This is the '437 patent, correct?

4 A. Correct.

5 Q. Okay. For the record, that entire number
6 is US patent 12,249,437, correct?

7 A. Yes.

8 Q. If I refer to this as the '437 patent, you
9 will know I am referring to this document, right?

10 A. Yes.

11 Q. Do these two patents contain similar
12 content?

13 A. Yes.

14 Q. Okay. We talked about the specification
15 earlier, correct?

16 A. Yes.

17 Q. Okay. Would you say these two patents
18 share the same specification?

19 MS. NALL: Objection, form.

20 A. Your same Topic 1 related to another but
21 they are more, different claims. They have a
22 slightly different claim.

23 Q (By Mr. Rosato) Okay. The claims are
24 different between the two patents, correct?

25 A. Correct.

1 Q. Do you recall seeing any other differences
2 between the patents, other than the claims?

3 A. Some of the figures are different. I am
4 not sure if the references are different or not. I
5 would have to look.

6 Q. Do you recall if it shares some of the
7 same figures?

8 A. Some of the figures are similar, yes.

9 Q. Okay. Let's look at Figure 1 of the '437
10 patent.

11 Let me know when you are there.

12 A. Yes, I'm here.

13 Q. Okay. So take a look at that.

14 Now, let's look at Figure 1 of the '603
15 patent, okay?

16 A. Okay, I'm here.

17 Q. Okay. The two patents share the same
18 Figure 1, correct?

19 A. Correct.

20 Q. So for reference, let's keep looking at
21 Figure 1 of the '603 patent.

22 A. Yes, I'm here.

23 Q. What is illustrated in Figure 1?

24 A. The decay scheme of the natural
25 Thorium-232.

1 Q. Okay. Let's walk through Figure 1. We
2 will start with Thorium --

3 A. 232.

4 Q. Okay. Then there is a pathway to
5 Thorium-228. Do you see that?

6 A. Correct.

7 Q. And this shows Thorium-228 decaying into
8 Radium-224, correct?

9 A. Correct.

10 Q. And then it shows the Radium-224 decaying
11 into Radon-220. Do you see that?

12 A. Yes.

13 Q. It shows the Radon-220 decaying into
14 Polonium-216. Is that right?

15 A. Yes.

16 Q. The Po is Polonium?

17 A. Yes, correct.

18 Q. And then 216Polonium decaying into
19 Lead-212, correct?

20 A. Correct.

21 Q. And the Pb and the 212Pb is lead, correct?

22 A. Yes, that is the chemical symbol for lead.

23 Q. Okay. This shows Radon-220 as a gas,
24 correct?

25 A. Yes, it is noble gas.

1 Q. And that Radon-220 gas is produced by the
2 decay of Thorium-228, correct?

3 A. Yes.

4 Q. It is produced by the decay of Thorium-228
5 and decay of Thorium-224, correct?

6 A. It comes directly from Radon-224, but
7 Radon-224, by itself, is created by the decay of the
8 Thorium-228.

9 Q. Okay. And that produces the Radon gas?

10 A. Correct.

11 Q. Okay. By this decay process, this Radon
12 gas is emanating from the source. Is that correct?

13 A. Correct.

14 Q. Describe how Radon-220 atoms move around
15 when it is in gas form.

16 A. It is -- I don't know how deep you want me
17 to go to the physics part of it.

18 But at the moment of its creation from
19 Radium-224, at the moment of the creation, it is
20 highly charged because it has to go to the nucleus
21 barrier. When it comes out, it is highly charged
22 but within a macro-second, it interacts with the
23 electronic cloud of the material around it.

24 Including, air, for example, and picks up
25 electron and becomes neutral. We call it

1 terminized.

2 At that point it is -- Radon has become
3 like a noble gas, like a helium, like xenon, like
4 argon. And it moves by highest speed within the
5 volume that it is confined in, bounces off the wall
6 and occupies entire volume, like air in this room.

7 But as noted here in the Figure 1, it has
8 only 56-2nds half-life. So not only it dances
9 around the volume, it would decay also. It
10 disappears and transmutes to Polonium-216.

11 And of course, at the moment it hits the
12 wall and if it decays at that moment, then you
13 expect the dotted flowing of Polonium stays on the
14 surface.

15 But if it decays on the space, which it
16 could, then that's a completely different type of
17 chemistry that you have to consider.

18 Q. Okay. Let's talk about the movement.

19 So you have mentioned the Radon gases
20 moving around the volume, correct?

21 A. Correct.

22 Q. And while it is moving around the volume,
23 it may decay into 216Polonium, correct?

24 A. Correct.

25 Q. That decay occurs while the radon atom is

1 in movement, then the resulting polonium atom
2 continues along that movement, correct?

3 A. Yes and no. If it was absolute vacuum,
4 yes.

5 But here we are talking about in air, and
6 air contains, of course, oxygen and contains
7 nitrogen, and it contains significant amount of
8 hydrocarbons, in a small amount, and other
9 impurities, dust, you know, silica air -- silica
10 particles, I should say.

11 And most likely, polonium will stick to
12 one of these surfaces.

13 And now you have a movement of that
14 carrier atom or molecule.

15 So it is hard to say just where the
16 polonium is going to continue with the same
17 trajectory.

18 An absolute vacuum, answer to your
19 question is, yes.

20 But in the real life, it is very difficult
21 to say how it is going to.

22 Q. Okay. But you wouldn't expect a radon
23 atom that decays in a polonium to just stop, right?

24 A. It does not stop.

25 Q. Okay. So you have mentioned the radon

1 atoms moving around the volume, correct?

2 A. Correct.

3 Q. And they decay into polonium?

4 A. Correct.

5 Q. And that's -- polonium atom doesn't just
6 stop, it continues moving in some capacity?

7 A. Right.

8 Q. Okay. And then that polonium atom will
9 continue moving but decay into Lead-212. Is that
10 correct?

11 A. Correct.

12 Q. And if that moving lead atom hits the
13 walls of the container, it probably sticks there,
14 correct?

15 A. Correct.

16 Q. Okay. And that is the collection surface
17 that you referred to?

18 A. It's an entire volume and the collection
19 surface is -- is defined as a surface that you can
20 retrieve the Lead-212. But there is other surfaces
21 that you cannot collect the Lead-212.

22 Like radon may go back again and hit the
23 source itself, the Thorium-228. Of course, you
24 cannot collect the lead from that.

25 And there are other spaces in the figure

1 related to this that is not accessible to leaching
2 the lead from.

3 Q. Okay. And by "these figures," you are
4 referring to the figures in the patent, correct?

5 A. Yes, the figures in the patent.

6 Q. Okay. But the idea is for the lead to hit
7 a surface from which you can collect it from?

8 A. Correct.

9 Q. Okay. And that is the collection surface?

10 A. Yes.

11 Q. Okay. We will come back to this, but let
12 me just first ask a few questions about your
13 technical background, if I may.

14 A. Uh-huh, yes.

15 Q. And you can feel free to look at your --
16 either of your declarations but I will refer to the
17 '603 declaration, okay?

18 A. Yes, uh-huh.

19 Q. Now, in each of your declarations,
20 including the '603 declaration, you include a
21 Biographical Sketch at the end of your declaration,
22 correct?

23 A. Correct, yes.

24 Q. We are looking at the '603 declaration
25 that starts at Page 87. Is that right?

1 A. Page 87, yes, uh-huh.

2 Q. I will help you out here for a second
3 because there are, as we look at these declarations,
4 there are two page numbers, right?

5 You can see that like that page, the
6 previous page, which has page 75 of your
7 declaration.

8 Do you see that?

9 A. Yes.

10 Q. And then in the lower right corner, it
11 says Page 86?

12 A. Yes.

13 Q. Okay. That latter number we tend to refer
14 to as the Bates numbering, okay?

15 A. Base numbering?

16 Q. It is called the Bates number.

17 A. Okay.

18 Q. Yeah. I mention this, if you have any
19 confusion on what page I'm referring to, we can talk
20 about that Bates.

21 I will try to be clear on that. If you
22 have any questions on what I am referring to, let me
23 know, okay?

24 A. Thank you.

25 Q. Okay. So we are looking at your

1 Biographical Sketch at page 87, okay?

2 A. Yes.

3 Q. Okay. And it says you completed your
4 undergraduate studies in chemistry at the National
5 University in Iran. Is that correct?

6 A. Correct.

7 Q. And then you completed a Ph.D. at
8 University of New Mexico. Is that correct?

9 A. Correct.

10 Q. Okay. And the Ph.D. was in what subject?

11 A. My training is physical chemistry.

12 Q. Okay. By training, physical chemistry,
13 you have listed here Radiochemistry?

14 A. Yes, but my thesis was based on
15 Radiochemistry, yes, uh-huh.

16 Q. Okay. Understood.

17 You mentioned earlier that you don't have
18 legal training, right?

19 A. None whatsoever.

20 Q. Okay. Let's look at page 2 of this
21 declaration.

22 A. Uh-huh.

23 Q. You covered some of this earlier but there
24 is a section here titled "Legal Standards." Do you
25 see that?

1 A. Legal Standards? What page? I'm so
2 sorry, I misunderstood.

3 Q. It is your declaration. It has page 2 of
4 your declaration and the Bates page is page 13.

5 A. Yes, uh-huh. Yes, I'm here.

6 Q. You see the section Legal Standards?

7 A. Right.

8 Q. Okay. You may have answered this earlier
9 but who informed you of the legal standards in this
10 case?

11 A. My legal team.

12 Q. Okay. I think you mentioned earlier that
13 the legal standards were provided to you. Is that
14 right?

15 A. Yes, uh-huh.

16 Q. Okay. And in fact, at page -- excuse
17 me -- paragraph 8, you stated, I have been informed
18 that the, you know, documents and materials, right?

19 A. Yeah.

20 Q. Do you see that?

21 A. Yes, uh-huh.

22 Q. The next paragraph, it says, I have been
23 informed that --

24 A. Yes.

25 Q. Okay. And by being informed, you are

1 referring to being informed by the legal team. Is
2 that fair?

3 A. Correct.

4 Q. Okay. Does -- the legal standard
5 continues from paragraph 8 and goes through
6 paragraph 28.

7 Do you see that?

8 A. Yes, uh-huh.

9 Q. And did you apply these legal standards
10 in -- that are stated in this section, in the
11 analysis that we see in the other sections?

12 A. Yes.

13 Q. Okay. And is it fair to say that your
14 understanding of patent law is what you wrote as
15 being your understanding in this Legal Standard
16 section?

17 A. Yes. Whatever I have in my declaration, I
18 have used all the legal standards that is listed
19 here, yes.

20 Q. Okay. Did you apply any legal standards
21 that are not listed in this Legal Standard section?

22 A. I don't know anything outside of this.
23 All the legal standard that I know is
24 limited to what I have here.

25 Q. Okay. And what you have listed here is

1 what you applied in your declaration?

2 A. Yes.

3 Q. Okay. And if there were any other legal
4 standards not mentioned here, those were not part of
5 your testimony. Is that fair?

6 A. That is fair, fair but -- okay.

7 Q. So it is fair to say you didn't go
8 investigate some legal standards on your own,
9 correct?

10 A. Did not, I did not.

11 Q. You are not a lawyer, you are a scientist,
12 right?

13 A. This was sufficient legal talk from my
14 part. Yes, I am a scientist. I don't have any
15 background in legal.

16 Q. Sure. And in rendering your opinions, you
17 followed the legal standard --

18 A. Yes.

19 Q. -- that are listed here?

20 A. Yes. What legal team was provided me, I
21 followed this instruction, yes.

22 Q. Okay. And you did not depart from these
23 legal standards to apply something not mentioned
24 here?

25 A. I have tried, yes. I don't -- most likely

1 not, but I don't know if there is anything specific
2 I can talk about it but I don't think I have.

3 Q. Okay. Just to be clear, when you say you
4 don't think you have, you don't think you have what?

5 A. I have not deviated from these standards.

6 Q. Okay. Great. Thank you. Thank you for
7 clarifying that. Let's get you another document.

8 I hand you a copy of Exhibit 1003 from the
9 '603 patent PGR.

10 And let me know when you have that.

11 (Exhibit marked, 1003.)

12 A. Yes, I have this document.

13 Q. Okay. What is this document?

14 A. This is a publication. It is a journal,
15 technical journal related to Applied Radiation that
16 covers radiopharmaceutical to part nuclear
17 chemistry, radiochemistry.

18 It covers the nuclear and in GO chemistry
19 or radiation in GO chemistry, like Thorium-22,
20 natatorium, distribution of the earth.

21 You can publish it in this journal, for
22 example.

23 Q. Okay. Why don't you turn to what is
24 marked as page 6 of this document.

25 You will see --

1 A. Yes, I have it.

2 Q. Okay. Who is listed as authors in this
3 paper?

4 A. Hassfjell & Per Hoff.

5 Q. Okay. Now, we have -- I think you refer
6 to this document in your declaration as the
7 Hassfjell-Hoff?

8 A. Correct.

9 Q. Okay. If I refer to this document as
10 Hassfjell-Hoff, you will know I am referring to
11 Exhibit 1003 here, correct?

12 A. Correct.

13 Q. Okay. You also discuss this document in
14 your second declaration, correct?

15 A. Correct.

16 Q. Okay. And that is the declaration that
17 addresses the '437 patent, right?

18 A. Correct.

19 Q. Okay. Now, this document is submitted in
20 that case also as marked Exhibit 1003, okay?

21 A. Correct.

22 Q. Okay. And that is the same document in
23 both cases, correct?

24 A. It is the same document. I don't know if
25 the numbering are the same or not.

1 This was Exhibit 1003, in '603, and in
2 '437 I think it's the same numbering but I cannot be
3 sure. I have to look.

4 Q. I will represent to you it has the same
5 exhibit number.

6 A. Okay.

7 Q. So if I am referring to Exhibit 1003, we
8 are talking about this document.

9 A. Right.

10 Q. And I may refer to it has Hassfjell-Hoff
11 but we are talking about the Hassfjell-Hoff
12 reference that was identically cited in both cases,
13 okay?

14 A. Correct, yes.

15 Q. Okay. Let's look at Figure 2 of
16 Hassfjell-Hoff.

17 Let me know when you are there.

18 A. Yes, I'm here.

19 Q. And are you familiar with this figure?

20 A. Yes.

21 Q. Okay. And what is shown here?

22 A. It is the Lead-212 generator that
23 Hassfjell and Hoff presented in this publication.
24 And this is the design of their generator system.

25 Q. Okay. Hassfjell-Hoff refers to this as

1 their generator, right?

2 A. Correct.

3 Q. In fact, on the bottom of this page, the
4 Figure legend states, "This is describing the design
5 of the generator shown, functional details and
6 operating mechanisms."

7 Do you see that?

8 A. Correct.

9 Q. Okay. And describe for me, generally, the
10 operation of this generator, please.

11 A. The generator is -- kept a detail of the
12 mechanical operation, but I am going to start by
13 saying that the source Thorium-228, in this case,
14 has been precipitated as a barium stearate.

15 This is a well-known compound that could
16 carry the Thorium.

17 What that means, Thorium-228 -- I am not
18 sure -- I just want to emphasize that in this case
19 the number of atoms are so small that you cannot
20 actually get the physical precipitate of the
21 Thorium-228. It is not visible to the naked eye.
22 It is so small.

23 So in order to force it to precipitate or
24 get the solid material, it's been known for long
25 time, over maybe 50, 60 years, you can use barium

1 stearate and force the Thorium to precipitate into
2 something that you can see and manipulate.

3 Another advantage of the stearate is it's
4 very fluffy and allows the Radon, that we have
5 discussed before, to emanate to high efficiency.

6 So they produce this stearate of
7 Thorium-228 precipitated, purify it and then put it
8 in this packet made from membrane and they double
9 and treble this packet to be sure that none of
10 Thorium stearate gets out of this packet. But, of
11 course, allow the Radon to emanate out of it.

12 Then they placed the -- this packet in
13 this chamber, which is called filering basket.
14 That's the -- means the filtering basket but the --
15 in touch, I think, the filering means filtering, if
16 I am correct.

17 And then there is a gate valve, as you can
18 see, that separates the upper part of this generator
19 from the lower part.

20 And then the gate valve is in open
21 position. You can push -- you can use this plunger
22 on the top of the generator. It marks as a tube, to
23 push the -- this basket into the collection vessel
24 that is on the door part of this generator.

25 And the collection vessel is actually a

1 plastic bottle, which is on a screw, the top is then
2 taken off and placed on the lower part.

3 And when the gate -- again, as I have
4 mentioned, when the gate is open, they can push the
5 basket back into this collection vessel, plastic
6 collection, right?

7 And as we discussed, the Radon would
8 emanate and part of it absorb on the surface of
9 this -- of the Y.

10 But in the same time, when they push the
11 basket down, the bottom part of the basket actually
12 seals the top of this plastic bottle.

13 So when the source is inside the bottle,
14 there is no -- the Radon cannot go anywhere else
15 except into the bathroom.

16 And after certain period of time, you
17 reverse the process. You -- the gate is still open,
18 you pull this filtering basket up, using the tube and
19 the plunger, and you close the valve and then you
20 unscrew the container that holds the plastic bottle,
21 you remove it, unscrew it and you remove it, and you
22 remove the plastic bottle. And leach the Lead-212
23 from that body, if you want to do it physically,
24 which I don't, but...

25 MR. ROSATO: Can we pause for a second?

1 Just go off the record.

2 (Discussion off the record.)

3 Q (By Mr. Rosato) Okay. Did you have
4 anything else about the generator you wanted to say?

5 A. I mean, I can continue but I think that's
6 what -- mostly, perhaps, just answer your question
7 at this time but I would be happy to go through it
8 again.

9 Q. Okay. That was a very helpful overview.
10 Let me ask you about some specific
11 components, okay?

12 A. Of course.

13 Q. Okay. In the middle of the page here,
14 showing Figure 2, it labels the housing upper
15 chamber.

16 Do you see that?

17 A. Yes, uh-huh.

18 Q. Okay. Now has the diameter listed at
19 44-milliliters?

20 A. Correct.

21 Q. Okay. There is a description of this
22 generator on the previous page, page 7.

23 Let's just turn to that.

24 A. Yes, I have it here.

25 Q. Okay. There is actually a section here in

1 the left column that reads, "The generator."

2 Do you see that?

3 A. Correct, yes.

4 Q. Okay. The third sentence down states,
5 "The generator was made with two components, a lower
6 compartment, which is a collection chamber, and
7 upper compartment, which is a housing chamber for
8 the source, when the collection chamber is removed."

9 Do you see that?

10 A. Yes, uh-huh.

11 Q. Okay. Now turning back to Figure 2, we
12 just identified the upper chamber, right?

13 A. Yes, uh-huh.

14 Q. And then lower down on this Figure 2 that
15 has labeled, "Collection Lower Chamber."

16 Do you see that?

17 A. Yes, uh-huh.

18 Q. And that's where you pointed to that the
19 polyethylene bottle is located, correct?

20 A. Correct.

21 Q. Okay. And that polyethylene bottle is
22 being used to collect Lead-212 and Bismuth-212,
23 correct?

24 A. Correct.

25 Q. And looking at Figure 2, you mentioned a

1 component that is present between the upper and
2 lower chambers.

3 What is that?

4 A. What was the question, again? I'm sorry.

5 Q. Looking at Figure 2, there is a component
6 located in between what we identified as the upper
7 and lower chambers, correct?

8 A. Oh.

9 MS. NALL: Objection, form.

10 A. You mean the gate valves?

11 Q (By Mr. Rosato) Right. Yeah.

12 So where is the gate valve located here?

13 A. It is in the upper chambers and lower
14 chambers.

15 Q. Between the upper and lower chambers,
16 correct?

17 A. Correct.

18 Q. Okay. What does the gate valve do?

19 A. The gate valve closes. In the closed
20 position, it separates the upper chamber from the
21 lower chamber. But in the same time, that gate
22 valve stops release of the Radon to the environment.

23 In other words, it does not matter if it
24 is open position or closed position, the Radon
25 cannot escape to the environment, go outside the

1 system.

2 In the open position, of course, you can
3 lower the source into the collection bottle.

4 And in the closed position, you pull the
5 source back and you isolate the upper part in order
6 to remove the collection vessel. That is the use of
7 that gate valve.

8 Q. Okay. You mentioned the -- is it outside
9 environment?

10 A. To the environment, yes.

11 Q. So when the gate valve is closed, the
12 source is isolated from the polyethylene bottle
13 below, correct?

14 A. Correct.

15 Q. Okay. And when that gate valve is open,
16 the source is exposed to the polyethylene bottle,
17 correct?

18 A. Correct.

19 Q. Okay. And I think you state this in your
20 declaration. We can see this at paragraph 57 of
21 your declaration in the '437 patent.

22 We can turn there. The declaration in the
23 '437 patent.

24 A. I'm sorry, what page is it, 47?

25 Q. It is paragraph 57.

1 So it is on page --

2 A. It is on page --

3 Q. Again, we have two different page numbers.

4 We have got page 28 and then Bates page 44.

5 A. Yes, uh-huh.

6 Q. So we are looking at paragraph 57 there.

7 Do you see that?

8 A. Yes, uh-huh.

9 Q. Okay. And you state, "When the gate valve
10 is closed, the cell precursor isotope source is not
11 fluidly coupled."

12 A. Let me take this off.

13 Okay. Please, again tell me the page
14 number page.

15 Q. Page 28.

16 A. Page 28 or 44?

17 Q. Or 44.

18 A. And section --

19 Q. Do you see the paragraph at the top of the
20 page?

21 A. Right.

22 Q. The last portion of that paragraph is what
23 we are looking at.

24 A. Okay.

25 Q. Where it says, "When the gate valves

1 close, the solid precursor isotope source is not
2 fluidly coupled."

3 A. Uh-huh.

4 MS. NALL: Objection, form.

5 Q (By Mr. Rosato) And when the gate valve is
6 open, the solid precursor source is pre-fluidly
7 coupled.

8 MS. NALL: Objection, mischaracterizes the
9 document.

10 Q (By Mr. Rosato) Do you see that?

11 A. Okay, yeah. I see that.

12 Q. Okay. Well, let's go back to -- well,
13 first, that is consistent with what we just talked
14 about in your description of Figure 2, the
15 generator?

16 A. Yes.

17 Q. Let's go back to the Hassfjell-Hoff
18 reference.

19 So Figure 2, you mention this showing a
20 tube, correct?

21 A. Yes, Figure 2.

22 Q. And they have the tube labeled at -- sort
23 of at the top of the figure there?

24 A. Yes, uh-huh.

25 Q. This is a long tube that extends

1 vertically in this Figure, correct?

2 A. Correct.

3 If I may add, that tube is actually a
4 sealed tube. In other words, it is -- the tube at
5 the top and bottom part of it are sealed.

6 Q. You are referring to the O-rings that are
7 shown there?

8 A. No. The tube itself is just a hollow tube
9 where the top and the bottom is welded shut. So it
10 is actually a rod in practice. In principle, it is
11 a hollow rod.

12 If you look at the top of it, it has a top
13 that is sealed and also in the bottom, it is sealed.
14 So it is a rod but it is hollow. But I think it was
15 a mistake to call it tube. I should have written it
16 as hollow. It is a hollow rod.

17 The purpose of this is only push the
18 basket up and down into the collection vessel and
19 pull it back up. And there is no reason that to be
20 open at all.

21 Q. I see.

22 And pushing it up and down, as you said,
23 is the only purpose of --

24 A. That is the purpose, yeah.

25 Q. Okay. You mentioned the filtering basket?

1 A. Uh-huh.

2 Q. Okay. And this is the hatched component
3 hanging off the bottom of the tube, correct?

4 A. Correct, uh-huh.

5 Q. Okay. We talked about this term
6 "filerling."

7 Do you recall what that means?

8 A. Yes. Filerling, I think it means filtering
9 or it is made from some sort of mesh, metal mesh,
10 that allows to gas -- Radon gas readily to pass
11 through.

12 But in the same time, it has enough
13 integrity to hold those packets of Thorium-228.

14 Q. Okay. Let's look at page 17 of your '603
15 declaration.

16 Let me know when you are there.

17 A. Okay.

18 Q. It is page 17. It is also marked as Bates
19 page 28.

20 A. Okay.

21 Okay, page 17 or what was the page number?

22 Q. So it says page 17 at the bottom and then
23 that Bates page number was 28.

24 A. Twenty-eight.

25 All right. I think I'm here, page 17 and

1 28.

2 Q. Do you see a footnote at the bottom of
3 that page?

4 A. Uh-huh.

5 Q. What is stated in that footnote?

6 A. Okay. That is the meaning of the filering
7 banner that describes here the -- when I read the
8 patent, I was not sure this was misspelled. And
9 then we have to look it up. The word "filering," it
10 is a Norwegian term, which means -- actually a
11 lace-type material, very similar to material that is
12 made from metal mesh, and I called it filter.
13 Basically I called it filtering. It is very close
14 to the English word "filter."

15 Q. And you have it noted as a Norwegian term
16 that means a lace-like material, right?

17 A. Correct, uh-huh.

18 Q. Okay. And during operation of
19 Hassfjell-Hoff's generator, what is it that is
20 contained in the filering basket?

21 A. It is Thorium-228 source.

22 Q. The filering basket contains the
23 228Thorium, barium source?

24 A. Correct. Which is enclosed in this packet
25 of membrane-type material.

1 Q. Do you recall what the packets are made
2 of?

3 A. I think it is nylon material, which is
4 very much like Nylon 66, it is famous stocking that
5 the ladies use.

6 Q. Okay. Let's look at the page of
7 Hassfjell-Hoff that precedes the figure. It is
8 page 7.

9 Let me know when you are there.

10 A. Yes, uh-huh.

11 Q. And let's look at the left column in the
12 upper most portion.

13 A. Right.

14 Q. It describes these packets. Do you see
15 that?

16 A. Right, yeah.

17 Q. Okay. You have mentioned earlier
18 precipitate and that is discussed here, correct?

19 A. Yes. On the top of the paragraph, it
20 describes the Thorium stearate precipitate. That is
21 how it was filtered, produced and then filtered and
22 then washed with a methanol to remove all the water.
23 And then it folded and wrapped into the plastic
24 material that is made from membrane.

25 Again, it is a plastic. And it is

1 described that it is wrapped several times and -- to
2 be sure that there is no leakage of Thorium volume
3 stearate out of this packet.

4 Q. Okay. It mentions a filter membrane,
5 correct?

6 A. Uh-huh, yes. The filter membrane on the
7 top part is for production of the barium stearate.

8 It is not what the barium stearate is
9 placed in. That is only to separate when you
10 precipitate it, you run it through this filter to
11 collect the precipitation and then you wash it to
12 gather the water, then you can collect the Thorium,
13 barium stearate.

14 Q. Okay. The second sentence there states,
15 "The filter membrane with the precipitate was folded
16 and wrapped in two additional filters."

17 A. Filters, yes.

18 Q. Okay. And then it says, "The packet was
19 then secured with plastic strips."

20 A. Right.

21 Q. Okay. But it is not saying the filter
22 membrane itself was plastic, correct?

23 A. My experience is these are all plastic
24 material. I have used this membrane a number of
25 times. Specifically Gilman USA that produces this

1 membrane. They are -- could be glass fiber, but
2 they have plastic material as a binder, for example,
3 but allows the liquid gas to go through. They are
4 very porous, whereas does not allow the precipitate
5 to go through --

6 Q. Okay.

7 A. -- the solid material. It stops the
8 solid.

9 Pretty much like making your drip coffee.
10 You put the coffee grind in your filter and you add
11 water and the coffee grind stays in the filter but
12 the liquid will go through.

13 Q. Okay. The filter here is not a source of
14 radioactivity, correct?

15 A. No.

16 Q. It is the precipitate that is the source.

17 A. Correct.

18 Q. Okay.

19 Okay. So these packets are made and then
20 placed in the filtering basket prior to operation of
21 the device?

22 A. Correct, yeah.

23 Q. And do you know how many packets are
24 placed in the basket?

25 A. It depends on -- I don't think there is a

1 detail on how many -- several. I don't know. I
2 don't recall exactly. And it depends what level of
3 radioactivity you are going to -- your generator is
4 going to produce, okay?

5 Q. Okay.

6 A. I say several.

7 Q. Several, okay.

8 It looks consistent with what
9 Hassfjell-Hoff states when they say the filering
10 basket has a capacity of three to four 228 barium
11 stearate packets?

12 A. Correct.

13 Q. Okay. And how many you would put in there
14 depends on how much source you want emanating?

15 A. Correct.

16 Q. Okay.

17 Okay. Are you still on page 7 of
18 Hassfjell-Hoff there?

19 A. Yes, I am still on page 7.

20 Q. Okay. So looking under that section
21 generator, if you will look at the second sentence
22 there, it states, "All generator parts were made of
23 stainless steel and connected to standard high
24 vacuum equipment to avoid leakage of radioactivity
25 to the surroundings."

1 Do you see that?

2 A. Yes.

3 Q. What are they referring to there in terms
4 of leakage of radioactivity?

5 A. Because they are -- as you can see, they
6 are, and the figure -- I am referring to Figure 2,
7 there is a chamber on the top which has O-rings, two
8 sets of O-rings, which this filtering basket is
9 attached to it. And that moves up and down, so
10 there is a possibility of the gas escapes from that
11 and then also the gate valve down here, the gate
12 valve that is, as you may know, it may contain
13 O-rings as well or could be metal-to-metal seal, but
14 there is a possibility of the leak.

15 So that is the reason they were concerned
16 about the integrity of the system here.

17 Q. Okay. When you say gas leaking out, are
18 you referring to Radon gas?

19 A. Yes, I am referring to the Radon gas.

20 Q. Okay. And that would include the Radon
21 gas produced from the 228 barium stearate, correct?

22 A. That is the only Radon that we are
23 discussing here, yes.

24 Q. Okay. That is one of my questions.

25 What would be the source of the, you know,

1 leakage of radioactivity?

2 A. The O-rings, failure of the O-rings.

3 As I said, there are certainly O-rings
4 here. And there is no other possibility except I
5 think the leakage point here is the O-rings.

6 Q. Okay. So that would be -- you are
7 referring to a point of potential leakage, correct?

8 A. Yes, potential leakage, yes.

9 Q. My first question is, what is the source
10 of the radioactivity?

11 A. What do you mean, source of radioactivity?
12 It is the Radon 220, that is the source that the
13 radioactivity could leak out into the environment.

14 Q. Okay. And the source is coming from the
15 228 --

16 A. Correct.

17 Q. -- Thorium?

18 A. Correct.

19 Q. And other than the 228 Thorium, barium
20 stearate, there is no other source of radioactivity
21 here, correct?

22 A. Correct.

23 Q. Now, I will ask you about the potential
24 points of leakage, okay?

25 A. Uh-huh.

1 Q. You have mentioned the O-ring?

2 A. Correct.

3 Q. If those O-rings are not sealed off, you
4 could get Radon gas leaking out there?

5 A. Correct.

6 Q. Okay. You also mentioned the gate valve,
7 correct?

8 A. Yes.

9 Q. The gate valve's wide open or not properly
10 closed, you could have Radon gas leaking out --

11 A. No, the gate valve is designed to not leak
12 to the outside -- to the outside environment. It
13 doesn't matter if it is closed or open. The gate
14 valve is supposed to be tight.

15 Q. I see.

16 So even if the gate valve is open, you
17 wouldn't expect radioactivity leaking outside of the
18 system.

19 A. System, yes.

20 Q. Okay. But if the gate valve is open,
21 obviously the Radon gets down into the polyethylene
22 bottle?

23 A. Correct.

24 Q. Okay.

25 Okay. We talked about the source of the

1 radioactive decay, okay?

2 A. Yes.

3 Q. And we talked about the 228 Thorium,
4 barium stearate, right?

5 A. Correct. In the case of Hassfjell and
6 Hoff, yes.

7 Q. Okay. And there are no other sources
8 shown here, other than the 228 Thorium, barium
9 stearate, right?

10 A. Correct.

11 Q. In other words, the tube is not producing
12 radioactivity, right?

13 A. Correct.

14 Q. Okay. The lace basket itself is not
15 producing radioactivity, correct?

16 A. They are all stabilized tubes, yes.

17 Q. Let's take a break.

18 A. Yes.

19 MR. ROSATO: We are at an hour or so. I
20 promise to try to keep you on that.

21 THE WITNESS: Thank you.

22 (A recess was taken.).

23 Q (By Mr. Rosato) Okay. Let's keep looking
24 at Figure 2 of Hassfjell-Hoff, please.

25 A. Yes, I'm here.

1 Q. Earlier you had mentioned a Bates valve
2 shown there in Figure 2.

3 Do you see that?

4 A. Yes.

5 Q. There is something labeled there as toggle
6 lever.

7 Do you see that?

8 A. Yes.

9 Q. What is that toggle lever?

10 A. I don't know what the word "toggle" really
11 means here but the lever is the gate valve.

12 Right up on the valve that you usually
13 turn the gate valve, actually slides, so this lever
14 actually slides the component inside the gate valve
15 to make it open and close.

16 Q. Okay. And you are gesturing with your
17 hand.

18 What do you mean by that?

19 A. Yes. Inside/out, kind of. That is what I
20 think how the gate valve works, yes.

21 Q. Is that operated by hand by sliding it
22 back and forth?

23 A. Yes. You can automate it but in here it
24 is just operated by hand.

25 Q. Okay. There is a photograph provided here

1 as Figure 3.

2 Do you see that?

3 A. Uh-huh. Yes, uh-huh.

4 Q. And this is a photograph of the generator
5 device?

6 A. Right, uh-huh.

7 Q. Is that toggle lever shown in this
8 picture?

9 A. I think this lever on the right side, the
10 black lever on the right side, my understanding is
11 it is in the secure position, so the gate valve
12 cannot be opened or closed.

13 You have to flip these, either up or down,
14 in order to operate it. And you can see part of the
15 shaft, also exposed here, most likely this shaft
16 goes through a series of the O-rings.

17 I am not an expert in gate valves, so I am
18 just guessing here.

19 Q. The black object you are pointing to is
20 the black handle, right?

21 A. Yes. The black handle that's referred
22 to -- and you go back to the original figure. That
23 is the toggle lever, I think.

24 Q. Okay. So the idea here is to grab that
25 toggle lever by hand and move the gate valve back

1 and forth?

2 A. Turn it first to the open -- not the open
3 position, to the point where you can take it from
4 the safety and then push it.

5 Q. So presumably you turn it to sort of
6 unlock the latch?

7 A. Exactly.

8 Q. And then move it forward or backward to
9 open the gate valve?

10 A. Correct, yes.

11 Q. And it is this physical operation that
12 opens and closes the gate valve?

13 A. Correct.

14 Q. Okay.

15 Okay. So looking at Figure 2, is this
16 demonstrating the gate valve in a closed position.

17 Is that fair?

18 A. I assume it is in here but it could be
19 open.

20 As I said, it is hard to say if it is
21 opened or closed. It doesn't matter because the
22 Radon cannot leak. The gate valve is designed and
23 the Radon cannot leak to the outside environment.

24 It could be. You can leave it open and
25 still you have a communication between the source

1 and the collection vessel.

2 Q. Okay. With the gate valve closed,
3 however, the tube must be in the upward position,
4 correct?

5 A. Correct, uh-huh.

6 Q. And if that gate valve is in the closed
7 position, it blocks the tube from moving downward?

8 A. Correct.

9 Q. Okay. You mentioned that even if the gate
10 valve was opened, the Radon gas does not escape the
11 generator itself, correct?

12 A. Does not escape to the outside.

13 Q. Okay. But it would escape down into
14 the --

15 A. Down into the collection bottle, yes.

16 Q. Okay. Unless, of course, the gate valve
17 is closed?

18 A. Correct.

19 Q. Okay. And it is the closing of the gate
20 valve that isolates the polyethylene bottle from the
21 source, correct?

22 A. Correct.

23 Q. Okay. You mentioned the O-rings shown at
24 the top of or above -- I will say at the top and the
25 bottom of what is labeled the tube passage.

1 Do you see that?

2 A. Yes, the two O-rings that is marked, yes.

3 Q. And those O-rings provide a seal in there?

4 A. It is the centering O-ring, allows the
5 tube, that I called it hollow rod, to move up and
6 down and also centers it.

7 Because, if you have two of them, then of
8 course the rod could move straight down. If it was
9 only one, the rod could move it slightly on the
10 right or left.

11 So that is the reason you typically put
12 two of them. They call it centering O-ring. In
13 general, that is what it is called.

14 Q. Okay. And in operation, you -- when the
15 tube is up, you wouldn't expect the filering basket
16 to pass all the way up into this tube passage,
17 correct?

18 A. No, no, because they are all one piece,
19 actually. They are all attached to each other. The
20 tube and the filering basket is attached.

21 Q. Okay. When the tube is pulled upward,
22 does the filering basket pull up into the tube
23 passage?

24 A. No.

25 Q. Okay.

1 A. It stops at the -- exactly where the
2 figure shows. It stops at the -- this says threaded
3 center in the tube to the filering basket, so I got
4 that position, it stops and it cannot go further,
5 higher up.

6 Q. Do these O-rings prevent Radon gas from
7 leaking up through the tube passage?

8 A. In principle. In practice, they are a
9 weakest point.

10 Q. They are a weak point?

11 A. Yes.

12 Q. Okay. Looking at this tube passage, I
13 asked you about the upward position --

14 A. Uh-huh.

15 Q. -- right?

16 When the tube is in the upward position,
17 you still have the filering basket below the tube
18 passage, correct?

19 A. Correct.

20 Q. And the tube shown here is much longer
21 than the tube passage, correct?

22 A. Correct.

23 Q. Okay. So when the tube is pushed
24 downward, then you don't expect, for example, the
25 top part of the tube to enter into the tube passage.

1 Would that be accurate?

2 A. If you push it down, it forces the
3 filering basket to go into -- if the gate is open,
4 it goes to the plastic bottle container and at the
5 top of the filering basket, as you see, is flared
6 out. It would seal against the plastic container.
7 And that is as far down as it could come.

8 So the filering basket never is designed
9 not to bottom out in the plastic basket. It stays
10 above the bottom of the plastic basket, the way this
11 is designed.

12 And the shoulder on top of the filering
13 basket, as I said, it would sit on top of the
14 plastic polyethylene bottle collection vessel.

15 Q. The configuration shown here has the lower
16 portion of the tube extending out the bottom of the
17 tube passage.

18 Do you see that?

19 A. I'm sorry. Repeat, again.

20 Q. So the configuration shown here in Figure
21 2 shows the lower portion of the tube extending out
22 from the tube passage.

23 Do you see that?

24 A. Yes, uh-huh.

25 Q. And this is with the tube in the upward

1 position, right?

2 A. Correct.

3 Q. If the tube is pushed in the downward
4 position, do you still expect part of the tube to
5 extend upward from the tube passage?

6 A. Please repeat. I lost track of what you
7 said.

8 Q. When you push the tube in the downward
9 position --

10 A. Uh-huh.

11 Q. -- you still expect a portion of the tube
12 to extend upward and not enter the tube's passage,
13 correct?

14 A. Correct.

15 Q. In other words, the tube is never
16 contained entirely within the tube passage?

17 A. Correct, yeah.

18 MR. ROSATO: Let's take a break here.

19 You have just answered so many of my
20 questions, I am trying to make the best use of your
21 time.

22 (A recess was taken.)

23 Q (By Mr. Rosato) Okay. So we have discussed
24 both the '603 patent declaration and the '437
25 declaration.

1 We had some specific questions on '603 we
2 covered, okay?

3 Right now we don't have any further
4 questions on '603, so we can break and then
5 transition to the next set of questions that are
6 more specific to the '437.

7 A. Okay.

8 MR. ROSATO: If you want to do redirect.

9 EXAMINATION

10 BY MS. NALL:

11 Q. Dr. Mirzadeh, earlier you mentioned that
12 the obviousness content in your declarations was
13 provided to you.

14 For clarity for the record, were you
15 talking about the legal section and your analysis or
16 something or just the legal section?

17 A. Just the legal section.

18 Q. Earlier you were asked about the
19 possibility of gas leaking past the O-rings and you
20 said that that was the weak point in a possibility
21 failure.

22 Do you remember that?

23 A. Yes, uh-huh.

24 Q. Do the O-rings in Hassfjell-Hoff, Figure
25 2, provide a gas-type seal?

1 A. Correct.

2 Q. Earlier you were asked whether, is the
3 closing of the gate valve that isolates the
4 polyethylene bottle from the source, and you said
5 correct.

6 Do you remember that?

7 A. Yes.

8 Q. Is it possible for the gate valve to
9 isolate the polyethylene bottle from the source if
10 the rod is in the lower position?

11 A. No. The gate valve has to remain open if
12 the source is extended down into the poly bottle.

13 Q. So only by both raising the tube and
14 closing the gate valve is it possible to isolate the
15 polyethylene bottle from the source, correct?

16 MR. ROSATO: Objection to form, leading.

17 A. Correct.

18 MS. NALL: I pass the witness with respect
19 to the '603 patent declaration.

20 EXAMINATION

21 BY MR. ROSATO:

22 Q. We can move on to the next case, the '437.

23 Okay. Doctor, in the previous discussion
24 we already introduced both declarations from the
25 '603 case and the '437 case, correct?

1 A. Correct.

2 Q. Do you have those declarations still in
3 front of you?

4 A. Yes.

5 Q. And we also discussed the Hassfjell-Hoff
6 reference earlier.

7 Do you still have that reference in front
8 of you?

9 A. Yes, it is here.

10 Q. And we discussed that in both cases, that
11 references Exhibit 1003, correct?

12 A. Correct.

13 Q. Okay. Let's turn to your '437 patent
14 declaration and we can start on page 11.

15 Let me know when you are there.

16 MS. NALL: For clarity, which page are you
17 referring to?

18 MR. ROSATO: This is page 11. It is also
19 Bates marked page 27.

20 MS. NALL: Thank you.

21 A. Yes, I'm here, page 11/27.

22 Q (By Mr. Rosato) And in this section, you
23 address the construction of the claim language
24 wherein the solid precursor isotope source is
25 configured to be fluidly coupled to a volume

1 including a collector surface with a gas tight seal,
2 correct?

3 A. Correct, yes.

4 Q. In paragraph 36, near the bottom of
5 page 11, you say that there are three possible
6 constructions.

7 Is that correct?

8 A. Correct.

9 Q. Where did you get these constructions
10 from?

11 A. When I evaluated the Claim 1C that is
12 given here in Section 2, it was not clear to me what
13 the gas tight seal was referring to.

14 So that is the reason I came up with these
15 three different construction to make it clear to
16 myself where the gas tight seals is referred back
17 to.

18 Q. And did you come up with these
19 constructions yourself?

20 A. Yes.

21 Q. These weren't provided to you by counsel?

22 A. No, these are what we have discussed but
23 they did, as I have mentioned earlier, they
24 transcribed what I had into the legal term.

25 Q. When you say what you had, what do you

1 mean?

2 A. I mean what I have written in my original
3 writing.

4 Q. The original writing in the declaration?

5 A. My original writing of the review of the
6 my declaration, yes, technical part, yes.

7 Q. When you say they transcribed, what are
8 you referring to?

9 A. There are terms here that they helped me
10 to convert it to the legal term.

11 Q. What are you referring to specifically?

12 A. They have reviewed it and they -- based on
13 what I have written and they confirmed legally or
14 legal term what I am saying is correct or I don't
15 know if the term is correct, whatever I have
16 written, it makes sense to be presented in the
17 court.

18 Q. Are there any legal terms here that you
19 are referring to?

20 A. Yeah. Like the 37, the POSITA. They
21 provided that term, that abbreviation. I didn't
22 know that.

23 Q. I see.

24 Before this declaration, you didn't know
25 the term?

1 A. No, I just mentioned that somebody skilled
2 like me would know these or can expect these. And
3 then they provided that type of clarification -- or
4 not clarification, I shouldn't say that -- the
5 abbreviation that made the sentence readable.

6 Otherwise, it would have been so long by
7 the time you get to the bottom of the sentence, you
8 forget what was in the beginning. So that type --
9 that type of editing.

10 Q. Did that editing change the content?

11 A. Not at all. Because I have reviewed, I
12 have signed here, this is my declaration.

13 Q. Sure. Okay.

14 So the interpretations were from your
15 perspective. Is that correct?

16 A. Yes, correct.

17 Q. Okay. And then the lawyers helped edit it
18 to state it from the perspective of a POSITA. Is
19 that correct?

20 A. Correct.

21 MS. NALL: Objection, form.

22 Q (By Mr. Rosato) Let's look at your
23 statement at the top of page 12 in that first bullet
24 point.

25 A. Yes.

1 Q. So there you state, "Just the collector
2 surface not the entire volume has a gas tight seal."

3 Do you see that?

4 A. Uh-huh.

5 Q. What do you mean by "the entire volume"?

6 A. The entire volume is the volume that --
7 that best describe it is look at Figure 3A.

8 The entire volume on 3A, the Figure 3A, it
9 shows a bottle with a cap and the source is in the
10 cap.

11 So the entire volume here is the bottle
12 and then there is the volume that's inside the cap
13 that is not accessible for the Lead-212 to be
14 leached because it's part of the source.

15 You don't want to touch it. You don't
16 want to leach the source off of the cap.

17 So the only part that you can leach lead
18 is the bottle itself but the volume still -- there
19 is the volume inside the cap that you did not count.

20 Q. So the entire volume is the bottle plus
21 the cap. Is that correct?

22 A. Correct.

23 Q. Okay. And you're saying this is shown in
24 Figure 3B, for example?

25 A. 3A, 3B, and also shown in 5A and 5B. They

1 are the same configuration of this design.

2 Q. Okay. So sticking with 3A and 3B, where
3 does it show the entire volume not having a gas
4 tight seal?

5 MS. NALL: Objection, form.

6 A. The entire volume that -- let me read what
7 I have said, if I may.

8 Yeah. If you look at the first bullet, it
9 says, "Just the collector surface and not the entire
10 volume has a gas tight seal."

11 And that is the case when the isotopes is
12 inside the collection bottle.

13 Q (By Mr. Rosato) Okay. Help me understand
14 that because you have mentioned two things, the
15 collector surface and the entire volume, right?

16 A. Yes. Collector surface is -- to me, the
17 collector surface is the surface that you might be
18 able to -- you use to leach the Lead-212.

19 Q. And what would be the collector surface in
20 Figure 3?

21 A. Figure 3, the collector surface is the
22 bottle that is shown, the vial, and that bottle does
23 have a gas tight seal.

24 Q. Okay. So the collector surface in Figure
25 3 does have a gas tight seal. Is that correct?

1 A. Yes.

2 Q. And -- okay. This is what I am trying to
3 understand from the first bullet point. It says,
4 "Just the collector surface not the entire volume."
5 Do you see that?

6 A. Yes.

7 Q. What do you mean by "not the entire
8 volume"?

9 A. The entire volume, I was referring to the
10 section that is inside the cap and also the volume
11 that the source is occupying.

12 Q. I see.

13 But you were saying in this construction,
14 the collector surface is what has the gas tight
15 seal.

16 Is that fair?

17 MS. NALL: Objection, form.

18 A. The -- as I said, the collector surface,
19 in this scenario, has a gas tight seal. And the
20 same as 5, design of the 5A and 5B, the figures that
21 are shown in figure 5A and 5B.

22 What else? I think it is clear to me
23 that's how -- what I had described here fits the
24 Figure 3A and 3B and also 5A and 5B.

25 Q (By Mr. Rosato) Let's talk about 3A.

1 Is there a gas tight seal shown there?

2 A. Yes. The gas tight seal is the cap
3 itself.

4 Q. Okay. But the collector surface in that
5 illustration does not have a gas tight seal on it.

6 Is that fair?

7 A. It doesn't matter. That is what is
8 described. That is how the cap is described as a
9 gas title seal.

10 Q. The cap forms a gas tight seal. Is that
11 correct?

12 A. Yeah.

13 Q. And it forms the gas tight seal when it is
14 screwed on top of the bottle, correct?

15 MS. NALL: Objection, form.

16 A. No. By itself, it doesn't have to. That
17 is how it is designed.

18 If you go back to Section 37, there is a
19 Figure 4. On the right side, there is an end of the
20 shaft, there is a part that seals against the tube,
21 if you will look at it, and that part is defined as
22 a gas and liquid tight valve.

23 In the drawing itself, it says that it
24 doesn't matter if this cap is all the way up to seal
25 the cap, the tube or not. It is defined as it is.

1 And that is what I am saying. That is how
2 patent defined this valve as a gas tight liquid
3 valve.

4 Q (By Mr. Rosato) Well, you are talking about
5 Figure 4 now, right?

6 A. Figure 4, yeah. It is the same concept.
7 When you define it and you -- it doesn't
8 matter if this valve is all the way up at the
9 position or not.

10 In the open position or closed position,
11 this valve is defined as a gas tight valve.

12 Q. When you say defined, what are you
13 referring to?

14 A. It is on the Figure 3. If you look at it,
15 it says, gas and liquid tight lid/valve.

16 Q. Did you read the specification describing
17 that as well when you formed this opinion?

18 A. Yes.

19 Q. And your understanding is that the
20 specification says that whatever position this is
21 in, it is forming a gas tight valve?

22 MS. NALL: Objection, form.

23 A. I cannot get away from whatever is
24 disclosed here.

25 I understand what you are asking but what

1 is disclosed here, to me it says gas and liquid
2 tight valve. And it is in the open position.

3 Q (By Mr. Rosato) And in that open position,
4 is it your understanding that a gas tight seal is
5 being formed?

6 A. Yes. I mean, the way that it is written
7 and described, it says this is a gas tight seal.

8 Q. In the figure, that is what you are
9 quoting to?

10 A. Yes.

11 Q. Okay. And is it your understanding that
12 the written text of the specification says the same
13 thing?

14 A. Yes.

15 Q. Okay. Just to be clear, you understand
16 the written text to say even when that is in the
17 open position, it is forming a gas tight seal?

18 MS. NALL: Objection, form.

19 A. Yes, that is what I am saying.

20 Q (By Mr. Rosato) Okay. Well, let's look at
21 the '437 patent. Maybe this will clear up some
22 confusion.

23 Let's look at column 18 and let me know
24 when you locate example 11.

25 A. I am sorry. What document? Where are

1 you?

2 Q. Do you have a copy of the '437 patent?

3 A. I have a '437 here.

4 Q. The '437 patent.

5 A. Yes, I have the '437 patent here.

6 Q. Okay. Turn to column 18 of the '437
7 patent and let me know when you locate example 11.

8 A. What paragraph?

9 Q. Do you see example 11?

10 A. Yes, example 11.

11 Q. Okay. So earlier you stated that your
12 understanding of Figure 4B is that the label gas and
13 liquid tight lid/valve forms a gas tight seal.

14 Do you remember that?

15 A. Yes, I said the valve is marked as a gas
16 tight seal.

17 Q. Okay. And I asked you if that is forming
18 a gas tight seal even when the device is in the open
19 configuration that is shown in 4B.

20 Do you see that?

21 A. Yes, I have it here.

22 Q. And we talked about that earlier, right?

23 A. Yes.

24 Q. And your position was, that even in the
25 open position, it is forming a gas tight seal.

1 Do you recall that?

2 A. Yes.

3 Q. Okay. I asked you if the written text of
4 the specification confirms that and you indicated
5 that you thought it did, right?

6 A. That is what I thought, yes, uh-huh.

7 Q. Let's look at the line starting at about
8 line 21 of column 18.

9 A. Line 21, yes.

10 Q. It states, "The rod in Figure 2, piston in
11 Figures 4A and B, slides in a tube with O-rings or
12 similar at the top to secure gas tight seal."

13 A. Yes. The O-ring on the top, yes, that is
14 the tube that moves the source up and down. It is
15 not shown in the figure. That O-ring is not shown
16 in the figure. It is just discussed here in the
17 text.

18 Q. Okay. And those O-rings at the top are
19 forming a gas tight seal to the outside environment,
20 correct?

21 A. Correct. Similar to the Hassfjell and
22 Hoff.

23 Q. Okay. But the O-rings at the top are
24 different than what you identified as being labeled
25 at the bottom of that -- of that component, labeled

1 gas and liquid tight lid/valve.

2 A. Correct.

3 Q. Okay. Now, a few lines down, at line 25,
4 it states, "In the open position, the source will be
5 exposed inside the container and emanate 220 Radon
6 and cause deposit of 212Pb onto the inner surface."

7 Do you see that?

8 A. Correct.

9 Q. Okay. It's telling us -- and that open
10 position is illustrated in Figure 4B, correct?

11 A. Figure 2B.

12 Q. It is illustrated in Figure 2B?

13 A. Uh-huh.

14 Q. It is also illustrated in 4B. Is that
15 correct?

16 A. Where is the 4B?

17 Q. You know, Figure 4B is in the patent. It
18 is also on page 12 of your declaration where you
19 have a red box around gas and liquid tight valve.

20 A. Yes, I see that.

21 But here it refer -- in the text it refers
22 to the Figure 2B. And there is a difference between
23 Figure 2B and 4B.

24 And the Figure 2B, it only shows a rod
25 with the section that I assume is the Thorium and

1 the Radon emanates out of it. And it is shown, on
2 Exhibit 2B, it shows some extension of this, which
3 is not in 2A.

4 So there is a difference between Figure 2
5 and Figure 4.

6 Q. Okay. Turn back to column 18.

7 A. Yes.

8 Q. Do you see the title, for example, 11?

9 A. Yes.

10 Q. It states, "Example of an Assembly with a
11 Retractable Source, Figure 2 and Figure 4A through
12 4B."

13 Do you see that?

14 A. Yes.

15 Q. Okay. So it is referring to both Figure 2
16 and Figure 4, correct?

17 A. The sentence, correct.

18 Q. Okay. And then we identified in that
19 line 21, it states, "The rod in Figure 2, piston in
20 Figures 4A and B."

21 A. Correct.

22 Q. Okay. And a couple of lines down, the
23 sentence starting at line 25, states, "In the open
24 position the source will be exposed inside the
25 container and emanate 220Rn and cause deposit of

1 212Pb onto the inner surface."

2 Do you see that?

3 A. Yes.

4 Q. It doesn't say this is limited to 4B, does
5 it?

6 A. No. You are correct.

7 Q. Okay. So let's look at Figure 4, again,
8 okay?

9 A. Yes, I have it here.

10 Q. And you can see this on page 12 of your
11 declaration?

12 A. Uh-huh.

13 Q. Okay. You have the red box around gas and
14 liquid tight lid/valve, correct?

15 A. Right.

16 Q. Now in the closed position in 4A?

17 A. The figure on the left side, yes.

18 Q. Uh-huh. That valve is coming into contact
19 with the bottom of what is marked chamber with gas
20 tight O-ring seal, correct?

21 A. Correct.

22 Q. Okay. In 4B, the figure on the right
23 side --

24 A. Uh-huh.

25 Q. -- it shows the piston depressed in the

1 down position, correct?

2 A. Correct.

3 Q. Okay. And that down position, that valve
4 is no longer in contact with the bottom of the
5 chamber with gas tight O-ring seal, correct?

6 A. Correct.

7 Q. It shows the source area exposed, correct?

8 A. Correct.

9 Q. Okay. So let's stay on your declaration.
10 And I want to come back to this top line, the first
11 bullet point.

12 MS. NALL: Objection, form.

13 Q (By Mr. Rosato) Let me know when you are
14 there.

15 A. Yes, I have it.

16 The first bullet on page 12, correct?

17 Q. That is correct.

18 Now there you say, "Just the collector
19 surface not the entire volume has a gas tight seal."
20 Correct?

21 A. Yes.

22 Q. Okay. Is it fair to interpret this as you
23 stating that the collector surface has a gas tight
24 seal?

25 A. The collector surface, yes, has a gas

1 tight seal, yes.

2 Q. Okay. And is it fair to understand what
3 you are saying here is that it is the collector
4 surface, not the entire volume, that has the gas
5 tight seal?

6 Is that fair?

7 A. Correct.

8 MS. NALL: Objection, form.

9 Doctor, I remind you, you have to pause to
10 give me a chance to object, please.

11 THE WITNESS: I'm sorry.

12 MS. NALL: No worries.

13 Q (By Mr. Rosato) Now, is the point of saying
14 not the entire volume here to distinguish the entire
15 volume from the collector surface?

16 A. What was the question? I'm sorry.

17 Q. I am trying to understand the point of
18 stating "not the entire volume" in this.

19 What was your point of referring to "not
20 the entire volume"?

21 A. Because just the collector surface is a
22 gas tight seal. That is how it is and not the
23 entire volume. It can't be.

24 Q. Okay. If the collector surface has a gas
25 tight seal, does it matter if the entire volume also

1 has a gas tight seal?

2 A. It does matter, because, as we said,
3 collector surface refers to the surface that you can
4 extract Lead-212.

5 Q. Okay.

6 A. Whereas, the entire volume, you have lost
7 significant amount of your product, on the entire
8 volume, if you want to use the entire volume.

9 So that is the point.

10 And that, again, is illustrated in Figure
11 4A, under first construction that I have. You have
12 collection surface, which is the vial itself.

13 I'm sorry. I am using my hand.

14 And then you have a cap that you cannot
15 recover the lead. And then you have a tube and the
16 plunger, that you cannot recover the lead from that
17 either.

18 So there is significant difference between
19 what you can collect Lead-212 from and what you
20 cannot.

21 So entire volume is, refers to all the
22 volume that the Radon could potentially deposit
23 lead, not only -- not -- and the collection surface
24 only refers to the surface that you can recover
25 Lead-212.

1 Q. Okay. Let me ask you about that. We can
2 stay on page 12 where it is illustrating Figures 4A
3 and 4B of the '437 patent, okay?

4 What is the collection surface shown here?

5 A. The collection surface, to me, here, in
6 Figure 4A, is the vial itself.

7 Q. Okay. The interior walls of the collector
8 vial?

9 A. The interior wall up through the thread,
10 the cap with thread into, that is the interior wall.

11 Q. Okay. And for the cap, it is illustrating
12 a gas tight gap at the top, correct?

13 A. Correct.

14 Q. Okay. So the collector surface here has
15 that gas tight cap?

16 A. Correct.

17 Q. Okay. Inside of that, there is this
18 chamber labeled, correct?

19 A. Yes.

20 Q. Okay.

21 A. The chamber, yeah.

22 Q. Okay. Is the -- is that chamber part of
23 the collector surface?

24 A. No.

25 Q. Is that chamber part of the entire volume?

1 A. The chamber is part of the entire volume,
2 yes.

3 Q. Got it.

4 Okay. So back to your construction, you
5 are saying the collector surface has a gas tight
6 seal, correct?

7 MS. NALL: Objection, form.

8 A. Correct.

9 Q (By Mr. Rosato) And you're saying here in
10 this construction, it is not the entire volume that
11 has the gas tight seal?

12 MS. NALL: Objection, form.

13 A. Okay. You are confusing me now, so repeat
14 again. Please repeat the question.

15 Q (By Mr. Rosato) We identified the collector
16 surface in Figure 4, correct?

17 A. Right.

18 Q. And according to your construction in the
19 first bullet point, you state, "The collector
20 surface has a gas tight seal." Correct?

21 It is the first bullet point.

22 A. Yes, the first bullet point. On the top,
23 you mean?

24 Q. Yes.

25 A. But that is the second construction. That

1 does not apply to this figure.

2 Q. I am asking you about that second
3 construction.

4 A. Right.

5 The second bullet, which -- the first
6 bullet was on page 11. The entire volume, the first
7 in the bottom of page 11, it says, "The entire
8 volume has a gas tight seal."

9 Q. I am asking about the second bullet point
10 where it says "just the collector surface."

11 A. But that bullet does not apply to this
12 figure.

13 Q. My question is applying to that bullet
14 point listed at the top of the page.

15 A. Yes.

16 Q. Okay. I am asking you, in that bullet
17 point, am I understanding it correctly to say that
18 the collector surface has a gas tight seal?

19 A. Yes, it does have -- it says the collector
20 surface has a gas tight seal.

21 Q. Okay. And am I understanding it to say
22 the entire volume does not have a gas tight seal?

23 MS. NALL: Objection, form.

24 A. No, just the collector surface has a gas
25 tight seal.

1 Q (By Mr. Rosato) Under this construction, it
2 doesn't matter whether or not the entire volume has
3 a gas tight seal?

4 A. No.

5 Q. Does it matter if the entire volume has a
6 gas tight seal?

7 A. It -- in the case of the -- if it refers
8 to the Figure 4, that is not -- it does not -- this
9 bullet does not apply to the Figure 4.

10 Q. Well, you did not apply it in this
11 paragraph to the second bullet, correct? But that
12 is not what I am asking.

13 A. Yeah.

14 Q. Because I know you didn't apply it to that
15 one. I have a different question.

16 My question is, when you say not the
17 entire volume, are you requiring this construction
18 to have no gas tight seal at the entire volume?

19 MS. NALL: Objection, form.

20 A. Yeah, that is not what I have said, no.

21 Q (By Mr. Rosato) What do you mean then when
22 you say not the entire volume?

23 A. I am just saying just the collector
24 surface has a gas tight seal and that refers to the
25 Figure 3A and 3B.

1 Q. Okay. So again, sticking with the
2 statement, you are saying just the collector surface
3 has a gas tight seal?

4 A. Yes.

5 Q. Okay. And the collector surface is
6 different than the entire volume.

7 Is that fair?

8 A. That is fair.

9 Q. And let me understand the basis of this
10 argument.

11 Are you basing it on the damage of the
12 claim?

13 A. When I read the claim, as I've said here,
14 in Section 36, that the gas tight seal
15 corresponds -- let me read my statement first, if I
16 may.

17 Q. What statement are you reading?

18 A. I am reading 36.

19 Because the term "gas with the gas tight
20 seal," as I have said it here, it is not clear that
21 this corresponds to the configure 2 in quotation
22 marks or fluidly coupled or volume.

23 That is the reason I have come up with
24 these three scenarios to explain the gas tight seal
25 has to be related to one of these other -- the term

1 may be options or -- I am looking for a word to
2 describe it.

3 But the gas tight seal does not
4 correspond -- it is not clear that this corresponds
5 to the configure 2 or fluidly coupled or to the
6 volume.

7 I have tried to separate these three
8 cases, and that is the reason I came with those
9 three construction legal term for it.

10 Q. Okay. You have mentioned three terms,
11 configure 2, fluidly coupled or volume, correct?

12 A. Yes. And that is also -- just I am
13 repeating what the Claim 1C construction is. That
14 is what it is.

15 Q. Okay. And in that first bullet point, at
16 the top of page 12 --

17 A. Right. That is the second construction,
18 yes, uh-huh.

19 Q. And you have mentioned not the entire
20 volume, correct?

21 A. Correct.

22 Q. You're pointing here that the gas light
23 seal does not correspond to that volume?

24 A. No.

25 Q. Well, you said there are three terms. It

1 has to correspond to one.

2 A. Right.

3 Q. Right?

4 It looks to me what you are saying in the
5 second --

6 A. Yeah, but that is covered under 1, bullet
7 1 and 3.

8 Q. I am asking you about 2, though.

9 A. I don't know how -- how to explain it to
10 you, but that is how -- that is clear to me, that is
11 how it is.

12 Q. What is clear to you?

13 A. The just collector surface and not the
14 entire volume has a gas tight seal.

15 Q. Okay. The entire volume does not have a
16 gas tight seal on it, correct?

17 MS. NALL: Objection, form.

18 A. No, that is not what I said.

19 Q (By Mr. Rosato) Under this construction,
20 does the entire volume have or not have a gas tight
21 seal?

22 A. Just the collector surface has a gas tight
23 seal.

24 Q. Okay. But not the entire volume?

25 MS. NALL: Objection, form.

1 Q (By Mr. Rosato) Yes?

2 A. I am just repeating myself, just the
3 collector surface.

4 Q. And just the collector surface has a gas
5 tight seal?

6 A. Has a gas tight seal, yes. It is clear to
7 me. I don't know why it is not.

8 Q. Well, it is not the entire volume that I
9 am asking about.

10 MS. NALL: Objection, form.

11 A. I'm sorry, I cannot --

12 Q (By Mr. Rosato) You can't tell me what you
13 meant when you said "not the entire volume"?

14 A. I had repeated myself, many times, that
15 just the collector surface has a gas tight seal.

16 Q. Okay. And it doesn't matter if anything
17 else has a gas tight seal?

18 A. No.

19 Q. It does matter if something else has a gas
20 tight seal?

21 A. Not in this statement, it does not.

22 Q. That answers my question, in this
23 statement it doesn't matter. Okay. We can move on
24 to the next topic.

25 (A recess was taken.)

1 Q (By Mr. Rosato) Okay. Doctor, let's keep
2 looking at the '437 patent at column 18, please.

3 A. Okay.

4 Q. And let me know when you are there.

5 A. Yes, I have it.

6 Q. Turn to column 18, and let's look back at
7 example 11. That is describing the operation of 2
8 and 4A through B?

9 A. That was column 18, did you say?

10 Q. Yes, example 11.

11 A. Okay. Example 11, yes.

12 Q. Earlier we looked at the second sentence
13 down there.

14 Do you see that?

15 A. Yes, uh-huh.

16 Q. It says, "The rod in Figure 2 and piston
17 in Figures 4A through B."

18 A. Yes, uh-huh.

19 Q. Okay. And the next sentence states, "The
20 valve at the bottom of the rod is gas and liquid
21 tight in the closed position for the unit."

22 Do you see that?

23 A. Yes.

24 Q. Okay. Next sentence states, "In the open
25 position, the source will be exposed inside the

1 container and emanate 220 Radon and cause deposit of
2 212 Lead onto the Inner Surface."

3 Do you see that?

4 A. Correct.

5 Q. And let's turn back to 4A and B.

6 A. Yes, I have it here.

7 Q. And Figure 4A is labeled "Closed
8 Position." Is that correct?

9 A. Correct.

10 Q. Okay. Figure 4B is labeled "Open
11 Position," correct?

12 A. Right.

13 Q. Okay. And this is shown at page 12 of
14 your declaration as well, correct?

15 A. Yes, I have it here, yes.

16 MS. NALL: Objection, form.

17 Q (By Mr. Rosato) Okay. You have reproduced
18 Figure 4 from the '437 patent, correct?

19 MS. NALL: Objection, form.

20 A. Yes, identical.

21 Q (By Mr. Rosato) Okay. And the object on
22 the left is labeled "Closed Position," correct?

23 MS. NALL: Objection, form.

24 A. The object on the left is in the closed
25 position.

1 Q (By Mr. Rosato) And is the object on the
2 right in the open position?

3 A. Yes.

4 Q. Okay. Great.

5 MR. ROSATO: No further questions.

6 MS. NALL: You're passing the witness?

7 MR. ROSATO: Yes.

8 MS. NALL: Let's go off the record for a
9 few minutes.

10 (A recess was taken.)

11 EXAMINATION

12 BY MS. NALL:

13 Q. Dr. Mirzadeh, you were asked a bunch about
14 your second construction, which is that just the
15 collector surface, not the entire volume, has a gas
16 tight seal.

17 Do you recall being asked about that?

18 A. Yes.

19 MR. ROSATO: Objection, form.

20 Q (By Ms. Nall) Would you please explain why
21 you think Figure 4 does not satisfy -- strike that.

22 Would you please explain why you think
23 Figure 4 of the '437 patent does not satisfy your
24 second proposed construction?

25 MR. ROSATO: Objection to form, leading.

1 A. That is because of the -- it shows there
2 is a valve and the valve is labeled as a gas
3 tight -- as a gas tight valve.

4 Regardless of in position of the shaft,
5 this valve remains a gas tight valve.

6 Q (By Ms. Nall) Does the collector surface in
7 Figure 4 extend into the cap in Figure 4?

8 A. Yes, it just stops right at the cap and
9 maybe a little bit is not shown but most likely it
10 is threaded into the cap.

11 Q. And is there volume within the tube around
12 the piston in Figure 4 as well?

13 A. Yes, that is an extra volume around the
14 shaft, inside the tube, that extends all the way,
15 even past the cap, as well. So there is a small
16 volume on top of the cap.

17 Q. So is it accurate that in addition to the
18 collector surface, the cap and the tube in Figure 4,
19 altogether have a gas tight seal?

20 MR. ROSATO: Objection to the form,
21 leading.

22 A. Repeat the question, please.

23 Q (By Ms. Nall) Would you please explain all
24 the ways Figure 4 has a gas tight seal?

25 A. Figure 4 has a gas tight seal when the cap

1 is closed and basically that is it.

2 It doesn't matter if the shift is up and
3 down, it still is going to be a gas tight valve.

4 Q. Right.

5 So Figure 4 has a gas tight cap that --

6 MR. ROSATO: I am going to ask you to ask
7 questions without pointing to things.

8 Q (By Ms. Nall) So Figure 4 has a gas tight
9 cap?

10 A. Yes.

11 Q. And Figure 4 has a chamber with O-rings.
12 And together, that whole entire volume in Figure 4
13 is gas tight, correct?

14 MR. ROSATO: Objection to the form.

15 A. Correct.

16 Q (By Ms. Nall) Figure 4 also shows a valve
17 at the bottom of the rod that is a gas tight valve,
18 correct?

19 A. Correct. Clearly shown here as a gas
20 tight valve.

21 MR. ROSATO: I will object to form and
22 leading.

23 Q (By Ms. Nall) When is that gas tight valve
24 at the bottom of the rod creating -- strike that.

25 You testified repeatedly that the valve at

1 the bottom is a gas tight valve, regardless of
2 whether it is sealed on the tube or in the open
3 position, right?

4 MR. ROSATO: Objection to form and
5 foundation, leading.

6 A. Correct.

7 Q (By Ms. Nall) Would you please explain the
8 functionality of the gas and liquid tight valve that
9 is at the bottom of the rod in Figure 4?

10 A. Please repeat the question.

11 Q. Would you please explain the functionality
12 of the gas and liquid tight valve that is at the
13 bottom of the rod in Figure 4 of the '437 patent?

14 A. On the left side, when the plunger is all
15 the way pulled up, the source is not exposed into
16 the interior. Therefore, there is no Radon
17 emanating to this valve on the left side.

18 On the right side, the plunger is all the
19 way down and the source is exposed for the volume.
20 Therefore, there is an emanation of the Radon take
21 place and the Lead-212 would deposit in all the
22 surfaces, including the collection and the cap and
23 the tube and all the volume inside the tube.

24 Q. Have you ever bought a valve from a
25 hardware store?

1 MR. ROSATO: Objection to form,
2 foundation, outside the scope.

3 A. Yes, I have.

4 Q (By Ms. Nall) When you buy a valve from a
5 hardware store, does the label on the valve change
6 depending on if the valve inside of the box is open
7 or closed?

8 MR. ROSATO: Objection to form,
9 foundation, scope, relevance.

10 A. No, the valve is labeled as sealing. That
11 can be used for -- it's the gas tight valve or gas
12 tight cap from the hardware store.

13 When it comes in the box, it says gas
14 tight cap and that is it.

15 Q (By Ms. Nall) Looking at Figure 5, you
16 testified earlier that Figure 5 of the '437 patent
17 satisfies the second proposed construction in your
18 expert declaration.

19 Do you remember that?

20 MR. ROSATO: Objection, form and scope.

21 A. Yes, the second. Yes, I do remember.

22 Q (By Ms. Nall) Would you please turn to
23 Figure 5 in the '437 patent.

24 MR. ROSATO: Object to questions on 5
25 being outside the scope. He wasn't asked any

1 questions about Figure 5.

2 A. Yes, I am in Figure 5A and B, on the '437.

3 Q (By Ms. Nall) Do you recall testifying
4 earlier that Figures 3 and 5 satisfy the second
5 construction that you proposed?

6 A. Yes.

7 MR. ROSATO: The same objection.

8 Q (By Ms. Nall) In Figure 5A what is at the
9 top of the glass bottle -- sorry, strike that.

10 In Figure 5B, what is at the top of the
11 glass bottle?

12 MR. ROSATO: The same objection.

13 A. It is the source on the inside. Is that
14 what you are asking, the source inside the cap?

15 Q (By Ms. Nall) No, I was asking about the
16 glass bottle.

17 A. The glass bottle in Figure 5A --

18 Q. B.

19 A. -- what is the question?

20 Q. What is shown at the top of the glass
21 bottle in Figure 5A of the '437 patent --

22 MR. ROSATO: The same objections.

23 A. It is some kind of gaskets that seals
24 against the cap.

25 Q (By Ms. Nall) If limitation 1C is

1 interpreted to only include the collector surface
2 and not any other surface, such as a seal or a cap,
3 would Figure 5A satisfy your second construction?

4 MR. ROSATO: Object to form, foundation,
5 scope.

6 A. Repeat the question, please.

7 Q (By Ms. Nall) If your second construction
8 for limitation 1C is literally limited to only the
9 collector surface --

10 A. Uh-huh.

11 Q. -- would Figure 5A satisfy that?

12 MR. ROSATO: Objection, form, foundation,
13 scope.

14 A. Yes, Figure 5 -- which figure was the --
15 Figure 5A or Figure 5B?

16 Q (By Ms. Nall) Either figure.

17 A. So let me read my statement, please.

18 Q. I will strike that and ask another
19 question.

20 A. As I made it clear, it's just that the
21 collector surface has the gas light seal and this
22 statement relates to Figure 58.

23 Q. It also refers to Figure 3, correct?

24 A. Correct. Figure 3 and Figure 5 are
25 both --

1 MR. ROSATO: Object to leading.

2 Q (By Ms. Nall) The area inside the bottle of
3 Figure 5 does include slightly more than the
4 collector surface, correct?

5 MR. ROSATO: Objection to form, leading.

6 A. Correct.

7 Q (By Ms. Nall) For Figure 3, does the area
8 inside the bottle include slightly more than just
9 the collector surface as well?

10 A. Yes.

11 Q. In your opinion, would a person of
12 ordinary skill in the art, looking at Figures 3 and
13 5, believe that they satisfy your second
14 construction?

15 MR. ROSATO: Objection to form, leading.

16 A. Yes, they cover the same.

17 MS. NALL: Pass the witness.

18 MR. ROSATO: No further questions.

19 MS. NALL: We will reserve the right for
20 the witness to review the transcript for
21 typographical errors and corrections.

22 MR. ROSATO: Single pages?

23 MS. NALL: I don't care.

24 (Proceedings concluded 1:30 p.m.)

25

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADVACELL PTY LTD.,
Petitioner,

v.

SCIENCONS AS and ARTBIO, INC.,
Patent Owner,

Case No. PGR2025-00040
U.S. Patent No. 12,249,437

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	112		57:10	3A
0	14:3, 8	2	58:21	76:7, 8, 25
	15:1 18:4		59:15, 19	77:2
029PGR	12	2	61:3, 8	78:24, 25
23:20	75:23	15:16	228thorium	93:25
040PGR	84:18	35:20	53:23	3B
25:20	86:10	36:3	232	76:24, 25
	87:16	41:15	28:3	77:2
	90:2	45:14	25	78:24
1	95:16	46:11, 14,	84:3	93:25
	99:13	25 47:5	85:23	
1	12, 125, 603	50:14, 19,	27	4
26:20	24:7	21 58:6	72:19	
27:9, 14,	12, 249, 437	61:24	28	4
18, 21, 23	26:6	62:2	37:6	79:19
28:1 30:7	12125603	64:15	49:4, 15,	80:5, 6
96:6, 7	11:15	68:21	16 52:19,	85:5, 16
10	12249437	70:25	23 53:1	86:7
16:9, 11,	19:13	73:12	2A	91:16
15, 25	13	83:10	85:3	93:8, 9
1001	36:4	85:4, 11,	2B	99:18
23:18, 20	15	15, 19	84:11, 12,	100:21, 23
1002	5:7	94:21	22, 23, 24	101:7, 12,
11:6 19:5	17	95:5, 11	85:2	18, 24, 25
1003	52:14, 18,	96:8	3	102:5, 8,
39:8, 11	21, 22, 25	98:7, 16		11, 12, 16
40:11, 20	18	21		103:9, 13
41:1, 7	81:23	83:8, 9		
72:11	82:6 83:8	85:19		
101	85:6	212	3	437
25:20	98:2, 6, 9	99:2	15:19	19:12, 16,
11	1:30	212pb	63:1	18 20:3, 6
72:14, 18	107:24	28:21	77:20, 21,	21:4, 13
73:5	1C	84:6 86:1	25 80:14	22:15
81:24	73:11	216polonium	96:7	26:3, 8
82:7, 9, 10	95:13	28:18	105:4	27:9
85:8	105:25	30:23	106:23, 24	40:17
92:6, 7	106:8	220	107:7, 12	41:2
98:7, 10,		59:12	36	48:21, 23
11		84:5 99:1	73:4	69:24
11/27		220RN	94:14, 18	70:6
72:21		85:25	37	71:22, 25
		228	74:20	72:13
			79:18	81:21

99:18	56-2nds		accurate	answers
100:23	30:8	<u>7</u>	6:21 68:1	7:5,12
103:13			101:17	97:22
104:16,23	57		activity	apparently
105:2,21	48:20,25	7	13:12	5:15
	49:6	45:22	add	application
44	58	54:8	51:3	26:2
49:4,16,	106:22	57:17,19	56:10	applied
17		75	added	38:1
44-	5A	34:6	12:2	39:15
milliliters	76:25		addition	apply
45:19	78:20,21,	<u>8</u>	101:17	37:9,20
47	24 105:2,		additional	38:23
48:24	8,17,21	8	55:16	92:1,11
4A	106:3,11,	15:18	address	93:9,10,
83:11	15	16:3	9:11	14
85:11,20	5B	36:17	72:23	applying
86:16	76:25	37:5	addresses	92:13
89:11	78:20,21,	86	40:17	approached
90:2,6	24 105:10	34:11	Advancell	10:23
98:8,17	106:15	87	9:19,20,	area
99:5,7		33:25	23,25	87:7
4B	<u>6</u>	34:1 35:1	10:6,24,	107:2,7
82:12,19	6		25	argon
84:10,14,	39:24	<u>9</u>	advantage	30:4
16,17,23			43:3	argument
85:12	60	99	agreed	94:10
86:4,22	42:25	6:9	11:3	arrive
90:3	603		air	7:23
99:10	11:13,17,	<u>A</u>	29:24	art
	22 19:24	abbreviatio	30:6	107:12
<u>5</u>	22:15	n	31:5,6,9	aspects
5	24:3,9	74:21	altogether	12:23
78:20	27:14,21	75:5	101:19	13:11
104:15,	33:17,20,	absolute	amount	Assembly
16,23,24	24 39:9	31:3,18	31:7,8	85:10
105:1,4	41:1	absorb	89:7	assume
106:14,24	52:14	44:8	analysis	5:25
107:3,13	69:24	accessible	37:11	64:18
50	70:1,4	33:1	70:15	84:25
10:11,12	71:19,25	76:13		
42:25	66			
	54:4			

atom	background	61:14	48:3, 12,	70:4
30:25	15:17	66:15, 20,	16 60:22	bullet
31:1, 14,	33:13	22 67:3,	65:15, 20	75:23
23 32:5,	38:15	17 68:3,	68:4, 14	77:8 78:3
8, 12	backward	5, 8, 9, 10,	71:4, 9,	87:11, 16
atoms	64:8	13	12, 15	91:19, 21,
29:14	banner	Bates	76:9, 11,	22 92:5,
32:1	53:7	34:14, 16,	18, 20	6, 9, 11,
42:19	barium	20 36:4	77:12, 22	13, 16
attached	42:14, 25	49:4	79:14	93:9, 11
58:9	53:23	52:18, 23	105:9, 11,	95:15
66:19, 20	55:7, 8, 13	62:1	16, 17, 21	96:6
attorney/	57:10	72:19	107:2, 8	bunch
client	58:21	bathroom	bottom	100:13
21:18, 21	59:19	44:15	42:3	buy
authors	61:4, 8	beginning	44:11	104:4
40:2	barrier	22:19	51:5, 9, 13	
automate	29:21	75:8	52:3, 22	
62:23	Base	behalf	53:2	C
avoid	34:15	5:23	65:25	
57:24	based	binder	68:9, 10,	call
	17:4, 6	56:2	16 73:4	29:25
	18:11	Biographica	83:25	51:15
B	35:14	l	86:19	66:12
	74:12	33:21	87:4 92:7	called
back	basically	35:1	98:20	6:3 8:19
16:4	23:8	Bismuth-212	102:17, 24	12:8 14:3
17:21	53:13	46:22	103:1, 9,	23:7
18:21	102:1	bit	13	34:16
32:22	basing	101:9	bought	43:13
33:11	94:11	black	103:24	53:12, 13
44:5	basis	63:10, 19,	bounces	66:5, 13
46:11	10:3 94:9	20, 21	30:5	calls
48:5	basket	blocks	box	21:18
50:12, 17	43:13, 14,	65:7	84:19	Canada
51:19	23 44:5,	body	86:13	5:13
62:22	11, 18	44:23	104:6, 13	Canadian
63:22, 25	51:18, 25	bottle	break	6:3, 5
73:16	53:20, 22	44:1, 12,	7:15, 16,	cap
79:18	56:20, 24	13, 20, 22	20, 24	76:9, 10,
85:6	57:10	46:19, 21	9:8, 9	12, 16, 19,
87:10	58:8		61:17	21 78:10
91:4 98:6			69:18	79:2, 8,
99:5				

10, 24, 25	22 10:14	chemistry	81:15, 21	32:16, 18
89:14	14:2	30:17	94:20	33:9
90:10, 11,	40:23	35:4, 11,	95:4	43:23, 25
15 101:7,	41:12	12 39:17,	96:10, 12	44:5, 6
8, 10, 15,	72:10	18, 19	97:6	46:6, 8, 15
16, 18, 25	95:8	cited	106:20	48:3, 6
102:5, 9	cell	13:1	close	51:18
103:22	49:10	18:12, 14	44:19	65:1, 15
104:12, 14	center	21:7, 12	50:1	68:14
105:14, 24	67:3	41:12	53:13	77:12
106:2	centering	cites	62:15	89:12, 23
capacity	66:4, 12	21:4	closed	90:4, 5
32:6	centers	claim	47:19, 24	103:22
57:10	66:6	16:8, 24	48:4, 11	collector
care	Chalk	17:8	49:10	73:1 76:1
107:23	6:4, 10	26:22	60:10, 13	77:9, 15,
carefully	chamber	72:23	63:12	16, 17, 19,
22:8	43:13	73:11	64:16, 21	21, 24
carrier	45:15	94:12, 13	65:2, 6, 17	78:4, 14,
31:14	46:6, 7, 8,	95:13	80:10	18 79:4
carry	12, 15	claims	86:16	87:18, 23,
42:16	47:20, 21	26:21, 23	98:21	25 88:3,
case	58:7	27:2	99:7, 22,	15, 21, 24
4:16, 19,	86:19	clarificati	24 102:1	89:3
21 5:1, 6,	87:5	on	104:7	90:7, 14,
11, 12, 17,	90:18, 21,	9:1 75:3,	closes	23 91:5,
24 8:23	22, 25	4	47:19	15, 19
9:7, 11	91:1	clarified	64:12	92:10, 18,
11:15	102:11	14:1	closing	19, 24
12:21, 23	chambers	clarify	65:19	93:23
13:7 14:3	47:2, 7,	21:24	71:3, 14	94:2, 5
15:6	13, 14, 15	clarifying	cloud	96:13, 22
19:16, 25	chance	39:7	29:23	97:3, 4, 15
21:10	88:10	clarity	coffee	100:15
23:21	change	70:14	56:9, 10,	101:6, 18
36:10	75:10	72:16	11	106:1, 9,
40:20	104:5	clear	collect	21 107:4,
42:13, 18	charged	6:23	32:21, 24	9
61:5	29:20, 21	34:21	33:7	column
71:22, 25	chemical	39:3	46:22	46:1
77:11	28:22	73:12, 15	55:11, 12	54:11
93:7		78:22	89:19	81:23
cases			collection	82:6 83:8
8:15, 17,				85:6
				98:2, 6, 9

communication 7:9 64:25	configuration 68:15, 20 77:1 82:19	17 96:19 100:14, 24 104:17 105:5 106:3, 7 107:14	continue 31:16 32:9 45:5	29:2, 5, 10, 12, 13 30:20, 21, 23, 24
communications 21:18, 22 22:22, 23	configure 94:21 95:5, 11	construction 73:6, 9, 19	continues 31:2 32:6 37:5	31:2 32:1, 2, 4, 10, 11, 14, 15 33:4, 8, 22, 23 35:5, 6, 8, 9 37:3 38:9
company 6:1	configured 72:25	contact 11:4 86:18 87:4	conversation 18:20 25:11	40:8, 11, 12, 14, 15, 18, 21, 23 41:14 42:2, 8 43:16
compartment 46:6, 7	confined 30:5	contacted 11:2	convert 17:5 74:10	45:20 46:3, 19, 20, 23, 24 47:7, 16, 17 48:13, 14, 17, 18 50:20 51:1, 2 52:3, 4
compensated 8:5, 8	confirmed 74:13	contained 53:20 69:16	converted 13:22	53:17, 24 54:18 55:5, 22 56:14, 17, 22 57:12, 15 58:21 59:7, 16, 18, 21, 22 60:2, 5, 7, 23 61:5, 10, 13, 15 64:10, 13 65:4, 5, 8, 11, 18, 21, 22 66:17 67:18, 19, 21, 22 69:2, 13, 14, 17 71:1, 5,
compensation 9:14, 17 10:2	confirms 83:4	container 32:13 44:20 68:4, 6 84:5 85:25 99:1	copy 11:5, 7 19:4 23:20 25:20 39:8 82:2	
complete 6:21	confusing 91:13	content 14:9 15:8, 16, 22 16:12, 16 17:2, 17 20:5, 8, 12 21:21 22:21 25:16 26:12 70:12 75:10	corner 34:10	
completed 4:23 35:3, 7	confusion 34:19 81:22	contents 16:1, 4, 7, 21	correct 4:15 5:5 8:13 9:2, 21 10:3, 4, 7, 15, 16 11:15, 16 15:1, 2, 23 16:17, 22 19:13, 14, 16, 17 20:10, 13 21:3, 5, 6 23:2, 10 24:4, 7, 8, 22 26:3, 4, 6, 15, 24, 25 27:18, 19 28:6, 8, 9, 17, 19, 20, 21, 24	
completely 30:16	connected 57:23	context 15:14		
component 47:1, 5 52:2 62:14 83:25	consistent 50:13 57:8			
components 45:11 46:5	constructing 19:24			
compound 42:15	construction 16:8, 25 17:8 72:23 73:15 78:13 89:11 91:4, 10, 18, 25 92:3 93:1, 17 95:9, 13,			
concept 80:6				
concerned 58:15				
concluded 107:24				

15, 17, 25	counsel	dates	21, 22	104:6
72:1, 11,	21:25	22:10	52:15	depends
12 73:2,	22:2	day	69:24, 25	56:25
3, 7, 8	73:21	23:11	71:19	57:2, 14
74:14, 15	count	days	72:14	deposed
75:15, 16,	76:19	23:6	74:4, 6, 24	4:12
19, 20	couple	days'	75:12	deposit
76:21, 22	85:22	23:9	84:18	84:6
77:25	coupled	decay	86:11	85:25
79:11, 14	49:11	27:24	87:9	89:22
83:20, 21	50:2, 7	29:2, 4, 5,	99:14	99:1
84:2, 8,	72:25	7, 11	104:18	103:21
10, 15	94:22	30:9, 23,	declaration	deposition
85:16, 17,	95:5, 11	25 32:3, 9	s	5:4 6:13
21 86:6,	court	61:1	33:16, 19	9:2, 6
14, 20, 21	4:21, 22	decaying	34:3	21:16
87:1, 2, 5,	7:6, 10	28:7, 10,	70:12	Depositions
6, 7, 8, 16,	74:17	13, 18	71:24	18:21
17, 20	cover	decays	72:2	depressed
88:7	11:21	30:12, 15	decline	86:25
90:12, 13,	20:24	31:23	21:23	deep
16, 18	107:16	declaration	29:16	describe
91:6, 8,	covered	11:13, 14,	define	29:14
16, 20	35:23	18, 22	80:7	42:9 76:7
93:11	70:2 96:6	12:15	defined	95:2
95:11, 20,	covers	13:2	32:19	describes
21 96:16	39:16, 18	14:10, 23	79:21, 25	53:7
99:4, 8, 9,	created	15:15, 22	80:2, 11,	54:14, 20
11, 14, 18,	29:7	16:17, 21	12	describing
22	creating	18:9, 11	definition	42:4
102:13,	102:24	19:12, 15,	13:21	80:16
15, 18, 19	creation	19, 24	14:3	98:7
103:6	29:18, 19	20:3, 6, 12	20:16, 19	description
106:23, 24	D	21:4	definitions	15:5
107:4, 6		22:8, 13	20:20	24:20
corrections		33:17, 20,	demonstrati	45:21
107:21		21, 24	ng	50:14
correctly		34:7	depart	design
92:17		35:21	38:22	41:24
correspond	damage	36:3, 4	depending	42:4 77:1
95:4, 23	94:11	37:17		78:20
96:1	dances	38:1		designed
corresponds	30:8	40:6, 14,		
94:15, 21		16 48:20,		
95:4				

60:11	54:18	documents	36:8, 12	employee
64:22	69:23	12:19, 20,	54:17	5:16
68:8, 11	72:5, 10	25 13:1,	62:1	employer
79:17	73:22	9, 13, 18,	70:11, 18	5:20, 23
detail	83:16	19, 21, 23	71:2 72:6	enclosed
42:11	discussing	17:22, 24	73:23	53:24
57:1	58:23	18:1, 3, 4,	82:11, 22	end
details	discussion	7 36:18	98:12	4:25
42:5	18:19	Docusign	104:16	33:21
deviated	45:2	12:12, 13	105:4	79:19
39:5	71:23	21:2	earth	English
device	distinction	door	39:20	53:14
56:21	8:22	43:24	edit	enter
63:5	distinguish	dotted	75:17	67:25
82:18	88:14	30:13	editing	69:12
diameter	distributio	double	75:9, 10	entire
45:18	n	43:8	efficiency	26:5 30:6
difference	39:20	downward	43:5	32:18
84:22	Doctor	65:7	electron	76:2, 5, 6,
85:4	71:23	67:24	29:25	8, 11, 20
89:18	88:9 98:1	69:3, 8	electronic	77:3, 6, 9,
differences	document	drawing	12:1	15 78:4,
8:14 27:1	4:24	79:23	29:23	7, 9 87:19
difficult	11:10	drip	electronica	88:4, 14,
31:20	12:3, 4, 5,	56:9	lly	18, 20, 23,
dinner	7 13:3, 24	duly	12:10	25 89:6,
23:7	14:7	4:3	emanate	7, 8, 21
directly	18:12, 13,	dust	43:5, 11	90:25
29:6	14 19:6, 9	31:9	44:8 84:5	91:1, 10
disappears	21:2, 8		85:25	92:6, 7, 22
30:10	23:22		99:1	93:2, 5,
disclosed	25:15, 21,	E	emanates	17, 18, 22
80:24	23 26:9		85:1	94:6
81:1	39:7, 12,	e-mail	emanating	95:19
discuss	13, 24	11:2	29:12	96:14, 15,
14:20	40:6, 9,	earlier	57:14	20, 24
40:13	13, 19, 22,	9:15	103:17	97:8, 13
discussed	24 41:8	16:20	emanation	100:15
22:17	50:9	17:16	103:20	102:12
43:5 44:7	81:25	19:25	emphasize	entirety
	documentati	26:15	42:18	24:16
	on	35:17, 23		environment
	15:7			47:22, 25

48:9, 10	67:24	101:13	41:15, 19	105:1, 2,
59:13	69:4, 11	extract	42:4	8, 10, 17,
60:12	75:2	89:4	45:14	21 106:3,
64:23	expected	eye	46:11, 14,	11, 14, 15,
83:19	6:17	42:21	25 47:5	16, 22, 23,
equipment	experience		50:14, 19,	24 107:3,
57:24	55:23		21, 23	7
equity	expert	F	51:1 54:7	figures
9:25	4:16		58:6	24:18
errors	10:18	fact	61:24	27:3, 7, 8
107:21	63:17	36:16	62:2	33:3, 4, 5
escape	104:18	42:3	63:1, 22	78:20
47:25	explain	failure	64:15	83:11
65:10, 12,	94:24	59:2	67:2	85:20
13	96:9	70:21	68:20	90:2
escapes	100:20, 22	fair	70:24	98:17
58:10	101:23	13:17	76:7, 8, 24	105:4
evaluated	103:7, 11	20:5	77:20, 21,	107:12
73:11	exposed	37:2, 13	24 78:21,	filed
EXAMINATION	48:16	38:5, 6, 7	24 79:19	5:15, 19
4:5 70:9	63:15	64:17	80:5, 6, 14	12:17
71:20	84:5	78:16	81:8	filering
100:11	85:24	79:6	82:12	43:13, 15
excuse	87:7	87:22	83:10, 15,	44:18
8:17 9:8	98:25	88:2, 6	16 84:10,	51:25
36:16	103:15, 19	94:7, 8	11, 12, 17,	52:6, 8
execute	extend	familiar	22, 23, 24	53:6, 9,
21:2	69:5, 12	12:22	85:4, 5,	20, 22
exhibit	101:7	13:16	11, 15, 16,	56:20
11:6 19:5	extended	14:19	19 86:7,	57:9 58:8
23:18, 20	71:12	25:3	17, 22	66:15, 20,
25:20	extending	41:19	89:10	22 67:3,
39:8, 11	68:16, 21	famous	90:6	17 68:3,
40:11, 20	extends	54:4	91:16	5, 8, 12
41:1, 5, 7	50:25	feel	92:1, 12	filing
72:11	101:14	7:1 33:15	93:8, 9, 25	15:6
85:2	extension	fiber	98:16	filter
expect	85:2	56:1	99:7, 10,	53:12, 14
30:13	extent	figure	18	55:4, 6,
31:22	21:17, 20	27:9, 14,	100:21, 23	10, 15, 21
60:17	extra	18, 21, 23	101:7, 12,	56:10, 11,
66:15		28:1 30:7	18, 24, 25	13
		32:25	102:5, 8,	filtered
			11, 12, 16	54:21
			103:9, 13	
			104:15,	
			16, 23	

filtering	form	forms	73:1, 13,	gases
43:14, 15	16:18	79:10, 13	16 76:2	30:19
52:8	17:19	82:13	77:3, 10,	gaskets
53:13	25:1	forward	23, 25	105:23
filters	26:19	64:8	78:14, 19	gate
55:16, 17	29:15	found	79:1, 2, 5,	43:17, 20
finally	47:9 50:4	11:2 18:9	9, 10, 13,	44:3, 4, 17
7:15	71:16	foundation	22 80:2,	47:10, 12,
find	75:21	103:5	11, 15, 21	18, 19, 21
15:21	77:5	104:2, 9	81:1, 4, 7,	48:7, 11,
finish	78:17	106:4, 12	17 82:12,	15 49:9,
18:23	79:15	free	13, 15, 18,	25 50:5
fits	80:22	7:1 33:15	25 83:12,	58:11
78:23	81:18	front	19 84:1,	60:6, 9,
flared	87:12	11:7 19:8	19 86:13,	11, 13, 16,
68:5	88:8	25:22	19, 23, 25	20 62:11,
flip	91:7, 12	72:3, 7	88:4, 22,	13, 14, 20
63:13	92:23	full	24 89:1	63:11, 17,
flowing	93:19	23:11	90:12, 15	25 64:9,
30:13	96:17, 25	functional	91:5, 11,	12, 16, 22
fluffy	97:10	42:5	20 92:8,	65:2, 6, 9,
43:4	99:16, 19,	functional	18, 20, 22,	16, 19
fluidly	23	functional	24 93:3,	68:3
49:11	100:19, 25	functional	6, 18, 24	71:3, 8,
50:2	101:20	functional	94:3, 14,	11, 14
72:25	102:14, 21	functional	19, 24	gather
94:22	103:4	functional	95:3, 22	55:12
95:5, 11	104:1, 8,	functional	96:14, 16,	general
folded	20 106:4,	functional	20, 22	66:13
54:23	12 107:5,	functional	97:4, 6,	generally
55:15	15	functional	15, 17, 19	23:4 42:9
footnote	formalities	gap	98:20	generator
53:2, 5	6:12	90:12	100:15	41:22, 24
force	formally	gas	101:2, 3,	42:1, 5,
42:23	9:11	28:23, 25	5, 19, 24,	10, 11
43:1	formed	29:1, 9,	25 102:3,	43:18, 22,
forces	80:17	12, 15	5, 8, 13,	24 45:4,
68:2	81:5	30:3	17, 19, 23	22 46:1, 5
forget	forming	52:10	103:1, 8,	50:15
75:8	18:8	56:3	12	53:19
	24:13	58:10, 17,	104:11, 13	57:3, 21,
	80:21	18, 19, 21	106:21	22 63:4
	81:17	60:4, 10	gas - type	65:11
	82:17, 25	65:10	70:25	
	83:19	67:6		
		70:19		

Geronimo 23:7	62:17, 21, 24 63:25	helium 30:3	10:3	14:12
gesturing 62:16	89:13	helped 74:9	hours 10:11, 12	impurities 31:9
Gilman 55:25	handle 63:20, 21	75:17	housing 45:14	include 20:8, 12
give 88:10	hanging 52:3	helpful 18:19	46:7	33:20
glass 56:1	happy 45:7	45:9	hydrocarbon s 31:8	58:20
105:9, 11, 16, 17, 20	hard 31:15	high 43:5		106:1
good 4:7, 8	64:20	57:23	I	107:3, 8
7:3, 25	hardware 103:25	higher 67:5	ICO 8:15	included 23:6
23:8	104:5, 12	highest 30:4	idea 33:6	includes 10:14
grab 63:24	Hassfjell 40:4	highly 29:20, 21	63:24	24:18
gradually 13:5	41:23	hit 32:22	identical 99:20	including 17:2
Great 18:17	83:21	33:6	identically 41:12	29:24
39:6	Hassfjell- hoff 40:7, 10	hits 30:11	identified 46:12	33:20
100:4	41:10, 11, 16, 25	32:12	47:6	73:1
grind 56:10, 11	50:17	Hoff 40:4	83:24	103:22
guess 25:9	54:7	41:23	85:18	informed 36:9, 17, 23, 25
guessing 63:18	57:9, 18	61:6	91:15	37:1
	61:24	83:22	illustrated 27:23	inside 44:13
	70:24	hold 52:13	84:10, 12, 14 89:10	62:14
	72:5	holds 44:20	illustratin g 90:2, 11	76:12, 19
	Hassfjell- hoff's 53:19	hollow 51:8, 11, 14, 16	illustratio n 79:5	77:12
half-life 30:8	hatched 52:2	66:5	important 7:4	78:10
hand 19:4	head 7:10	hour 7:24	impossible	84:5
23:19	hear 6:24, 25	61:19		85:24
25:19	7:6	hourly		90:17
39:8				98:25
				101:14
				103:23
				104:6
				105:13, 14
				107:2, 8
				Inside/out 62:19
				instruct 21:19

22:21	35:5	104:5	76:16, 17	leaking
instruction	isolate	labeled	77:18	58:17
38:21	48:5	9:7 46:15	leached	60:4, 10,
integrity	71:9, 14	50:22	76:14	17 67:7
52:13	isolated	62:5	leaching	70:19
58:16	48:12	65:25	33:1	leave
interacts	isolates	83:24, 25	lead	64:24
29:22	65:20	90:18	28:21, 22	left
interested	71:3	99:7, 10,	32:12, 24	46:1
22:1	isotope	22 101:2	33:2, 6	54:11
interior	6:10	104:10	76:17	66:10
90:7, 9, 10	49:10	labels	89:15, 16,	86:17
103:16	50:1	45:14	23 99:2	99:22, 24
interpret	72:24	laboratory	Lead-212	103:14, 17
87:22	isotopes	5:13, 14	24:1 26:2	legal
interpretat	77:11	lace	28:19	4:23 11:4
ions	issues	61:14	32:9, 20,	13:14, 15,
75:14	13:15	lace-like	21 41:22	16, 19, 23
interpreted	15:1	53:16	44:22	14:14, 16,
106:1		lace-type	46:22	18, 25
interrupt	J	53:11	76:13	15:17
18:24	journal	ladies	77:18	17:5, 14
introduced	39:14, 15,	54:5	89:4, 19,	20:8, 19,
71:24	21	language	25 103:21	20 22:17
investigate		72:23	leading	23:1
38:8	K	Larsen	71:16	35:18, 24
invoiced	kind	23:25	100:25	36:1, 6, 9,
10:9	62:19	Larson	101:21	11, 13
invoices	105:23	12:17	102:22	37:1, 4, 9,
9:20 10:6	kindly	latch	103:5	15, 18, 20,
involve	4:9	64:6	107:1, 5,	21, 23
6:5		law	15	38:3, 8,
involved	L	37:14	leak	13, 15, 17,
13:12	Lab	lawyer	58:14	20, 23
15:1	6:3, 4	38:11	59:13	70:15, 16,
involving	label	lawyers	60:11	17 73:24
11:15	82:12	17:12	64:22, 23	74:10, 14,
19:16		75:17	leakage	18 95:9
Iran		leach	55:2	legally
		44:22	57:24	74:13
			58:4	legend
			59:1, 5, 7,	42:4
			8, 24	letting
				5:16

level	40:2		42:24	54:24
57:2	45:18	M	53:11, 16,	55:4, 6,
	92:14		25 54:3,	15, 22, 24
lever			24 55:24	56:1
62:6, 9,	literally	macro-	56:2, 7	
11, 13	106:8	second		membrane-
63:7, 9,	locate	29:22	materials	type
10, 23, 25	81:24	made	36:18	53:25
lid/valve	82:7	43:8 46:5	matter	mention
80:15	located	52:9	47:23	18:18
82:13	46:19	53:12	60:13	34:18
84:1	47:6, 12	54:1, 24	64:21	50:19
86:14	locating	56:19	79:7, 24	mentioned
life	13:9	57:22	80:8	10:5, 15
31:20	long	75:5	88:25	16:16, 21
	5:9, 10	106:20	89:2	17:16, 24
light	23:5	main	93:2, 5	30:19
95:22	42:24	14:2	97:16, 19,	31:25
106:21	50:25	make	23 102:2	35:17
limitation	75:6	16:14	matters	36:12
105:25	longer	62:15	10:18	38:4, 23
106:8	67:20	69:20	meaning	44:4
limited	87:4	73:15	53:6	46:25
37:24	looked	makes	means	48:8
86:4	98:12	74:16	25:8	51:25
106:8	lost	making	42:17	54:17
lines	69:6 89:6	56:9	43:14, 15	60:1, 6
84:3	lot	manipulate	52:7, 8	62:1
85:22	8:21	43:2	53:10, 16	65:9, 23
liquid	loudly	marked	62:11	70:11
56:3, 12	6:24	23:18	meant	73:23
79:22	lower	39:11, 24	97:13	75:1
80:2, 15	34:10	40:20	mechanical	77:14
81:1	43:19	52:18	42:12	95:10, 19
82:13	44:2	66:2	mechanisms	mentions
84:1, 19	46:5, 14,	72:19	42:6	55:4
86:14	15 47:2,	82:15	medical	mesh
98:20	7, 13, 15,	86:19	6:9 26:2	52:9
103:8, 12	21 48:3	marks	meetings	53:12
listed	68:15, 21	43:22	22:25	metal
12:19	71:10	94:22	23:4, 5, 10	52:9
14:5 16:9		material	membrane	53:12
35:13		29:23	43:8	metal-to-
37:18, 21,				metal
25 38:19				58:13

methanol	66:5, 8, 9	92:23	nucleus	object
54:22	71:22	93:19	29:20	63:19
	97:23	96:17, 25		88:10
Mexico		97:10	number	99:21, 24
35:8	moved	99:16, 19,	24:6 26:5	100:1
	13:5	23 100:6,	34:13, 16	102:21
middle		8, 12, 20	41:5	104:24
45:13	movement	101:6, 23	42:19	106:4
	30:18	102:8, 16,	49:14	107:1
minutes	31:1, 2, 13	23 103:7	52:21, 23	
100:9		104:4, 15,	55:24	objection
Mirzadeh	moves	22 105:3,		15:10
4:2, 7, 11	30:4 58:9	8, 15, 25	numbering	16:18
70:11	83:14	106:7, 16	34:14, 15	17:19
100:13	moving	107:2, 7,	40:25	20:14
	30:20, 22	17, 19, 23	41:2	21:17
mischaracte	32:1, 6, 9,		numbers	25:1
rized	12 65:7	natatorium	34:4 49:3	26:19
20:14		39:20		47:9
mischaracte		National	nylon	50:4, 8
rizes	N	6:3 35:4	54:3, 4	71:16
50:8				75:21
misspelled	naked	natural	0	77:5
53:8	42:21	27:24		78:17
				79:15
misstates	Nall	neutral	O-RING	80:22
15:10	9:1, 5	29:25	60:1	81:18
	15:10		66:4, 12	87:12
mistake	16:18	nitrogen	83:13, 15	88:8
51:15	17:19	31:7	86:20	91:7, 12
	20:14	noble	87:5	92:23
misundersto	21:17	28:25		93:19
od	22:20	30:3	O-RINGS	96:17, 25
36:2	25:1		51:6	97:10
molecule	26:19	nod	58:7, 8, 13	99:16, 19,
31:14	47:9	7:9	59:2, 3, 5	23
	50:4, 8	normal	60:3	100:19, 25
moment	70:10	7:9 18:20	63:16	101:20
29:18, 19	71:18		65:23	102:14
30:11, 12	72:16, 20	Norwegian	66:2, 3	103:4
	75:21	53:10, 15	67:6	104:1, 8,
months	77:5		70:19, 24	20 105:7,
22:13	78:17	noted	83:11, 18,	12 106:12
	79:15	30:7	23 102:11	107:5, 15
morning	80:22	53:15		
4:7, 8	81:18	nuclear	029pgr	objections
	87:12	5:13 6:4	24:14	105:22
move	88:8, 12	39:16, 18	oath	
29:14	91:7, 12		4:3 6:17	
63:25				
64:8				

obvious 15:5	opened 63:12	74:2, 4, 5	part 29:17	11:13, 15,
obviousness 15:9, 14, 18 17:16 20:13, 17, 19 70:12	64:21	originally 17:7	38:4, 14	18 12:16,
occupies 30:6	65:10	overlap 8:21	39:16	17 13:4
occupying 78:11	opens 64:12	overview 15:19 45:9	43:18, 19, 24 44:2, 8, 11 48:5 51:5 55:7 63:14 67:25 69:4 74:6 76:14, 17 79:20, 21 90:22, 25 91:1	15:6, 20 19:12, 13, 16 22:14 23:25 24:3, 6, 9, 13, 16, 24 25:4, 10, 12 26:3, 6, 8 27:10, 15, 21 33:4, 5 37:14 39:9
occur 23:5	operate 63:14	oxygen 31:6	partial 23:11	40:17
occurred 5:6	operated 62:21, 24	operation 42:6	particles 31:10	48:21, 23
occurs 30:25	operating 42:6	operating 42:6	parts 57:22	53:8
Offhand 11:1	operation 42:10, 12	p.m. 107:24	pass 52:10 66:16 71:18 107:17	69:24 71:19 72:13 80:2 81:21 82:2, 4, 5, 7 84:17 90:3 98:2 99:18 100:23 103:13 104:16, 23 105:21
open 43:20 44:4, 17 47:24 48:2, 15 50:6 51:20 60:9, 13, 16, 20 62:15 64:2, 9, 19, 24 68:3 71:11 80:10 81:2, 3, 17 82:18, 25 84:4, 9 85:23 98:24 99:10 100:2 103:2 104:6	opinion 21:9 80:17 107:11	packet 43:8, 9, 10, 12 53:24 55:3, 18	passage 65:25 66:16, 23 67:7, 12, 18, 21, 25 68:17, 22 69:5, 12, 16	patents 12:19 22:15, 16 26:11, 17, 24 27:2, 17
	opinions 24:14 38:16	packets 52:13 54:1, 14 56:19, 23 57:11	paid 10:2	pathway 28:4
	opposed 7:8	pages 15:22 107:22	paper 40:3	pause 44:25 88:9
	options 95:1	paid 10:2	paragraph 36:17, 22 37:5, 6 48:20, 25 49:6, 19, 22 54:19 73:4 82:8 93:11	Pb 28:21
	order 42:23 48:5 63:14	paper 40:3	passing 100:6	
	ordinary 107:12	paper 40:3	past 70:19 101:15	
	original 13:23 14:21, 22 23:25 63:22	paragraph 36:17, 22 37:5, 6 48:20, 25 49:6, 19, 22 54:19 73:4 82:8 93:11	patent 5:11, 12, 15, 19 6:5, 6, 7	

pending 7:20	pick 7:11	19 89:9 91:19, 21, 22 92:9, 14, 17 95:15	75:18	precipitate 42:20, 23 43:1 54:18, 20 55:10, 15 56:4, 16
people 7:9	picks 29:24		position 43:21 47:20, 24 48:2, 4 63:11 64:3, 16 65:3, 7 67:4, 13, 16 69:1, 4, 9 71:10 80:9, 10, 20 81:2, 3, 17 82:24, 25 84:4, 10 85:24 86:16 87:1, 3 98:21, 25 99:8, 11, 22, 25 100:2 101:4 103:3	
period 44:16	picture 63:8	pointed 46:18		precipitate d 42:14 43:7
person 5:15 13:16 107:11	piece 66:18	pointing 63:19 95:22 102:7		precipitati on 55:11
perspective 75:15, 18	piston 83:10 85:19 86:25 98:16 101:12	points 59:24		precursor 49:10 50:1, 6 72:24
PGR 8:17, 18 11:14 19:16 39:9	place 22:18 103:21	polonium 28:16 30:13 31:1, 11, 16, 23 32:3, 5, 8		prepare 21:15 22:7
PGR2025-00029 9:2, 8 11:6	plastic 44:1, 5, 12, 20, 22 54:23, 25 55:19, 22, 23 56:2 68:4, 6, 9, 10, 14	Polonium-216 28:14 30:10		preparing 12:14
PGR2025-00027 9:7		poly 71:12	possibility 58:10, 14 59:4 70:19, 20	present 47:1
PGR235-00040 19:5	plunger 43:21 44:19 89:16 103:14, 18	polyethylen e 46:19, 21 48:12, 16 60:21 65:20 68:14 71:4, 9, 15	Post-grant 8:19	presented 41:23 74:16
Ph.d. 35:7, 10	Po 28:16		potential 59:7, 8, 23	pretty 23:8 56:9
photograph 62:25 63:4	point 5:22 10:8 14:6 30:2 59:5, 7 64:3 67:9, 10 70:20 75:24 78:3 87:11 88:13, 17,	portion 49:22 54:12 68:16, 21 69:11	potentially 89:22	prevent 67:6
physical 35:11, 12 42:20 64:11		porus 56:4	practice 51:10 67:8	previous 20:11 34:6 45:22 71:23
physically 44:23		POSITA 74:20	pre-fluidly 50:6	primarily 13:14 17:13
physics 29:17			precedes 54:7	principle 51:10

67:8	61:20	purified	101:22	35:13, 15
prior	properly	24:1 26:2	103:10	39:17
15:10	60:9	purify	105:19	radioisotop
20:15	proposed	43:7	106:6, 19	es
56:20	100:24	purpose	questioned	24:2
privileged	104:17	51:17, 23,	4:4	radiopharma
21:18, 22	105:5	24	questioning	ceutical
problem	provide	push	9:10	39:16
6:25 8:2	6:20 7:5	43:21, 23	questions	Radium-224
proceeding	15:14	44:4, 10	6:23	28:8, 10
8:6, 10	66:3	51:17	33:12	29:19
proceedings	70:25	64:4 68:2	34:22	radon
8:13	provided	69:8	58:24	29:9, 11
107:24	13:14, 19	pushed	69:20	30:2, 19,
process	14:1, 4, 8,	67:23	70:1, 4, 5	25 31:22,
6:13 7:5,	10, 13, 16,	69:3	100:5	25 32:22
9 12:14,	21, 25	pushing	102:7	43:4, 11
24 13:8	15:7, 8, 23	51:22	104:24	44:7, 14
19:24	16:17, 22	put	105:1	47:22, 24
20:2, 4	17:3, 17	11:3 43:7	107:18	52:10
21:1	20:6, 20	56:10	quotation	58:18, 19,
22:18	36:13	57:13	94:21	20, 22
29:11	38:20	66:11	quoting	59:12
44:17	62:25		81:9	60:4, 10,
produce	70:13			21 64:22,
43:6 57:4	73:21			23 65:10
produced	74:21	Q	R	67:6 84:5
29:1, 4	75:3	Qualificati	radiation	85:1
54:21	providing	on	39:15, 19	89:22
58:21	6:17 9:17	15:17	radioactive	99:1
produces	publication	question	61:1	103:16, 20
29:9	39:14	7:1, 19, 20	radioactivi	Radon-220
55:25	41:23	8:23 9:4	ty	28:11, 13,
producing	publish	18:5, 7, 23	56:14	23 29:1,
61:11, 15	39:21	22:6, 18	57:3, 24	14
product	pull	25:2, 7, 16	58:4	Radon-224
89:7	44:18	31:19	59:1, 10,	29:6, 7
production	48:4	45:6 47:4	11, 13, 20	raising
24:1 26:1	51:19	59:9	60:17	71:13
55:7	66:22	88:16	61:12, 15	read
promise	pulled	91:14	radiochemis	12:16
	66:21	92:13	try	14:20
	103:15	93:15, 16		17:6 22:8
		97:22		

24:5, 13,	11:10	13:4, 6	33:1	removed
16 53:7	19:9	18:11	39:15	46:8
77:6	23:22	21:5, 7, 8,	94:25	rendering
80:16	25:23	12 22:16	relates	21:9
94:13, 15	recommendat	27:4	106:22	38:16
106:17	ions	72:11	relationshi	repeat
readable	23:13	referred	p	7:2 18:5
75:5	record	17:21	9:22	68:19
readily	4:10	32:17	release	69:6
52:10	23:13, 16	63:21	47:22	91:13, 14
reading	24:5 26:5	73:16	relevance	101:22
94:17, 18	45:1, 2	referring	104:9	103:10
reads	70:14	13:1 14:9	relevant	106:6
46:1	100:8	18:1	12:21	repeated
real	recover	25:4, 6, 14	13:6	97:14
31:20	89:15, 16,	26:9 33:4	relied	repeatedly
reason	24	34:19, 22	18:8, 13	102:25
6:20	red	37:1	21:9	repeating
51:19	84:19	40:10	remain	95:13
58:15	86:13	41:7 51:6	71:11	97:2
66:11	redirect	58:3, 6,	remains	Rephrase
73:14	70:8	18, 19	101:5	25:2
94:23	refer	59:7	remember	report
95:8	11:17	72:17	4:20 11:1	5:2, 3
recall	19:18	73:13	14:2	reporter
5:6 6:1	24:9, 23	74:8, 11,	18:23	7:6, 11
10:8, 25	25:12	19 78:9	19:25	represent
13:18	26:8	80:13	22:20	41:4
27:1, 6	33:16	85:15	70:22	reproduced
52:7 54:1	34:13	88:19	71:6	99:17
57:2 83:1	40:5, 9	refers	82:14	requiring
100:17	41:10	41:25	104:19, 21	93:17
105:3	84:21	84:21	remind	reserve
received	reference	89:3, 21,	22:12	107:19
12:4	16:6	24 93:7,	25:5 88:9	respect
recess	27:20	24 106:23	reminder	71:18
23:17	41:12	rehearsed	6:16	response
61:22	50:18	13:10	remove	8:23
69:22	72:6, 7	related	44:21, 22	restaurant
97:25	Referenced	12:16	48:6	23:7, 12
100:10	18:16	13:21	54:22	
recognize	references	14:13		
	12:19	18:3		
		26:1, 20		

resulting	17:20		24 81:4,	21 45:25
31:1	19:4, 6	S	7, 17	49:18
retained	20:18		82:13, 16,	57:20
10:17	21:24	Saed	18, 25	70:15, 16,
Retractable	22:25	4:2, 11	83:12, 19	17 72:22
85:11	23:16, 19	safety	86:20	73:12
retrieve	25:3	64:4	87:5, 19,	78:10
32:20	26:23	satisfies	24 88:1,	79:18
reveal	44:25	104:17	5, 22, 25	84:25
22:21	45:3	satisfy	89:1	94:14
revealing	47:11	100:21, 23	91:6, 11,	sections
21:21	50:5, 10	105:4	20 92:8,	16:6
reverse	61:19, 23	106:3, 11	18, 20, 22,	37:11
44:17	69:18, 23	107:13	25 93:3,	secure
review	70:8	scenario	6, 18, 24	63:11
4:20 8:19	71:16, 21	78:19	94:3, 14,	83:12
74:5	72:18, 22	scenarios	20, 24	secured
107:20	75:22	94:24	95:3, 23	55:19
reviewed	77:13	scheme	96:14, 16,	send
22:14, 16	78:25	27:24	21, 23	13:22
74:12	80:4	scientist	97:5, 6,	sense
75:11	81:3, 20	38:11, 14	15, 17, 20	18:21
River	87:13	scope	100:16	74:16
6:4, 10	88:13	104:2, 9,	101:19,	sentence
rod	91:9, 15	20, 25	24, 25	46:4
51:10, 11,	93:1, 21	106:5, 13	106:2, 21	55:14
14, 16	96:19	screw	sealed	57:21
66:5, 8, 9	97:1, 12	44:1	51:4, 5, 13	75:5, 7
71:10	98:1	screwed	60:3	85:17, 23
83:10	99:17, 21	79:14	103:2	98:12, 19,
84:24	100:1, 5,	seal	sealing	24
85:19	7, 19, 25	58:13	104:10	separate
98:16, 20	101:20	66:3 68:6	seals	55:9 95:7
102:17, 24	102:6, 14,	70:25	44:12	separates
103:9, 13	21 103:4	73:1, 13	73:16	43:18
room	104:1, 8,	76:2	79:20	47:20
30:6	20, 24	77:4, 10,	105:23	series
Rosato	105:7, 12,	23, 25	section	63:16
4:6 9:3, 6	22 106:4,	78:15, 19	15:19	services
15:13	12 107:1,	79:1, 2, 5,	16:8, 19,	10:23
16:20	5, 15, 18,	9, 10, 13,	24 17:2, 9	set
run	22		18:4, 15	9:10 70:5
			35:24	
			36:6	
			37:10, 16,	

sets	105:20	27:8	source	specificall
58:8	shows	53:11	29:12	y
settled	14:23	83:12, 21	32:23	55:25
4:21	28:7, 10,	Single	42:13	74:11
shaft	13, 23	107:22	44:13	specificati
63:15	67:2	sir	46:8	on
79:20	68:21	19:7	48:3, 5,	24:21, 23
101:4, 14	76:9	21:23	12, 16	25:4, 5,
shake	84:24	sit	49:10	12, 15
7:10	85:2	68:13	50:1, 6	26:14, 18
share	86:25	Sketch	53:21, 23	80:16, 20
26:18	87:7	33:21	56:13, 16	81:12
27:17	101:1	35:1	57:14	83:4
shares	102:16	skill	58:25	specifics
27:6	shut	107:12	59:9, 11,	22:1, 7
shift	51:9	skilled	12, 14, 20	23:3
102:2	side	75:1	60:25	speed
shoulder	63:9, 10	slides	64:25	30:4
68:12	79:19	62:13, 14	65:21	stabilized
show	86:17, 23	83:11	71:4, 9,	61:16
77:3	103:14,	sliding	12, 15	stainless
showing	17, 18	62:21	72:24	57:23
45:14	sign	slightly	76:9, 14,	standard
50:19	12:5, 7	26:22	16 78:11	14:18
shown	signature	66:9	83:14	15:18
41:21	11:25	107:3, 8	84:4	37:4, 15,
42:5 51:7	12:1, 2	small	85:11, 24	21, 23
61:8 62:2	20:24	31:8	87:7	38:17
63:7	signed	42:19, 22	98:25	57:23
65:23	12:6, 11	101:15	103:15, 19	standards
67:20	75:12	solid	105:13, 14	14:16
68:15, 20	significant	42:24	sources	15:17
76:23, 25	31:7	50:1, 6	61:7	20:9
77:22	89:7, 18	56:7, 8	space	35:24
78:21	signing	72:24	30:15	36:1, 6, 9,
79:1	12:5	sooner	spaces	13 37:9,
82:19	silica	8:1	32:25	18, 20
83:15	31:9	sort	speak	38:4, 8, 23
85:1 90:4	similar	50:22	6:24	39:5
99:13	20:2, 11	52:9 64:5	specific	start
101:9	21:1		39:1	28:2
102:19	26:11		45:10	42:12
			70:1, 6	72:14

started	stays	strips	90:4, 5,	39:2
12:23	30:13	55:19	14, 23	78:25
13:4	56:11	studies	91:5, 16,	talked
starting	68:9	35:4	20 92:10,	19:23
16:8, 25	stearate	subject	18, 20, 24	22:2
83:7	42:14	35:10	93:24	26:14
85:23	43:1, 3, 6,	submit	94:2, 5	50:13
starts	10 54:20	9:20	96:13, 22	52:5
33:25	55:3, 7, 8,	submitted	97:3, 4, 15	60:25
state	13 57:11	5:1 10:5	99:2	61:3
4:9 48:19	58:21	40:19	100:15	82:22
49:9	59:20	sufficient	101:6, 18	talking
75:18	61:4, 9	38:13	106:1, 2,	11:19
76:1	steel	suing	9, 21	16:19
91:19	57:23	5:12	107:4, 9	19:20
stated	stick	support	surfaces	24:10, 24
36:17	31:11	14:1, 4	31:12	31:5
37:10	sticking	supported	32:20	41:8, 11
53:5	77:2 94:1	21:12	103:22	70:15
82:11	sticks	supporting	surrounding	80:4
statement	32:13	12:18, 25	s	team
75:23	stocking	13:19	57:25	11:4
94:2, 15,	54:4	17:21	sworn	13:14, 20
17 97:21,	stop	supposed	4:1, 3	22:17
23	22:24	60:14	symbol	23:1
106:17, 22	31:23, 24	surface	28:22	36:11
statements	32:6	30:14	system	37:1
17:14	stops	32:16, 19	41:24	38:20
states	47:22	33:7, 9	48:1	technical
42:4 46:4	56:7	44:8 73:1	58:16	4:24
55:14	67:1, 2, 4	76:2	60:18, 19	12:22
57:9, 22	101:8	77:9, 15,		13:11
83:10	store	16, 17, 19,	T	17:13
84:4	103:25	21, 24		33:13
85:10, 19,	104:5, 12	78:4, 14,	Table	39:15
23 98:19,	straight	18 79:4	15:16, 25	74:6
24	66:8	84:6 86:1	16:4, 7, 12	technically
stating	strike	87:19, 23,	talk	technician
87:23	100:21	25 88:4,	6:12	6:9
88:18	102:24	15, 21, 24	18:24	telling
stay	105:9	89:3, 12,	30:18	84:9
87:9 90:2	106:18	23, 24	34:19	tend
			38:13	

34:13	16:14	16 76:2	42:25	105:9,10,
term	18:18	77:4,10,	44:10,16	20
14:4 25:4	81:13	23,25	45:7	topic
52:5	things	78:14,19	47:21	6:9 26:20
53:10,15	7:4 77:14	79:1,2,5,	52:12	97:24
73:24	102:7	10,13,22	69:21	topics
74:10,14,	Thorium	80:2,11,	75:7	20:12
15,21,25	28:2	15,21	times	total
94:19,25	42:16	81:2,4,7,	55:1,25	10:12
95:9	43:1,10	17 82:13,	97:14	touch
terminized	54:20	16,18,25	title	43:15
30:1	55:2,12	83:12,19	79:9 85:8	76:15
terms	59:17,19	84:1,19	titled	track
13:25	61:3,8	86:14,20	35:24	69:6
14:1,14	84:25	87:5,19,	today	training
17:6,14	Thorium-22	23 88:1,	6:21	35:11,12,
58:3	39:19	5,22,25	16:20	18
74:9,18	Thorium-224	89:1	21:16	trajectory
95:10,25	29:5	90:12,15	25:11	31:17
testified	Thorium-228	91:5,11,	toggle	transcribed
4:4	28:5,7	20 92:8,	62:5,9,10	18:22
102:25	29:2,4,8	18,20,22,	63:7,23,	73:24
104:16	32:23	25 93:3,	25	74:7
testifying	42:13,17,	6,18,24	top	transcript
105:3	21 43:7	94:3,14,	43:22	107:20
testimony	52:13	19,24	44:1,12	transition
6:17,21	53:21	95:3	49:19	70:5
8:6,10	Thorium-232	96:14,16,	50:23	transmutes
9:15	27:25	20,22	51:5,9,12	30:10
15:11	thought	97:5,6,	54:19	treble
18:8,14	12:20	15,17,20	55:7 58:7	43:9
20:15	83:5,6	98:21	65:24	truth
38:5	thoughts	100:16	67:25	6:18
text	14:11	101:3,5,	68:5,12,	tube
81:12,16	thread	19,24,25	13 75:23	43:22
83:3,17	90:9,10	102:3,5,	79:14	44:18
84:21	threaded	8,13,17,	83:12,13,	50:20,22,
theorems	67:2	20,23	18,23	25 51:3,
13:22	101:10	103:1,8,	87:10	4,8,15
thesis	tight	12	90:12	52:3
35:14	60:14	104:11,	91:22	
thing	73:1,13,	12,14	92:14	
		time	95:16	
		4:14 5:9,	101:16	
		10 10:9		
		19:1		

61:11	typically	6:19 7:1,	69:5, 12	valve's
65:3, 7, 25	66:11	7, 22 22:4		60:9
66:5, 15,	typographic	77:13	USA	valves
16, 20, 21,	al	78:3	55:25	47:10
22 67:3,	107:21	80:25		49:25
7, 12, 16,		81:15	V	63:17
17, 20, 21,	U	88:2, 17		
23, 25		94:9	vacuum	verbal
68:16, 17,			31:3, 18	7:5, 11
21, 22, 25	uh-huh	understandi	57:24	verify
69:3, 4, 5,	5:3 8:20	ng		12:22
8, 11, 15,	10:21	37:14, 15	valve	20:24
16 71:13	11:20, 24	63:10	43:17, 20	
79:20, 25	16:11	80:19	44:19	vertically
83:11, 14	17:1	81:4, 11	47:12, 18,	51:1
89:15	33:14, 18	82:12	19, 22	vessel
101:11,	34:1	92:17, 21	48:7, 11,	43:23, 25
14, 18	35:15, 22	Understood	15 49:9	44:5 48:6
103:2, 23	36:5, 15,	17:15	50:5	51:18
tube's	21 37:8	19:2	58:11, 12	65:1
69:12	45:17	35:16	60:6, 11,	68:14
tubes	46:10, 13,	unit	14, 16, 20	
61:16	17 49:5, 8	98:21	62:1, 11,	vial
turn	50:3, 24	University	12, 13, 14,	77:22
9:11	52:1, 4	35:5, 8	20 63:11,	89:12
39:23	53:4, 17		25 64:9,	90:6, 8
45:23	54:10	unlock	12, 16, 22	visible
48:22	55:6	64:6	65:2, 6,	42:21
62:13	59:25	unscrew	10, 16, 20	
64:2, 5	63:3, 6	44:20, 21	71:3, 8,	volume
72:13	65:5		11, 14	30:5, 6, 9,
82:6 85:6	67:14	upfront	79:22	20, 22
98:6 99:5	68:24	15:4	80:2, 3, 8,	32:1, 18
104:22	69:10	upper	11, 21	55:2
turning	70:23	43:18	81:2	72:25
46:11	76:4 83:6	45:14	82:15	76:2, 5, 6,
Twenty-	84:13	46:7, 12	84:19	8, 11, 12,
eight	86:12, 18,	47:1, 6,	86:18	18, 19, 20
52:24	24 95:18	13, 15, 20	87:3	77:3, 6,
	98:15, 18	48:5	98:20	10, 15
type	106:10	54:12	101:2, 3, 5	78:4, 8, 9,
13:12	undergradua	upward	102:3, 16,	10 87:19
30:16	te	65:3	17, 20, 23,	88:4, 14,
75:3, 8, 9	35:4	66:21	25 103:1,	15, 18, 20,
	understand	67:13, 16	8, 12, 17,	23, 25
		68:25	24 104:4,	89:6, 8,
			5, 6, 10, 11	21, 22

90:25	weakest	5:2, 3
91:1, 10	67:9	15:8, 21
92:6, 8, 22	weird	17:4
93:2, 5,	18:21	24:20
17, 18, 22		51:15
94:6, 22	welded	74:2, 13,
95:6, 11,	51:9	16 81:6,
20, 23	well-known	12, 16
96:14, 15,	42:15	83:3
20, 24		
97:8, 13	whatsoever	wrote
100:15	35:19	4:20, 23,
101:11,	wide	25 14:11
13, 16	60:9	17:8
102:12	word	37:14
103:19, 23	53:9, 14	
	62:10	X
W	95:1	
	wording	xenon
walk	17:5	30:3
28:1		
wall	words	Y
30:5, 12	47:23	
90:9, 10	51:4	
	61:11	year
walls	69:15	10:19, 20
32:13	working	years
90:7	5:23 6:2	5:7 42:25
wanted	works	
45:4	62:20	
wash	worries	
55:11	88:12	
washed	worth	
54:22	23:9	
water	wrapped	
54:22	54:23	
55:12	55:1, 16	
56:11	writing	
ways	14:21, 22,	
101:24	25 17:13	
weak	20:3	
67:10	74:3, 4, 5	
70:20	written	