

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

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U.S. Patent No. 7,421,847
IPR 2025-00559
U.S. Patent No. 7,207,181

DEPOSITION OF GREGOR P. HENZE, Ph.D., P.E.
December 11, 2025

ANTHONY INC.,
Petitioner,
v.
CONTROLTEC, LLC,
Patent Owner.

APPEARANCES:

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Appearing on behalf of Petitioner

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214-651-5000
Appearing on behalf of Patent Owner

1 PURSUANT TO NOTICE and the Federal Rules of Civil
 2 Procedure, the deposition of GREGOR P. HENZE,
 3 Ph.D., P.E., called by the Patent Owner, was taken
 4 on Thursday, December 11, 2025, commencing at 8:14
 5 a.m., at Haynes & Boone, LLP, 675 15th Street,
 6 Suite 1100, Denver, Colorado, before Shelly
 7 Findley, Professional Shorthand Reporter and
 8 Notary Public within and for the State of
 9 Colorado.

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11 DEPOSITION OF GREGOR P. HENZE, Ph.D., P.E.

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

2 GREGOR P. HENZE, Ph.D., P.E.,

3 having been first duly sworn, testified as follows:

4 MR. JONES: Charlie Jones with Haynes and
5 Boone on behalf of the respondent and joined by my
6 partner, Robert Ziemian.

7 MS. REICHEL: Whitney Reichel from Fish &
8 Richardson for the petitioner.

9 THE DEPONENT: And Gregor Henze.

10 EXAMINATION

11 BY MR. JONES:

12 Q Good morning, Dr. Henze. How are you?

13 A I'm doing good.

14 Q You just did, but could you state your full
15 name for the record please, sir?

16 A Gregor Henze.

17 Q And you understand we're here to take your
18 deposition today in connection with two inter partes
19 review proceedings and that you're an expert for the
20 petitioner in those proceedings?

21 A Yes, I do.

22 Q And you've been deposed before, sir; is that
23 correct?

24 A Yes, I have.

25 Q How many times?

1 **A Roughly half a dozen times.**

2 Q So you're familiar with the process
3 generally?

4 **A Yes.**

5 Q Is there any reason you can't answer my
6 questions truthfully today? Medical? Physical?
7 Otherwise?

8 **A No.**

9 Q Thank you.
10 If you turn to Exhibit 1004 in the '181
11 binder that's in front of you, that's the Carter
12 patent, U.S. Patent 7,137,262.

13 Do you have Anthony 1004 in front of you,
14 sir?

15 **A Yeah, I do.**

16 Q What is a dew point?

17 **A That's the temperature at which air is at
18 its maximum capacity to carry moisture in the air.**

19 Q Is the dew point also the point at which
20 condensation begins to form?

21 **A Yes.**

22 Q And what does one like, such as yourself,
23 need to calculate -- what data points -- strike all
24 that.

25 What data points would someone, such as

1 yourself, require to calculate a dew point in any given
2 environment?

3 **A Typically three variables. I need the**
4 **environmental pressure. But if that's assumed to be**
5 **atmospheric, all I need is temperature and relative**
6 **humidity.**

7 Q Okay.

8 **A But I could use other pairs of variables**
9 **too.**

10 Q Can you calculate the dew point with the
11 ambient temperature alone?

12 **A You cannot.**

13 Q If you would, look at the Carter patent,
14 Anthony 1004, which I'm just going to refer to as
15 "Carter" today.

16 Are you familiar with this patent generally,
17 sir?

18 **A Yes, I am.**

19 Q And in the claims of Carter, the apparatus
20 described therein --

21 **A At the end?**

22 Q Yes, sir.

23 **A Claims. Mm-hmm.**

24 Q Are you there looking at the claims of the
25 Carter patent?

1 **A Yes, Column 6.**

2 Q And the claims in the Carter patent turn off
3 the heating apparatus based on an ambient temperature;
4 right?

5 A No, that is not quite correct. They turn
6 off the heating element when the surface temperature
7 reaches the ambient temperature.

8 Q Okay. The apparatus described in the claims
9 of Carter does not turn off based on any relative
10 humidity reading; is that correct?

11 A The -- if I point to Claim 1, limitation
12 one, two three, four -- fourth limitation, "wherein the
13 control units enacts the switching unit to switch the
14 heating unit on when the surface temperature is less
15 than or equal to the dew point derived value," so it is
16 a comparison between the surface temperature and the
17 dew point temperature.

18 Q That's for activating the heating unit,
19 correct, what you just quoted?

20 **A** **That is correct, yeah.**

21 Q And the remainder of that sentence in
22 Carter, Claim 1, at the very end says, "and to switch
23 the heating unit off when the surface temperature
24 attains the ambient temperature"; right?

25 **A** That's what it says, yes.

1 Q So at least for Claim 1 in Carter, the
2 device switches off without respect to relative
3 humidity; correct?

4 A Carter turns off the heating element at a
5 temperature value that is guaranteed to be above the
6 dew point. So it's in the very safe zone. And it only
7 switches off after having switched on using a dew point
8 measurement.

9 Q My question, sir, was: The language says,
10 to switch off the heating unit -- "to switch the
11 heating unit off when the surface temperature attains
12 the ambient temperature"; right?

13 A That's what it says, yes.

14 Q There's no reference there to relative
15 humidity; right?

16 MS. REICHEL: Objection. Form.

17 THE DEPONENT: This claim limitation has to
18 be viewed as an entirety, and there's only a meaning to
19 switching something off once it has been switched on
20 before. And the switching on before in Carter is
21 driven by the impending risk of condensation, and that
22 can only be inferred from a dew point temperature.

23 Q (By Mr. Jones) The device described in
24 Claim 1 of Carter is going to switch off whenever the
25 frame temperature -- strike all that.

1 The device in Carter in Claim 1 is going to
2 switch off the heating unit when the surface
3 temperature attains the ambient temperature; right?

4 **A That is what this subsection of the claim**
5 **limitation states, yes.**

6 Q And if you look at Claim 8 of Carter.

7 **A Claim 8.**

8 Q The device described in that claim, Claim 8
9 of Carter, also deactivates the heating unit if the
10 second determination is at an acceptable level; right?

11 (Reporter clarification.)

12 THE DEPONENT: What is this -- the label for
13 that limitation?

14 Q (By Mr. Jones) Well, let's --

15 **A Is it . . .**

16 Q Let's look at Claim 8, Element I; right?

17 **A Yes. Mm-hmm. I, that's what I asked for,**
18 **yes.**

19 Q I. Claim -- Element I, Claim 8 of Carter,
20 "Making a second determination of whether the second
21 surface temperature measurement is at an acceptable
22 level relative to the second ambient temperature
23 measurement."

24 Right?

25 MS. REICHEL: Objection. Form.

1 Q (By Mr. Jones) That's what it says; right?

2 A I believe so.

3 Q Is there any mention of relative humidity in
4 Element I of Claim 8?

5 A There's mention in Element D. And that -- I
6 have to read the claim in its totality.

7 Q This will go a lot quicker if you just
8 answer my questions, please sir.

9 Is there any mention of relative humidity in
10 Element I of Claim 8?

11 A There's not.

12 Q Okay. And what does the second
13 determination in Claim J -- Element J of Claim 8 refer
14 to?

15 What second determination is being referred
16 to?

17 A The second determination only makes sense if
18 you're aware of what the first determination is, and
19 that's mentioned above in this claim.

20 Q The second determination is a determination
21 of a surface temperature; right?

22 A Yes.

23 Q Let's look at Claim 10 of Carter. I'd like
24 to look at the last two elements.

25 Do you see those?

1 **A I do.**

2 Q Okay. And the second determination referred
3 to in the next-to-last element of Claim 10 is a
4 determination of surface temperature; right?

5 **A Yes.**

6 Q Okay. Not a determination of anything else;
7 right?

8 MS. REICHEL: Objection. Form.

9 Q (By Mr. Jones) Go ahead.

10 **A I read a claim in its entirety, and the**
11 **second determination makes only sense to me as a reader**
12 **if I've encountered a first determination, and that**
13 **first determination does involve humidity.**

14 Q Okay. Does the second determination involve
15 humidity as written here in the plain language of the
16 claim?

17 **A It does not.**

18 Q If you turn to your declaration, please,
19 sir, starting -- in the '181 patent. That's
20 Anthony 1003.

21 Do you have that in front of you?

22 **A I do.**

23 Q This is your sworn testimony; correct?

24 **A Yes, it is.**

25 Q If you turn to the portion that begins on

1 Paragraph 57 of your declaration in the '181 patent.

2 A I found it.

3 Q This is the section entitled Roman numeral
4 VIII, Claim Construction?

5 A Mm-hmm.

6 Q And then you set forth Paragraphs 58
7 through -- through 75, you set forth nine claim
8 constructions?

9 A Yeah.

10 Q Correct?

11 A I believe so.

12 Q Who created these claim constructions?

13 A I did.

14 Q These are your words?

15 A Yes.

16 Q And you created them independently?

17 A No.

18 Q Okay. How did you create --

19 A With counsel.

20 Q Oh, so you formed -- strike all that.

21 Just to be clear, you formulated the claim
22 constructions in Section 8 of your declaration for the
23 '181 --

24 A Mm-hmm.

25 Q -- IPR with counsel?

1 **A Yeah.**

2 Q So which words are yours and which words are
3 counsel's?

4 MS. REICHEL: Objection to form.

5 And I just caution the witness not to reveal
6 the content of any conversations with counsel, but if
7 you have an answer to that question at a high level,
8 you can provide.

9 THE DEPONENT: I do not recall.

10 Q (By Mr. Jones) Okay. So you can't tell me
11 in Section 7 -- strike all that.

12 You are not able to tell me, as you sit here
13 today, in Section 8 of your declaration for the '181
14 IPR which words are yours and which words are
15 counsel's; is that correct?

16 MS. REICHEL: Objection to form.

17 Same instruction. I instruct you not to
18 reveal the content of any communications with counsel.

19 Q (By Mr. Jones) You can answer.

20 **A This is my declaration in front of you, and**
21 **I worked, as I mentioned just a second ago, with**
22 **counsel to develop these claim constructions.**

23 Q I want to know, sir, in Section 8 of your
24 '181 declaration which words are yours and which words
25 are counsel's. I do not want to know what your counsel

1 told you.

2 **A Mm-hmm.**

3 **Q** I want to be clear about that.

4 **A Yeah.**

5 **Q** But in Section 8 of your '181 declaration,
6 tell me which words are yours and which words are
7 counsel's.

8 **MS. REICHEL:** Objection to form.

9 **THE DEPONENT:** I'm not able to do that at
10 this point.

11 **Q** (By Mr. Jones) In evaluating relative
12 humidity, is there ever a point -- strike all that.

13 In evaluating relative humidity, is there
14 ever a possibility that the -- strike all that.

15 In evaluating a dew point, is it possible
16 that there are environments in which the relative
17 humidity and the ambient temperature become very close
18 together?

19 **A** I do not understand the question. Are there
20 conditions under which relative humidity -- yeah. Do
21 you mind kindly rephrasing the question?

22 **Q** Sure.

23 Let's take a very high humidity environment,
24 right, on the coast. Are you aware of conditions in
25 which the dew point and the ambient temperature may be

1 very close together?

2 **A Yes, under conditions of high relative**
3 **humidity, yes, that's the case.**

4 Q And are you aware that the '181 patent
5 describes temperature sensors that have a margin of
6 error of 1 to 2 degrees Celsius?

7 **A Not specifically.**

8 Q Okay. Let's look at the '181 patent, which
9 is in your binder in front of you. That is going to be
10 Exhibit 1.

11 Do you have the '181 patent in front of you?

12 **A I do.**

13 Q All right. Let's look at claim -- let's
14 look at Column 6, Line 65 of the '181 patent.

15 **A I found it.**

16 Q Okay. Do you see where the '181 patent
17 describes, "the accuracy of frame temperature
18 measurements has been documented by testing to be
19 within 1 or 2 degrees centigrade"?

20 **A I do.**

21 Q Do you think that's an accurate statement?

22 MS. REICHEL: Objection. Form.

23 Q (By Mr. Jones) Well, you hold yourself out
24 as an expert in SR; right?

25 Sir, do you hold yourself out as an --

1 **A Absolutely.**

2 Q Okay. Do you think that's an accurate
3 statement?

4 MS. REICHEL: Objection. Form.

5 THE DEPONENT: This is a declaration that I
6 did not write, and this declaration claims that an
7 accuracy of frame measurement has been documented by
8 testing. I don't know who the testing did. The values
9 are 1 to 2 degrees Celsius. In that sense your
10 accuracy are common values. But I didn't do that test.

11 Q (By Mr. Jones) I understand that. But do
12 you think it's possible that the kinds of devices at
13 issues in these IPRs, the temperature sensors may have
14 margins of error of 1 to 2 degrees Celsius?

15 **A I do, but that was not your question,**
16 **whether it was possible.**

17 Q That is my question now, do you think that
18 is possible?

19 **A Absolutely, yeah, these are common values.**

20 Q And do you understand that 1 degree Celsius
21 is 1.8 degrees Fahrenheit?

22 **A Yes.**

23 Q And so do you think it's possible that the
24 temperature sensors used in the types of devices at
25 issue in this IPR might have a range of error of up to

1 3.6 degrees Fahrenheit?

2 **A Yes.**

3 Q Are you aware of a situation, is it
4 possible, sir, that the dew point in the ambient
5 temperature may be closer than 3.8 degrees Fahrenheit
6 of each other?

7 **A In greenhouses?**

8 Q Sure.

9 **A In -- I do not expect those conditions to
10 exist in retail stores or laboratory environments.**

11 Q Have you ever been to Galveston, Texas?

12 **A No, I have not.**

13 Q Okay. Have you ever been to South Florida?

14 **A I have.**

15 Q Okay. And if condensation is actually
16 forming, then the dew point and the ambient temperature
17 are the same; right?

18 **A No, not at all.**

19 Q No?

20 **A No, not at all.**

21 Q Okay. When does condensation form?

22 **A The condensation occurs at a surface that
23 has no relevance to what the temperature of the ambient
24 air is.**

25 Q Okay. So if the surface temperature and the

1 relative humidity are the same, then condensation
2 forms?

3 **A No, the surface temperature is below the dew**
4 **point of the ambient air --**

5 Q Okay. I keep getting that wrong and I
6 apologize.

7 **A It's my field. It's thermodynamics.**

8 Q You're an expert in thermodynamics?

9 **A I do. I am.**

10 Q So you are aware that condensation -- there
11 may be situations in the United States where the dew
12 point and the ambient surface temperature are the same?

13 **A I think what you want to say, but you**
14 **haven't, is that there are conditions under which**
15 **ambient air can be close to its dew point such that**
16 **when there is a cold surface, condensation will occur.**

17 Q Okay.

18 **A Sorry, it's the teacher in me. I apologize.**

19 Q That's fine.

20 And in such instances -- I mean, you're
21 confusing me now. You're saying that there aren't
22 situations, environmental situations in which the dew
23 point and the ambient temperature could be within
24 3 degrees Fahrenheit of one another?

25 **A No, I did not say that. Those conditions**

1 **can exist but they're very, very rare.**

2 Q What do you say that based on?

3 A **Well, because we have no climate zone that**
4 **resides that close to -- I mean, we have --**

5 Q Are you an expert in climatology now, sir?

6 A **I do know something about weather data, yes.**

7 Q I'm just asking if you're an expert, sir?

8 A **In my line of work I have to use weather**
9 **data routinely --**

10 MR. JONES: Objection. Nonresponsive.

11 Q **(By Mr. Jones) Are you an expert in**
12 **climatology, sir?**

13 A **I am not a climatologist.**

14 Q Okay. Do you believe that there may exist
15 environmental conditions in which the dew point and
16 ambient temperature are within 3.8 degrees Fahrenheit
17 of one another?

18 A **In outside -- in outdoor conditions, yes.**
19 **But in maintained indoor conditions, maintained for**
20 **human comfort, very, very unlikely.**

21 Q And what do you say that based on?

22 A **Based on the fact that most human occupancy**
23 **for -- in the United States is in those climate**
24 **conditions designed with air conditioning and comfort**
25 **cooling in mind, and we maintain conditions that are**

1 **very far away from the ones you just mentioned.**

2 Q What reference are you pointing to for that,
3 or is that just Dr. Henze's opinion?

4 A **This is not Dr. Henze's opinion but it is**
5 **what we as a community do. We design indoor**
6 **environments to be amenable for human occupancy. And**
7 **the conditions you just described may exist outside,**
8 **absolutely, in the swamp of Florida in August, but**
9 **that's not a common indoor environment for which we**
10 **have systems.**

11 Q And what are you going to cite for that?
12 What are you going to point to? What in the record are
13 you going to point to to support that position?

14 A **I would say that's common understanding,**
15 **sir.**

16 Q It's common understanding?

17 A **Yes, unless your system has failed, you**
18 **would not reside in a place that -- where those**
19 **conditions exist.**

20 Q Do you think a refrigerated display case
21 could be used outdoors?

22 A **Theoretically, it could.**

23 Q You've never seen a refrigerated display
24 case used outdoors?

25 A **Not very frequently.**

1 Q Ever been to a football game?

2 A I have.

3 Q Ever walk through the concourse at a
4 football game?

5 A Like I said, not frequently, personally, no.

6 Q Okay. Let's go back to your claim
7 constructions here for a second. Back to Section 8 of
8 your '181 declaration that starts at Paragraph 57.

9 If we could look at -- let's look at
10 Construction G that begins at Paragraph 70 in your '181
11 declaration. Are you there, sir?

12 A I am, yes.

13 Q In Paragraph 71, you state that, "The
14 corresponding structure is 'a housing,'" and a housing
15 is in quotation marks, "having a base and a cover that
16 when made together establish an air pocket around the
17 temperature sensor."

18 Correct?

19 A Correct.

20 Q But if you go to the '181 patent again. I'm
21 sorry --

22 A That's a lot of pages in between.

23 Q Sir, I apologize.

24 A No, no worries. It's in my declaration.

25 Q If you go to paragraph -- Column 10, Claim 4

1 of the '181?

2 **A Column 10, line?**

3 **Q Claim 4.**

4 **A Oh, Claim 4.**

5 **Q Do you see that, the last three lines of**
6 **Claim 4?**

7 **A I do see that, yes.**

8 **Q You agree with me that Claim 4 teaches that**
9 **having air gaps there around allowing air flow between**
10 **said protective shield and protective cover --**

11 (Reporter clarification.)

12 MR. JONES: Let me just start over.

13 **Q (By Mr. Jones) You agree that Claim 4**
14 **teaches a cover face opening including a protective**
15 **shield there over having air gaps there around allowing**
16 **air flow between said protective shield and said cover**
17 **and thus over said at least one dew point sensing**
18 **component; right?**

19 **A Yes.**

20 **Q So doesn't Claim 4 teach away from your air**
21 **pocket that you put in Paragraph 71 of your**
22 **declaration?**

23 MS. REICHEL: Objection to form.

24 THE DEPONENT: In establishing the structure
25 in Paragraph 71, I relied on the patent and I'm

1 referencing Column 6, 32 through 710, and I believe
2 I'm -- that assumed structure is in line with the
3 patent, so I'm not sure in which way it could teach
4 away.

5 Q (By Mr. Jones) How can you have an air
6 pocket and also having gaps for air flow? Square those
7 two things for me.

8 MS. REICHEL: Objection. Form.

9 THE DEPONENT: How can you -- may I ask you
10 to repeat your question? How can you?

11 Q (By Mr. Jones) How can there be an air
12 pocket while also having air gaps there around allowing
13 air flow?

14 A **I think that is totally reconcilable.**

15 Q How?

16 A You can have a pocket, it doesn't mean it's
17 a sealed pocket, it just means it's a cavity of air
18 around the sensors, because the temperature and are
19 humidity sensor are designed to capture the ambient air
20 temperature, so you need to have flow through it,
21 that's required.

22 Q So why didn't you put all those words in
23 Paragraph 71?

24 A **I did not see -- deem it to be necessary.**

25 Q So everything you just said you think is

1 imputed into your Paragraph 71 in your '181
2 declaration?

3 MS. REICHEL: Objection. Form.

4 THE DEPONENT: I believe that having air
5 pockets is not at odds with allowing for air flow so,
6 therefore, yeah, I don't know why I did not put it in
7 there but I think it's totally in line.

8 Q (By Mr. Jones) Based on what?

9 A On my understanding of air pockets and
10 sensors.

11 Q We just take your word for it? Is that what
12 the PTAB should do?

13 MS. REICHEL: Objection. Form.

14 THE DEPONENT: I do not believe that an air
15 pocket in to -- in its common use and customary use
16 indicates that it must be a sealed air pocket.

17 Q (By Mr. Jones) Why didn't you indicate that
18 in Paragraph 71?

19 A I do not recall.

20 Q You don't have any reason that you give the
21 board as you sit here today?

22 A Correct, I do not.

23 Q Claim 5 of the '181 patent also --

24 A Let me get to it, please.

25 Q Sure.

1 A I see. The apparatus of Claim 4 when said
2 cover of said dew point sensing unit housing includes
3 opposite and openings to establish ambient air flow
4 through said dew point sensor unit housing.

5 Q And you didn't specifically address Claim 5
6 in your '181 declaration in your claim construction G,
7 did you?

8 A I'm not a legal expert, but my understanding
9 was that if I have a claim element involving a
10 means-plus-function, I have to identify the
11 corresponding structure in the declaration -- in the
12 description, and that is what I attempted to do.

13 Q Do you recall what my question was, sir?

14 A I believe you asked me why I did not
15 specifically address in my corresponding structure in
16 Paragraph 1 the Claim Number 5.

17 But in the corresponding structure
18 assignment, I'm looking to the description of the
19 patent.

20 Q The question, sir, was: You did not
21 specifically address Claim 5 in your '181 Construction
22 G?

23 A Yes, that's what I heard you say.

24 Q You agree with me that you didn't address
25 Claim 5?

1 MS. REICHEL: Objection. Form.

2 THE DEPONENT: I agree with that's what you
3 said. And my answer that I gave you previously stands.

4 Q (By Mr. Jones) So your understanding is for
5 claim plus function in determining claim constructions,
6 you're supposed to look at the claim function in the
7 claim and then go to the SPECT and find a structure;
8 right?

9 A Correct.

10 Q Let's do that. Let's look at Column 7 of
11 the '181.

12 A Mm-hmm.

13 Q And take a second, please, sir, and
14 familiarize yourself with -- it starts about Line 33 of
15 Column 7 of the '181 and runs through about 48.

16 Do you see where it says "housing 115"?

17 A That entire paragraph?

18 Q Yeah, just read that paragraph, and let me
19 know when you're ready to talk about it.

20 A Yeah, it's a long paragraph. I'm done.

21 Q You've had a chance to read the paragraph
22 that starts "housing 115" in Column 7 of U.S. Patent
23 '181?

24 A Yes.

25 Q Would you agree that that paragraph

1 describes a structure for thermally isolating the
2 sensing unit?

3 **A Among other things. It describes a lot of**
4 **things in one paragraph. It's a long paragraph; right.**

5 Q Do you agree that it also describes a
6 structure for thermally isolating the sensing unit?

7 **A Yes.**

8 Q And part of that structure described in the
9 paragraph of '181 in Column 7 that begins about 33 is a
10 heated -- spacer ribs; right?

11 **A Yes, spacer ribs 147.**

12 Q So why didn't you include spacer ribs in
13 your corresponding structure description in
14 Paragraph 71 of the '181 declaration?

15 **A I adopted the meaning of the word "housing,"**
16 **and a housing consisting of a base and a cover is what**
17 **I believe to be a common understanding.**

18 **What is shown here in this paragraph that**
19 **extends over more than 12 or 15 lines is a very**
20 **detailed description of many aspects of this invention.**

21 Q And your job was to go to the SPECT and find
22 the corresponding structure; right?

23 **A Yeah. Yes.**

24 Q And starting at Line 35, Column 7 of the
25 '181, it says "first." It's the first thing described;

1 right?

2 "First, by assuring that sensor is held away
3 from the unnaturally heated frame (either cooled by the
4 freezer or heated by the frame heaters) with spacer
5 ribs"; right?

6 **A That's what it says, yeah.**

7 **Q** Why didn't you describe spacer ribs in
8 Paragraph 71 of your '181 patent?

9 **MS. REICHEL:** Objection. Form.

10 **THE DEPONENT:** I believe the reliance on the
11 description of the '181 patent that I offered in
12 Column 6:32 through 7 -- Column 7, Line 10, was
13 sufficient to describe what I would call a housing.

14 That level of specificity offered in the
15 column you just described I did not deem to be
16 necessary to convey the housing as interpreted by the
17 '181 patent.

18 **Q** (By Mr. Jones) The paragraph we've been
19 talking about that starts at Line 33 of Column 7 of the
20 '181 patent starts, "Housing is configured to thermally
21 isolate the dew point sensor"; right?

22 **A Yes.**

23 **Q** This paragraph that starts at Line 33 of
24 Column 7 of the '181 specifically details how to
25 configure the housing to thermally isolate the dew

1 point sensor; right?

2 **A** **It describes one way that this patent deems**
3 **it to be appropriate to do so, but there are other ways**
4 **to isolate.**

5 Q Claimed function, Paragraph 70 of your '181
6 declaration, right, is a -- Construction G, right above
7 Paragraph 70 in your '181 declaration, is a means for
8 thermally isolating said temperature sensing unit;
9 right?

10 **A** **Yes.**

11 Q That's what you're trying to find a
12 structure for; right?

13 **A** **Yes.**

14 Q And you cite in Paragraph 71 of your '181
15 declaration, the '181 patent, Exhibit 1001, at
16 Column 6, Line 32 through Column 7, Line 10; right?

17 **A** **Correct.**

18 Q Okay. Take the time, sir, get the '181
19 patent, read 6:32 through 7:10 and show me where it
20 says "thermally isolating" or "thermally isolate."

21 **A** **In Line 51.**

22 Q Of?

23 **A** **Column 6.**

24 Q Okay. Okay. Does Lines 50 through 55 of
25 Column 6 of the '181 patent describe any structure?

1 **A** Well, I'm referencing a larger section than
2 that. So if you begin earlier, then I do describe --
3 it does reference the base and the cover.

4 **Q** Okay. So that's one thermally isolate.
5 Where else?

6 **A** I haven't gotten to the end yet.

7 **Q** Okay.

8 **A** That's the first one I found.

9 **Q** Please continue reading.
10 Hold on, let's just pause for a second.
11 Line 50 of Column 6, it says, "Housing 83 is
12 configured at cover and base to thermally isolate the
13 sensing chip"; right?

14 **A** What did my claimed function say? Thermally
15 isolating said temperature sensing unit.

16 **Q** Okay. I just asked you what it said.

17 **A** Okay.

18 **Q** Was I right?

19 **A** (The witness nodded.)

20 **Q** Okay. Keep reading.

21 **A** It says here in Line 57, beginning with "by
22 thus", By thus configuring board/carrier 89 and housing
23 83" -- I skip what's in the brackets -- "little
24 transfer of heat to sensor chip occurs."

25 And that is what I deem to be thermally

1 **isolating.**

2 Q Okay. Where else?

3 A **In Line 61, "Assuring accurate measurement**
4 **of surface temperature of unit 93 unaffected by**
5 **inaccuracy introduced as artifact into the measurement**
6 **by ambient temperature conditions in the vicinity of**
7 **housing."**

8 Q That's not a structure, and I asked you for
9 thermally isolating. Keep going.

10 A **Well, that is paraphrasing thermally**
11 **isolating in the words of the patent.**

12 Q I didn't ask you to paraphrase, sir. You
13 know that.

14 Where does it say thermally isolating?

15 MS. REICHEL: Objection. Form.

16 THE DEPONENT: I think those are the
17 occurrences, the two.

18 Q (By Mr. Jones) Did you ignore the paragraph
19 starting at Line 33, Column 7 of the '181 in developing
20 your claim construction for means for thermally
21 isolating said temperature sensing unit --

22 MS. REICHEL: Objection. Form.

23 Q (By Mr. Jones) -- to avoid infringement?

24 A **No.**

25 MS. REICHEL: Objection. Form.

1 Q (By Mr. Jones) Have you looked at the
2 accused device in this case?

3 A **Have I looked at --**

4 Q The accused device in the district court
5 litigation.

6 A **No, I've only looked at this patent here.**

7 Q If the -- in construing a
8 means-plus-function claim, are you free to ignore, sir,
9 an explicit description of a structure to accomplish
10 said means in the patent specification?

11 MS. REICHEL: Objection. Form.

12 THE DEPONENT: I am not aware that I
13 explicitly ignored a description. But on the --

14 Q (By Mr. Jones) Are you free, sir -- strike
15 that.

16 Do you know whether the law permits you to
17 ignore a structure specifically described in this
18 patent specification to accomplish a means in
19 construing a means-plus-function claim?

20 MS. REICHEL: Objection. Form.

21 THE DEPONENT: No, I'm not aware of such a
22 law.

23 Q (By Mr. Jones) Let's look at construction F
24 in your '181 patent declaration that is -- '181 IPR
25 declaration. That's Paragraph 68 and 69 of your '181

1 declaration. Take a chance to look at that and let me
2 know when you're ready to talk about it.

3 (Reporter clarification.)

4 THE DEPONENT: Mm-hmm, I've read it.

5 Q (By Mr. Jones) Okay. And construction F in
6 your '181 declaration is means for thermally isolating
7 said dew point sensing unit; right?

8 A Yes.

9 Q And you -- your corresponding structure in
10 Paragraph 69 of your '181 declaration was, "A
11 housing -- "housing" in quotes -- "having a base and a
12 cover that, when mated together, establish an air
13 pocket around the dew point sensing unit"; right?

14 A Yes.

15 MS. REICHEL: Objection. Form.

16 Q (By Mr. Jones) Did I read that correctly?

17 A I think so. **"A housing unit having a base
18 and a cover that, when mated together, establish an air
19 pocket around the dew point sensing unit."**

20 Q You don't say anything in there about
21 holding the dew point sensing unit away from the
22 unnaturally heated frame, do you?

23 MS. REICHEL: Objection. Form.

24 THE DEPONENT: I do not.

25 Q (By Mr. Jones) And you don't say anything

1 in Paragraph 69 about spacer ribs, do you?

2 MS. REICHEL: Objection. Form.

3 THE DEPONENT: I do not.

4 Q (By Mr. Jones) And you don't say anything
5 in there about a board and a carrier, do you?

6 MS. REICHEL: Objection. Form.

7 THE DEPONENT: Correct, I do not.

8 Q (By Mr. Jones) And you don't say anything
9 in there, Paragraph 69 of your '181 declaration, about
10 preventing thermal transfer through the housing from
11 the mounting surface of the frame, do you?

12 MS. REICHEL: Objection. Form.

13 THE DEPONENT: I do not.

14 Q (By Mr. Jones) Why? Let me restate that.
15 In Paragraph 69 of your corresponding
16 structure in the '181 declaration, why didn't you
17 discuss holding the housing away from an unnaturally
18 heated frame, spacer ribs, a board/carrier, or
19 preventing thermal transfer through the housing?

20 MS. REICHEL: Objection. Form.

21 Q (By Mr. Jones) Just tell the board why you
22 didn't consider those things.

23 **A I do not recall.**

24 Q So when we write our response to the
25 petition for review of the '181 patent, we can tell the

1 board that you didn't recall any reason for not
2 discussing holding away from the frame spacer ribs, a
3 board/carrier, or preventing thermal transfer through
4 the housing in coming up with your construction in
5 Paragraph 69 of the '181 declaration; is that correct?

6 MS. REICHEL: Objection. Form.

7 THE DEPONENT: That was a very long
8 question. Can you repeat that, please?

9 Q (By Mr. Jones) When we write our response
10 to the petition for review of the '181 patent, we can
11 tell the board that you didn't recall any reason for
12 not discussing holding away from the frame spacer ribs,
13 a board/carrier, and preventing thermal transfer
14 through the housing in coming up with your construction
15 in Paragraph 69 of the '181 declaration; is that
16 correct?

17 A I disagree.

18 MS. REICHEL: Objection. Form.

19 THE DEPONENT: I disagree. The structure
20 that I offer for this claim function thermally
21 isolating said dew point sensing unit from variations
22 in temperature of the display case frame, or display
23 case door, is, to my understanding, achieved through
24 this structure that offers a base and a cover that,
25 when mated together, establish air pockets. And those

1 air pockets do isolate the dew point sensing
2 temperature from variations in temperature of the
3 display case.

4 Q (By Mr. Jones) Why didn't you include a
5 discussion of spacer ribs in your Paragraph 69 of the
6 '181 declaration?

7 A When I crafted these -- this structure, I
8 was -- I believed and I still believe that the
9 function, the claimed function is adequately achieved
10 with those features that I offer here in this
11 structure.

12 Q Okay. That wasn't my question, sir.
13 Respectfully, I said why didn't you include a
14 discussion of spacer ribs in your Paragraph 69 of the
15 '181 declaration?

16 A I don't know where exactly but elsewhere in
17 my declaration is a discussion of these spacer ribs and
18 other aspects, but I do not recall why in this
19 corresponding function I did not inherit the entirety
20 of this long description.

21 Q Why didn't you discuss -- Paragraph 69 is
22 your construction -- strike all that.

23 Paragraph 69 of the '181 declaration is your
24 corresponding structure for means for thermally
25 isolating said dew point sensor unit; right?

1 **A Yes.**

2 **Q Nothing else; right?**

3 **MS. REICHEL: Objection. Form.**

4 **THE DEPONENT: That's what I wrote.**

5 **Q (By Mr. Jones) Okay. And you can't recall**
6 **why you didn't discuss spacer ribs in Paragraph 69 of**
7 **the '181 declaration; right?**

8 **A Not in the context of establishing this**
9 **structure of that claimed function.**

10 **Q And you can't recall why you didn't discuss**
11 **holding the housing away from the unnaturally heated**
12 **frame in Paragraph 69 of the '181 declaration; right?**

13 **A There are other aspects that I did not add**
14 **to this structure like the membrane and the membrane**
15 **covers -- or the membrane that covers an opening.**
16 **Those are other aspects I didn't include in the**
17 **corresponding structure of this.**

18 **You can see from my declaration that I**
19 **relied on Column 7, Line 11 through 62, so a long**
20 **description of the invention. When writing my -- the**
21 **corresponding structure, the cover and the base and the**
22 **established air pockets provide the function of**
23 **thermally isolating said dew point.**

24 **Q Sir, you're probably the smartest guy in the**
25 **room and probably in the building. I have no quibble**

1 with that. I'm just asking you, can you recall why you
2 didn't discuss holding the housing away from an
3 unnaturally heated frame in Paragraph 69 of your '181
4 declaration?

5 I'm not asking what else you didn't include
6 in there, although I appreciate that admission. I just
7 want to know why -- do you have any reason that you can
8 articulate to the board for why you didn't discuss
9 holding the housing away from an unnaturally heated
10 frame in Paragraph 69 of your '181 declaration? It's
11 an easy question.

12 MS. REICHEL: Objection. Form.

13 THE DEPONENT: I do not.

14 Q (By Mr. Jones) Thank you.

15 And do you have any explanation to the PTAB
16 about why you didn't discuss a board/carrier in your
17 structure described in Paragraph 69 of your '181
18 declaration?

19 MS. REICHEL: Objection. Form.

20 THE DEPONENT: The elements of the structure
21 are limited to the ones that I wrote down here, which
22 are the base, the cover, and the air pockets.

23 Q (By Mr. Jones) I'm just asking, sir -- I
24 understand that. I appreciate that very much. I'm
25 just asking, do you have an explanation for why you

1 didn't discuss a board/carrier in the structure you
2 describe in Paragraph 69 of the '181 declaration?

3 MS. REICHEL: Objection. Form.

4 THE DEPONENT: Sitting here today, I do not.

5 Q (By Mr. Jones) Okay. And do you have an
6 explanation for why you did not discuss preventing
7 thermal transfer through the housing from the mounting
8 surface of the frame in Paragraph 69 of your '181
9 declaration?

10 MS. REICHEL: Objection. Form.

11 THE DEPONENT: Can you point me to that line
12 in the patent --

13 Q (By Mr. Jones) Absolutely. More than happy
14 to. Line 43, Column 7 of the '181 patent.

15 A **Column 7, 40 --**

16 Q It is about 43 -- yeah, it's 42, sorry, of
17 the '181, prevents thermal transfer through the housing
18 from the mounting surface of the frame unit?

19 A **But the sentence begins with "the air
20 pocket" and that air pocket is in my structure.**

21 Q Well, it says, "The air pocket behind the
22 board/carrier."

23 Right?

24 A **No -- well, let's read the sentence as it is
25 written.**

1 Q Okay.

2 A Okay. "The air pocket behind the
3 board/carrier and extending all the way to the mounding
4 surface of Unit 151 prevents thermal transfer through
5 the housing from the mounting surface of Frame
6 Unit 151."

7 So the air pocket that is in my structure
8 prevents that heat transfer.

9 Q But you don't say anything about being
10 behind a board/carrier, do you?

11 A I do not.

12 Q Why?

13 A My intent to find the corresponding
14 structure was to achieve the claimed function and not
15 in all of its variations that is offered in the patent.

16 Q That wasn't --

17 A And the claimed function is provided by the
18 structure I offer.

19 Q That wasn't my question, sir. I didn't ask
20 anything about your intent. I said, why didn't you
21 discuss the location of the air pocket behind the
22 board/carrier?

23 MS. REICHEL: Objection. Form.

24 THE DEPONENT: I do not recall.

25 MR. JONES: Let's take a break.

1 (Recess from 9:18 a.m. until 9:34 a.m.)

2 Q (By Mr. Jones) Doctor, are you ready to
3 proceed?

4 A I am good to go.

5 Q I didn't mention this but I assume you know,
6 having been in multiple depositions, if you do need to
7 take a break for any time, do let me know, and we'll do
8 our best to accommodate that.

9 A Okay.

10 Q But I am trying to move through this to get
11 you out of here and back to your everyday job.

12 A Yes.

13 Q If you could look at Figure 2 of Carter,
14 it's Anthony 1004. I guess it's Figures 1 and 2.

15 A Figures 1 and 2?

16 Q Yes, sir. Of the Carter patent. There's a
17 door latch assembly here that is a prominent feature of
18 the figures; correct?

19 A Yes.

20 Q In your experience as a person of ordinary
21 skill in the art of the things at issue in these IPRs,
22 what are these door latches commonly made out of?

23 A They are forged steel, you know, yeah,
24 forged steel commonly or aluminum.

25 Q Typically a metal; right?

1 **A Yeah, a metal.**

2 Q Have you ever seen the kinds of
3 refrigeration devices described in the Carter patent
4 with these door latch assemblies made out of plastic?

5 **A Not to my recollection.**

6 Q Have you ever seen them made out of wood or
7 styrofoam or anything else like that?

8 **A No.**

9 Q And doesn't it make sense that metal is used
10 because you need a robust connection that holds the
11 door tightly shut?

12 **A Mm-hmm.**

13 Q Is that a yes?

14 **A Yes.**

15 Q Just wanted to get a verbal response, sir, I
16 apologize for jumping on you.

17 Can we look, please, sir, at Claim
18 Construction C in your '181 declaration that begins at
19 Paragraph 63, please, sir.

20 **A Hold this open.**

21 Q Would it be helpful if at a break we put
22 your declaration in a separate binder so that you can
23 hold it open? We can discuss it at a break. Maybe --

24 **A It might be useful, yeah.**

25 Q Take a chance to just review Claim

1 Construction C beginning at Paragraph 63 in your '181
2 patent, and let me know when you're ready to talk about
3 it.

4 MS. REICHEL: I don't want to interrupt, but
5 you could also take it out of the binder if you want to
6 look at two things simultaneously.

7 MR. JONES: However is easiest for you, sir.

8 THE DEPONENT: If I took it out of the
9 binder, I'm afraid I'll just create a mess and then
10 we're sorting papers.

11 MR. ZIEMIAN: I have a clip, too, for you,
12 if you'd like.

13 MS. REICHEL: Just whatever makes it easier
14 for you.

15 THE DEPONENT: Yeah, we're now talking about
16 Carter --

17 Q (By Mr. Jones) I'm just talking about
18 claim --

19 A Yeah, well, if we're going back and forth,
20 then I'm --

21 Q I understand.

22 But if you would, just for the record so
23 we're clear, you're looking at Claim Construction C in
24 your '181 patent, and please read it, sir, and my
25 question is, please let me know when you've had a

1 chance to review it and you are prepared to talk about
2 it.

3 **A Okay. I've revisited Paragraph 64 and 63.**

4 Q Okay. Wonderful.

5 In Paragraph 64 of your '181 declaration the
6 second bullet "Deactivating structure."

7 Do you see that, sir?

8 **A I do.**

9 Q And you have bracket 1, bracket 2, and
10 bracket 3 in that paragraph; correct?

11 **A I do.**

12 Q And in bracket 1 you say "discounting,"
13 right, and then in bracket 2 you say "determining if
14 the discounted," in 3 it says "if the discounted frame
15 temperature"?

16 **A I do, yes. I see that.**

17 Q What is a "discount" or "discounting"?

18 **A A reduction, a subtraction, an adjustment.**

19 Q Well, of those three, which is it, or is it
20 all three?

21 **A It's a modification of the frame temperature
22 by subtraction of a preselected set point.**

23 Q Where did you get the term "discount" or
24 "discounting"? Is that your word?

25 **A Yeah. Yes, it is my word. It's commonly**

1 **used to discount something in engineering.**

2 Q All right. If -- I appreciate that. Thank
3 you.

4 If the board wanted to verify your
5 understanding of what discount or discounting means in
6 this context, what source should they look to?

7 A Elsewhere in the report, I describe what the
8 discounting process is and does, so I thought it was
9 fairly obvious.

10 Q But the '181 declaration is your testimony;
11 right?

12 A It is.

13 Q Your words; right?

14 A Yes.

15 Q If the board wants to independently verify
16 what you mean by "discounting," where should they look?

17 A I personally adopted this terminology from
18 my own use as someone who works in engineering, and
19 discounting one variable by another value is a common
20 expression I use. I don't know where to point the
21 board to.

22 Q So it's just your language. Is that fair to
23 say?

24 A I think this is an ordinary and customary
25 use of the word "to discount."

1 Q I appreciate that, but you can't point to
2 anything that supports your statement that it's --

3 A **Not that I recall, no.**

4 Q Okay. Thank you.

5 If we could, then, turn to Paragraph 123 of
6 your '181 declaration, please.

7 If you'd like to take a chance to review
8 Paragraph 123 of the '181 and let me know when you've
9 had a chance to do so.

10 A **I'm done.**

11 Q As used in Paragraph 123 your '181
12 declaration, what is a floating offset?

13 A **The floating offset is the difference**
14 **between the dew point of the ambient air at a**
15 **particular point in time and the current ambient air**
16 **dry-bulb temperature.**

17 Q Is "floating offset" your terminology?

18 A **It is my -- yeah, it's my choice of words.**

19 Q Okay. Is there a reason you put it in red?

20 A **I do not recall. Not necessary. I also put**
21 **"set point high" in red.**

22 Q Same question, is there a reason you put
23 "set point high" in red?

24 A **To underscore a parallel structure.**

25 Q Does -- "floating offset" doesn't appear in

1 the '181, to your knowledge, does it?

2 **A Not to my knowledge.**

3 Q And to your knowledge as you sit here right
4 now, "floating offset" doesn't appear in Carter; right?

5 **A Not to my knowledge.**

6 Q So this is just your term to help explain
7 everything?

8 **A To describe what is effectively done by
9 Carter, yes.**

10 Q You see there's -- on Paragraph 96 [sic] of
11 your '181 declaration, Paragraph 23, there's four
12 equations; right?

13 **A Tell me again where.**

14 Q Page 96.

15 **A Oh, Page 96.**

16 Q Paragraph 123.

17 **A Okay.**

18 Q There's four equations there; right?

19 **A Correct. Yes.**

20 Q And I'm going to make a joke. This is
21 dangerous in a deposition, but I was promised there
22 would be no math, but here we are, there's math.

23 So my question is, you have -- your first
24 equation is cabinet surface temperature equals ambient
25 temp; right?

1 **A Correct.**

2 Q Can we call that Equation A just for today?

3 **A We can.**

4 Q And in Paragraph 123 of your '181
5 declaration, moving down the page, the next equation is
6 cabinet surface temp equals dew point plus floating
7 offset.

8 Can we call that Equation B?

9 **A We can, yes.**

10 Q And the third equation down in Paragraph 123
11 of your '181 declaration is frame temp minus set point
12 high is greater than dew point.

13 Can we call that Equation C?

14 **A We can.**

15 Q And then the last equation in Paragraph 123
16 of your '181 declaration is frame temp greater than dew
17 point plus set point high.

18 Can we call that Equation D, please, sir?

19 **A Yes.**

20 Q Thank you for helping me simplify this. I
21 appreciate it.

22 Let me just see if I understand this, and
23 tell me if I'm wrong. What you're saying in sum in
24 Paragraph 123 of your '181 declaration is that
25 Equation A equals Equation B; right?

1 **A Is equivalent to.**

2 **Q Is equivalent to Equation B.**

3 **A Mm-hmm.**

4 **Q And Equation B is equivalent to Equation C?**

5 **A Yes -- no, no, that's not true. I say**

6 **Equation C is equivalent to Equation D.**

7 **Q Okay. So in Paragraph 123 of your '181**

8 **declaration, is there any equivalence between**

9 **Equation A and Equation D?**

10 **THE COURT REPORTER: Did you say Equation A**

11 **and Equation D?**

12 **MR. JONES: Yes, ma'am.**

13 **THE DEPONENT: So Equation A describes**

14 **Carter's condition under which the heater is turned off**

15 **and it's using the variable name cabinet surface**

16 **temperature.**

17 **And Equation A describes that when that**

18 **cabinet surface temperature is equal or exceeds the**

19 **ambient temperature, the heating element would be**

20 **turned off.**

21 **Q (By Mr. Jones) And that's what Carter**

22 **describes, right, Equation A?**

23 **A That's what Carter describes, yes.**

24 **I offer in Equation B that that would be**

25 **equivalent to a dew point plus an offset that is a**

1 function of how humid the environment is. But I argue
2 it's a very safe choice to use the ambient temperature.

3 In Equation C -- this is a reference to the
4 '181 patent. I'm offering Equations C and D. They are
5 mathematically equivalent. All I do here is move the
6 set point to the right-hand side.

7 So the differences that I address in my
8 report is that in Equation A, I have an equal sign, and
9 in Equation D, I have a greater than sign. I address
10 that elsewhere. And -- but, otherwise, they do
11 describe equivalent intents.

12 Q Equation A in Paragraph 123 of your '181
13 declaration, that's actually what Carter does to shut
14 off the heating element; right?

15 A I believe that is exactly what Carter
16 proposes, to wait until the cabinet surface temperature
17 has reached the ambient dry-bulb temperature.

18 Q In Equation B in Paragraph 123 of the '181
19 declaration, that's your interpretation of what Carter
20 does?

21 A Which one did you just reference?

22 Q Equation B.

23 A B. It is mathematically equivalent, as I
24 describe above, right, that there is a varying and
25 floating offset that will always exist between the

1 **ambient temperature and the dew point of that**
2 **temperature.**

3 Q Is Equation B specifically set out in Carter
4 or is that your analysis?

5 A **That is my analysis.**

6 Q Okay. And what is Equation C again, please,
7 sir, in Paragraph 123 of your '181 declaration?

8 A **Equation C is the condition set forth by the**
9 **'181 patent to disable the heating element.**

10 Q So Equation C, in your opinion, is what
11 actually occurs in the '181 patent; is that correct?

12 A **C or D; right.**

13 Q Well, which one is it?

14 A **They're the same. They're equivalent.**

15 Q Oh, because you just moved the variable from
16 one side to the other?

17 A **Yeah.**

18 Q Like basic algebra?

19 A **Very basic algebra, yeah.**

20 Q So is Equation A in Paragraph 123 of the
21 '181 equal to/the same as Equation D in Paragraph 123?

22 A **Not strictly mathematically equal to, but**
23 **effectively it is.**

24 Q So what do you have -- appreciate that.
25 What do you have to do to bridge the gap

1 between Equation A and Equation D in Paragraph 123 of
2 your '181 declaration?

3 **A Not much. The choice in Carter is to use an**
4 **ambient temperature -- the ambient temperature as the**
5 **turn off condition. That is always higher than the dew**
6 **point.**

7 **The difference between the dew point and the**
8 **ambient temperature is a floating offset. And that**
9 **floating offset could easily be chosen by someone using**
10 **the '181 patent as the set point high.**

11 **The value of the set point high not being**
12 **specified in the '181.**

13 **Q Thank you.**

14 **Equation A has temperature equals**
15 **temperature; right?**

16 **A Yes, it has an equal sign.**

17 **Q But we're only looking at temperature one**
18 **equaling temperature two, right, in Equation A?**

19 **A That's what Carter says, yes.**

20 **Q Now, Equation D in Paragraph 123 of the '181**
21 **declaration introduces dew point; right?**

22 **A Correct.**

23 **Q And dew point, as we discussed, has two**
24 **components, correct?**

25 **A Not quite correct. Dew point is one**

1 **variable. It's one property of moist air. It is**
2 **determined, commonly, using two other variables, but**
3 **there are dew point sensors that measure directly.**

4 Q Can one calculate dew point without relative
5 humidity?

6 A **Yes.**

7 Q How?

8 A **Using a so-called chilled mirror device.**

9 Q Explain that, please.

10 A **A chilled mirror device is a device in which**
11 **you have a highly polished, clean glass surface, a**
12 **mirror, and you apply a electric cooling circuit, a**
13 **so-called Peltier cooling system, and you cool the**
14 **chilled mirror surface until that surface is colder**
15 **than the dew point.**

16 Then condensation will occur, and the
17 **opacity of light being reflected from that mirror will**
18 **change or the reflection characteristics will change,**
19 **and that point will be then recorded by a chilled**
20 **mirror sensor.**

21 Q Are you saying chilled mirror sensor, sir?

22 A **Chilled mirror sensor, yes.**

23 Q M-i-r-r-o-r?

24 A **Yeah, mirror, like a mirror you look at.**

25 **And the mirror is chilled until it turns from fully**

1 **specular to being milky.**

2 Q Does either Carter or the '181 patent teach
3 the use of a chilled mirror sensor?

4 A **Carter refers to dew point sensors. He does**
5 **not specifically mention that particular type of**
6 **sensor, but it's a common sensor.**

7 Q Would that be a practical sensor to use in a
8 refrigerated display case?

9 A **Practical in the sense of being effective?**
10 **Yes.**

11 Q No, in the sense of being economic and
12 robust.

13 A **They are very robust, more robust than the**
14 **dew point sensors that rely on humidity measurement**
15 **because humidity measurement is notoriously uncertain**
16 **and suffers from saturation of humidity sensors.**

17 **So using a chilled mirror sensor would be**
18 **providing for high accuracy, actually among the highest**
19 **accuracy of dew point measurements, at a cost premium**
20 **that, sitting here today, I cannot quantify. But**
21 **they're more expensive.**

22 Q How many refrigerated display cases with
23 condensation control devices have you seen in your
24 experience that use chilled mirror sensors?

25 A **I don't recall.**

1 Q Have you seen one?

2 A I don't recall because they're in -- they're
3 packaged, you don't see the mirror.

4 Q Sure.

5 You can't recall a single instance; is that
6 correct?

7 A The Carter patent leaves the way that the
8 dew point is measured open, and there are multiple ways
9 of measuring it. And so I -- for completeness sake, I
10 offer to you when you said that the dew point requires
11 two variables to be determined, I just wanted to
12 correct that, that there are sensors that get to the
13 dew point directly.

14 Q Okay. Give me one example that you've ever
15 seen of a condensation control device used on a
16 refrigerated display case that uses a chilled mirror
17 sensor.

18 A Yeah, I do not recall. In fact, I said
19 they're packaged units, and what's behind the unit, I
20 do not know. I mean, it's a dew point sensor.

21 Q You're holding yourself out as a person of
22 ordinary skill in the art of the devices at issue in
23 the '181 IPR; right?

24 MS. REICHEL: Objection. Form.

25 THE DEPONENT: Yes.

1 Q (By Mr. Jones) Yes, you are?

2 A Yes.

3 Q But you can't name a single such device that
4 uses a chilled mirror sensor?

5 A We were discussing at this point the
6 possible types of sensors that Carter could have
7 employed in the description of his patent.

8 Q I understand what you were discussing. My
9 new question is, as a person of ordinary skill in the
10 art, holding yourself out as one, in these IPRs, can
11 you identify, as we sit here today for the board, a
12 single control device of the kind we're discussing that
13 uses a chilled mirror sensor?

14 A I do -- I offer to you that for the purposes
15 of measuring dew point there are multiple avenues.

16 Q I understand that, sir. I appreciate that.
17 Thank you.

18 I'm asking you to tell us any device of the
19 type at issue in these IPRs that you've seen that uses
20 a chilled mirror sensor, just any single one.

21 A I do not recall.

22 Q And how long have you been in this field,
23 sir?

24 A A good 30 years.

25 Q Did you cite any such device in any of the

1 materials that you submitted in support of your
2 declarations in these IPRs, that you can recall?

3 **A I did -- I do not recall that it was my duty**
4 **to identify all available means of measuring dew point.**

5 Q Did I ask you about what your duty was,
6 Doctor?

7 That's my question. Did I ask you what your
8 duty was?

9 **A You did not.**

10 Q Okay. My question was, did you cite any
11 references in all of the materials that you submitted
12 in support of your declaration in these IPRs that
13 identify a condensation control device using a chilled
14 mirror sensor?

15 **A I did not.**

16 Q Let's look at Claim 8 of the Carter patent,
17 please, sir.

18 **A That's Column 7; right?**

19 Q Yes. I'm looking at Paragraph -- or
20 Elements B, C, and D of the Carter patent. Just for
21 the record, Element 8B says, "Reading a first ambient
22 temperature measurement."

23 8C says, "Reading an ambient relative
24 humidity measurement."

25 And 8D says, "Calculating a dew point from

1 the first ambient temperature measurement in the
2 ambient relative humidity."

3 Did I read that correctly?

4 **A You did.**

5 Q Does that describe a chilled mirror sensor
6 in Claim 8 of Carter?

7 **A Nope, it does not.**

8 Q Look at Claim 1 of Carter, please, sir,
9 Column 6. Does Claim 1 of Carter 6 describe using a
10 chilled mirror sensor?

11 **A No, it does not.**

12 Q And if you could, please, sir, look at
13 Claim 10 of Carter that begins in the Column 7. Does
14 Claim 10 of Carter describe using a chilled mirror
15 sensor?

16 **A Neither.**

17 Q It does not?

18 **A It does not.**

19 Q Thank you.

20 So in the context -- turning back to
21 Paragraph 123 of your '181 declaration.

22 **A So if I may interject briefly, the**
23 **description does mention dew point sensor. I would**
24 **need to revisit Carter to find that, but that is in the**
25 **description. If I had the time, I could point to that.**

1 Q Okay.

2 A And I offered the dew point sensor as one
3 option of dew point sensing.

4 Q Claim 10 doesn't describe a chilled mirror
5 sensor, does it?

6 A It does not.

7 Q So to summarize, Claims 1, 8, and 10, which
8 are the independent claims of Carter, do not describe
9 using a chilled mirror sensor; correct?

10 A That is correct.

11 Q In the context of Carter, looking at
12 Claim D --

13 A We are back on page?

14 Q 96 of your '181 declaration.

15 Do you see that? Are you there?

16 A Yes.

17 Q Equation D in Paragraph 123 of your '181
18 declaration, in the context of Carter, measuring dew
19 point involved measuring the relative humidity and the
20 ambient temperature; correct?

21 MS. REICHEL: Objection to form.

22 THE DEPONENT: That's not correct. Like I
23 said, in the claims that we've just identified it is
24 not mentioned. But in the description, I am sure if
25 you gave me the time, I could find a dew point sensor

1 identified as such. I just don't --

2 Q (By Mr. Jones) A dew point sensor
3 identified as what?

4 A Just as that, as a dew point sensor.

5 Q Just as a dew point sensor?

6 A Yeah, not relying on the individual
7 measurements.

8 Q And it is your opinion than a POSITA in this
9 field would know that the use of a chilled mirror
10 sensor would be appropriate in this context?

11 A Would be one of the ways you could measure
12 dew point.

13 Q That was different. My question was that a
14 POSITA would know that the use of a chilled mirror
15 sensor was appropriate in the context of the invention
16 described in Carter?

17 A Depending on what the refrigerated case
18 holds and the value of its contents, using a chilled
19 mirror dew point sensor is one of the options. Again,
20 I cannot speak to the economics of how many dollars
21 that would be extra, but it is highly precise. And if
22 you want the higher precision, a POSITA would go to a
23 chilled mirror sensor and not the combination of a
24 relative humidity and the dry-bulb air temperature
25 sensor.

1 Q You've been to a grocery store?

2 A Yeah, I think that's -- that can be assumed,
3 yes.

4 Q And you've seen the refrigerated display
5 cases in a grocery store?

6 A Yes, I have.

7 Q And you think a POSITA reading Carter would
8 think it is appropriate to use a chilled mirror sensor
9 in the condensation control devices for those grocery
10 store display case --

11 A Yeah, but a --

12 Q -- those grocery store refrigerated display
13 cases?

14 You can answer.

15 A Carter speaks to refrigerated cases in
16 general, and the refrigerated display cases I find in a
17 store may -- may have such cost pressures that you
18 would choose the cheapest possible sensing device. But
19 that also is for other temperature sensors. You can --
20 there are a variety of temperature, a variety of
21 humidity, and a variety of dew point sensors out there.
22 That is just the nature of the field.

23 Q Do you think that a POSITA reading Carter
24 would be informed to use a chilled mirror sensor in the
25 condensation control devices for grocery store

1 refrigerated display cases?

2 **A** **Not to choose but to consider, yes. To**
3 **consider as one of the options, and I stand by that.**

4 **Q** And you believe that's disclosed in Carter?

5 **A** **As I said, it's not disclosed in the claim**
6 **elements but I remember in the description that it**
7 **refers to a dew point sensor. And to be clear, a dew**
8 **point comes in a number of variants and has the same**
9 **objective of measuring dew point.**

10 **Q** It is unjust to the public -- ready? I'll
11 start over.

12 "It is unjust to the public as well as an
13 evasion of the law to construe a patent claim in a
14 manner different from the plain import of its terms."

15 Do you agree with that statement, sir?

16 MS. REICHEL: Objection. Form.

17 THE DEPONENT: Can I have that one more
18 time? It's unjust?

19 **Q** (By Mr. Jones) Let's just be clear. You're
20 holding yourself out as an expert in a patent matter;
21 right?

22 **A** **Yes.**

23 **Q** And you're offering claim constructions for
24 patents; right?

25 **A** **Yes.**

1 Q And you're opining as an expert on the
2 validity of my client's patents; right?

3 A **Correct.**

4 Q "It is unjust to the public as well as an
5 evasion of the law to construe a patent claim in a
6 manner different from the plain import of its terms."

7 Do you agree with that statement?

8 MS. REICHEL: Objection to form.

9 THE DEPONENT: I don't know what you're
10 referencing or reading from. It would be helpful.

11 Q (By Mr. Jones) I'm asking you if you agree
12 with the statement?

13 MS. REICHEL: Objection to form.

14 Q (By Mr. Jones) You can answer.

15 A **Since it's not in front of me, can you**
16 **please offer this one more time?**

17 Q It is unjust -- you want to write it down?

18 A **No.**

19 Q Okay.

20 A **No, I just want to --**

21 Q "It is unjust to the public as well as an
22 evasion of the law to construe a patent claim in a
23 manner different from the plain import of its terms."

24 A **Okay. Yeah, I can subscribe --**

25 MS. REICHEL: Objection to form.

1 Q (By Mr. Jones) You can answer. Do you
2 agree to that?

3 A Yes, it sounds reasonable. Can you indulge
4 me where this was from?

5 Q So explain the relationships between
6 Equations A, B, C, and D in Paragraph 123 of your '181
7 declaration one more time.

8 A Equation A describes the condition under
9 which Carter's patent describes that a frame heater or
10 a heater element would be turned off, and that
11 condition occurs when the surface temperature of the
12 cabinet reaches the ambient temperature. That's
13 Equation A.

14 In my declaration I describe how that
15 ambient temperature is virtually always -- unless it's
16 raining in the location where that refrigeration unit
17 is located, that ambient temperature is always equal to
18 the dew point temperature plus what I call a floating
19 offset.

20 Those two are mathematically equivalent.

21 In Equation C I cite the '181 patent in
22 which the '181 patent describes the conditions under
23 which the heater is turned off, which is when the frame
24 temperature minus a set point high exceeds the dew
25 point.

1 **In Equation D I move the set point high to**
2 **the other side of the equation, now reading that the**
3 **frame temperature must exceed the dew point and a said**
4 **temperature high.**

5 Q Does Equation B appear in Carter?

6 Let me reask that.

7 Does Equation B in Paragraph 123 of your
8 '181 declaration appear in Carter?

9 A **No, it does not. This is my -- this is a**
10 **mathematical equivalent that I describe.**

11 MR. JONES: Strike everything after "No, it
12 does not" as nonresponsive.

13 Q (By Mr. Jones) Does Equation C appear in
14 the '181 patent?

15 A **Yes, it does.**

16 Q Where?

17 A **In one of the figures. 14B.**

18 Q In figure what, sir?

19 A **14B.**

20 Q Where? I see 14B but where in 14B?

21 A **There's a rectangular box above a diamond**
22 **shape, and it describes the low temperature for -- it**
23 **describes two temperature set points -- or two**
24 **temperatures -- low temperature, high temperature.**
25 **Those are the activation and deactivation temperatures.**

1 Q Where in Figure 14B of the '181 patent does
2 it say frame temp minus set point high is greater than
3 dew point?

4 A If you go to the description, set point.
5 I would like to, as I come across it, come
6 back to our conversation just a minute ago in which you
7 asked me about individual dew point sensors and the
8 patent declares combination sensors providing
9 relatively accurate dew point sensing unknown and
10 commercially available.

11 MR. JONES: Objection as nonresponsive.

12 Q (By Mr. Jones) My question was where does
13 the equation frame temp minus set point high greater
14 than dew point appear in Figure 14B of the '181 patent
15 which you cited as support for your equation in
16 Paragraph 123 of your '181 declaration?

17 A It's in Line 3 of Column 9, "Once the
18 monitored frame temperature rises to a preselected set
19 point above the dew point, the heaters are relayed
20 off."

21 Q And you believe that sentence is equal to
22 frame temp minus set point high is greater than dew
23 point?

24 A I mean, the equation describes a condition
25 under which the heaters are turned off.

1 Q That wasn't my question, sir.

2 You believe the sentence you just read in
3 Column 9 of the '181 patent is equal to frame
4 temperature minus set point high is greater than dew
5 point?

6 A **It is. Monitored frame temperature rises to
7 a preselected set point above the dew point, the
8 heaters are turned off.**

9 Q And where does Equation D in Paragraph 123
10 of your '181 declaration appear in the '181 patent?

11 A **Equation D I mentioned earlier is a
12 mathematical equivalent by moving the set point to the
13 right-hand side of the equation of Equation C.**

14 Q My question, sir, was: Where does frame
15 temp greater than dew point plus set point high,
16 Equation D in Paragraph 123 of your '181 declaration,
17 appear in the '181 patent?

18 A **Equation C appears. And I think we just
19 read it in written form.**

20 Q I'm asking about Equation D. Where's
21 Equation D in the '181?

22 A **We agreed earlier that Equation D is the
23 trivial addition of the set point to both sides of the
24 equation, thereby moving it to the right hand of the
25 equation. It's simple arithmetic, in fact, algebra.**

1 Q Not my question.

2 Where does Equation D appear in the '181
3 patent?

4 A I do not know.

5 Q Can you point to any of the other sources
6 you've cited, which are numerous, in your '181
7 declaration where the dew point -- sorry -- where the
8 ambient temperature is described as dew point plus a
9 floating offset?

10 A I cannot.

11 Q And if we could go back, please, sir, in
12 your '181 declaration to Paragraph 58, it's claim
13 construction A. Paragraph 58 in the '181 declaration,
14 58 and 59.

15 A Activating the display case frame or door
16 heater when monitored display case door or frame
17 temperature drops below a preselected set point above
18 the dew point value derived from monitored ambient
19 temperature and relative humidity.

20 Okay. Yes.

21 Q In Paragraph 59 of -- strike all that.
22 Sorry.

23 In Paragraph 59 your '181 declaration, you
24 use the terms "discounting, discounted frame
25 temperature, discounted frame temperature."

1 Do you see that?

2 **A I do.**

3 Q Do you use, in Paragraph 59 of your '181
4 declaration, "discounted" and "discounting" in the same
5 manner that you use it in Paragraph 64 of your '181
6 declaration or is it different?

7 **A It should be the same.**

8 Q It's the same?

9 **A Yes.**

10 Q So your testimony about "discounting" and
11 "discounted" and it's usage in Paragraph 64 of the '181
12 declaration also applies to the same terms' usage in
13 Paragraph 59 of your '181 declaration?

14 **A I believe so. It's just the -- the operator**
15 **is a greater than and here it's a less than, right,**
16 **above and below.**

17 Q Sure. But "discounting" and "discounted"
18 have the same meaning?

19 **A Yes.**

20 Q If we look at Paragraph 58 in your '181
21 declaration, you see that that outlines the claimed
22 function for processing means for activating
23 Element 1C?

24 **A Yeah.**

25 Q And that's of the '181 patent; right?

1 **A Yes.**

2 Q And it says, "The dew point value derived
3 from monitoring ambient temperature and relative
4 humidity."

5 Do you see that?

6 **A Correct.**

7 Q Does that describe the use of a -- the
8 mirror sensor we were discussing earlier?

9 **A It does not, no. It describes one of the**
10 **ways you can determine the dew point.**

11 Q Well, it's the claim function you were
12 trying to construe; right?

13 **A Mm-hmm.**

14 Q Is that a "yes"?

15 **A Yes.**

16 Q And the claimed function you were trying to
17 construe does not involve a mirror sensor; right?

18 **A It does not involve a chilled mirror sensor,**
19 **no.**

20 Q A chilled mirror sensor. I appreciate that.
21 Thank you.

22 If we go to Paragraph 57 of your '181
23 declaration, you see the -- the second sentence, it
24 says, "I have been informed"?

25 **A Correct.**

1 Q It reads -- you write -- you testify in
2 Paragraph 57 of your '181 declaration, "I have been
3 informed that such terms require not only the recited
4 function in the claim but also the corresponding
5 structure disclosed in the '181 patent specification,
6 paren, or equivalent of such disclosed structure,
7 close paren, period."

8 Is that a true statement as far as you're
9 concerned?

10 A **Yes. That's what I write, mm-hmm.**

11 Q What is an equivalent as you use it there?

12 A **In the context of Paragraph 58, an**
13 **equivalent --**

14 Q 57, sir. I'm sorry. Paragraph 57 of your
15 '181 declaration. The sentence that begins, "I have
16 been informed."

17 What does the word "equivalent" mean as used
18 in Paragraph 57 of your '181 declaration?

19 A **It means that the claim function is achieved**
20 **through a structure that is taken from the description**
21 **of the patent and -- and stays, in all meaningful ways,**
22 **true to that structure. That's how I read**
23 **"equivalent."**

24 Q That's your understanding of the word
25 "equivalent" as used in Paragraph 57 of your '181

1 declaration?

2 **A Yes.**

3 Q How do you determine if an equivalent --
4 strike that.

5 How do you determine if a structure is
6 equivalent of a disclosed structure? What are the
7 guidelines for that?

8 **A I'm not aware of the legal requirements.**

9 Q Okay. In your claim construction section,
10 paragraph -- strike all that.

11 In your claim construction Section 8 of your
12 '181 declaration in Paragraphs 58 through 75, please
13 identify which of the corresponding structures that you
14 outlined are equivalents.

15 MS. REICHEL: Objection to form.

16 Q (By Mr. Jones) As you use that term in
17 Paragraph 57 of the '181 declaration.

18 **A I mean, in Paragraph 59, I offer that the**
19 **function means, processing means, connected for**
20 **activating would entail three -- a three-step algorithm**
21 **identified in Paragraph 59. And in those exact words,**
22 **it's not taken from the description but it is --**
23 **captures the spirit of that structure.**

24 Q Is Paragraph 61 -- is the corresponding
25 structure described in Paragraph 61 of your '181

1 declaration an equivalent?

2 MS. REICHEL: Objection to form.

3 THE DEPONENT: I mean, the -- I do not
4 believe so.

5 Q (By Mr. Jones) In Paragraph 64 of your '181
6 declaration, is the corresponding structure described
7 there in Paragraph 64 an equivalent?

8 A Equivalent in the sense it's not taken
9 verbatim, but it describes the process or the
10 structure. And you see these are my words; these are
11 not direct quotes from the description.

12 Q So the structure in Paragraph 64 of your
13 '181 declaration is an equivalent?

14 MS. REICHEL: Objection to form.

15 THE DEPONENT: It's a paraphrasing, right.
16 As I mentioned, it's not found verbatim.

17 Q (By Mr. Jones) Well, does an equivalent
18 include a paraphrasing?

19 MS. REICHEL: Objection to form.

20 THE DEPONENT: I don't think so. I think
21 this describes -- is not an equivalent. It describes
22 what it does in my words.

23 Q (By Mr. Jones) Is the corresponding
24 structure in Paragraph 67 of your '181 declaration an
25 equivalent?

1 **A I don't believe so. This is what a**
2 **description reveals.**

3 Q Is the corresponding structure in
4 Paragraph 69 of your '181 declaration an equivalent?

5 **A I do not know.**

6 Q For Paragraph 71 in your '181 declaration,
7 is the corresponding structure described there an
8 equivalent?

9 **A These structures are taken from the**
10 **description on the patent.**

11 Q My question was, in Paragraph 71 of the '181
12 declaration, is the structure you describe there an
13 equivalent?

14 **A To the extent that I'm using my own words,**
15 **it is equivalent to the structure I found, yes.**

16 Q If you look at Claim Construction B in your
17 '181 declaration, that starts with the corresponding
18 structure, Paragraph 61. Are you there?

19 **A I am there, yes.**

20 Q Okay. Do you need to take a break, sir?

21 **A It would be nice at some point --**

22 Q Could we just finish just a couple questions
23 and we'll have lunch?

24 **A Sure. Yeah, okay.**

25 Q If you'd like to review Paragraph 61,

1 please, take a second to do so.

2 **A I will do that. Yeah, it's a long one.**

3 **Yeah. Okay.**

4 **Q Okay. Now, in Claim Construction B --**

5 **A Yes.**

6 **Q -- of the '181 declaration, what we're**
7 **construing is Element D of Claim 1 of the '181; right?**

8 **A Housing means --**

9 **(Reporter clarification.)**

10 THE DEPONENT: Housing means, yes. The
11 housing means for locating.

12 **Q (By Mr. Jones) And if you look at Column 9**
13 **of the '181 patent, Element D says, "Housing means for**
14 **locating said sensing units including structure**
15 **establishing thermal isolation."**

16 Right? And it goes on.

17 **A "Housing means for locating said sensing**
18 **units including structure establishing thermal**
19 **isolation of said sensing units by minimizing heat**
20 **transfer contacts between said sensing units and said**
21 **housing units," yeah, I see that.**

22 **Q And then in Paragraph 61 you go on to quote**
23 **that exact language; right? "Structure establishing**
24 **thermal isolation of said sensing units by," and you**
25 **even underline it, "minimizing heat transfer contacts**

1 between said sensing units and said housing units."

2 Right?

3 **A Yeah.**

4 Q And you thought it was important to include
5 that language because you put it in your sworn
6 testimony; right?

7 **A Correct.**

8 Q But then when we go to Claim Construction G,
9 Paragraph 70 and 71 of your '181 declaration. Do you
10 see that?

11 **A I do.**

12 Q Why don't you include in Claim Construction
13 G, Paragraph 71, a similar discussion of minimizing
14 heat transfer contacts?

15 MS. REICHEL: Objection. Form.

16 Q (By Mr. Jones) I just want to know why
17 these two claim constructions in -- these two
18 corresponding -- my question is, why are the two
19 corresponding structures described in Paragraph 61 of
20 your '181 declaration and Paragraph 71 of your '181
21 declaration different?

22 And then we can take a break.

23 MS. REICHEL: Objection. Form.

24 THE DEPONENT: Well, the claim construction
25 for the claim language "housing means for locating"

1 provides in detail structure the -- as I underlined and
2 "minimizing heat transfer contacts," this construction
3 is about the housing means; whereas in G, that's
4 Paragraph 70, this is about thermally isolating the
5 temperature sensing unit from variation. So this is a
6 more narrow focus on protecting that sensor temperature
7 unit from variations in ambient air.

8 Q (By Mr. Jones) In ambient air; right?

9 A Mm-hmm.

10 Q Any other explanations?

11 A In the claim function, no.

12 MR. JONES: Let's take a break.

13 (Recess from 10:37 a.m. until 10:57 a.m.)

14 Q (By Mr. Jones) Back on the record.

15 Welcome back, sir. Are you ready to

16 proceed?

17 A I am.

18 Q You had a chance to stretch your legs?

19 A I did.

20 Q Okay. Same thing, if you need another
21 break, just let me know, and we'll work something out.

22 If we could, turning back to your '181
23 declaration, if we could look at Claim Construction F,
24 that's Paragraph 68 and 69.

25 A I've read it, yeah.

1 Q Okay. In Paragraph 68 and 69, we're working
2 with Claim 15 of the '181 patent; right?

3 A Yeah, element -- exactly, means -- that
4 involves, "Means for thermally isolating said dew point
5 sensing unit."

6 (Reporter clarification.)

7 Q (By Mr. Jones) Let me ask that question.
8 In Claim Construction F, Paragraph 68 and 69 of your
9 '181 declaration, we're discussing -- strike all that.
10 Paragraph 68 and 69 of your '181
11 declaration, you are discussing Claim 15 of the '181
12 patent; correct, sir?

13 A Yes.

14 Q Please turn to, in your second notebook,
15 Claim 15 of the '181.

16 A Yes, sir.

17 Q Would you like a chance to read Claim 15?

18 A "The system of Claim 14 further comprising
19 means for thermally isolating said dew point sensing
20 unit from variations in temperature of the display case
21 frame or display case door."

22 Q So for Claim Construction F in your '181
23 declaration, from what are we thermally isolating said
24 dew point sensing unit?

25 A Quoting Claim 15, "from variations in

1 **temperature of the display case frame or display case**
 2 **door."**

3 Q So in Claim 15 we're isolating -- thermally
 4 isolating the dew point sensing unit from variations in
 5 temperature of the display case frame or display case
 6 door; right?

7 A **Yes.**

8 Q Not the ambient temperature; right?

9 A **Correct, yes.**

10 Q So why doesn't Paragraph 69 of your '181
 11 declaration include the same discussion as Paragraph 61
 12 of your '181 declaration regarding minimizing heat
 13 transfer contacts?

14 MS. REICHEL: Objection. Form.

15 THE DEPONENT: In Paragraph 61, I describe
 16 that the claim language specifies that the housing
 17 includes a structure helping to minimize heat transfer
 18 contacts; whereas in the Paragraph 68 the claim
 19 function is to thermally isolate the dew point sensors.
 20 It's not per se describing the housing unit but the act
 21 of, or the function of isolating the dew point sensors
 22 from variations of the display case frame or display
 23 case door.

24 Q (By Mr. Jones) Anything else?

25 A **In my structure, I point to Figure 7 through**

1 **9 that specifies the dew point sensor under 15**
2 **including cover and base, but I also point to**
3 **Figures 10 through 12, a single housing utilized to**
4 **house both sensors. So I reference the housing of the**
5 **sensors in here.**

6 Q Anything else?

7 A **I don't think so.**

8 Q Why did you not discuss spacer ribs in
9 Paragraph 69 of your '181 declaration?

10 A **We encountered the spacer ribs earlier in**
11 **the specification; correct?**

12 Q My question was, why did you not discuss
13 spacer ribs in Paragraph 69 of your '181 declaration?

14 A **I do not recall. I do not.**

15 Q Why did you not discuss holding the dew
16 point sensor away from the unnaturally heated frame in
17 Paragraph 69 of your '181 declaration?

18 A **Do you mind pointing again to what you**
19 **quoted from in the '181 description?**

20 Q My question is, why didn't you discuss
21 holding the dew point sensor away from the unnaturally
22 heated frame in Paragraph 69 of your '181 declaration?

23 A **I believe I relied on the structure for**
24 **housing means, and that housing and referencing**
25 **structure for -- the means for thermally isolating, so**

1 I'm inheriting the key characteristics of the housing
2 in the corresponding -- in the structure for the
3 thermally isolating feature. And that includes the air
4 pockets, the base cover, but it doesn't specifically
5 point out, as you said, the keeping away from the -- I
6 wish I could find the exact word -- unnaturally heated
7 frame. I found it. Okay.

8 Yeah, I do not recall the motivation to not
9 mention this -- the feature or the objective of
10 thermally isolating the dew point sensors achieved
11 through the air pockets that I mentioned.

12 MR. JONES: I appreciate that answer, but
13 I'm going to object it to as nonresponsive.

14 Q (By Mr. Jones) My question is, why did you
15 not discuss holding the dew point sensor away from the
16 unnaturally heated frame in Paragraph 69 of your '181
17 declaration?

18 A My reference in the corresponding structure,
19 however, does refer to that statement; right?

20 Q Elsewhere in your declaration it says that
21 the citations are only representative, and every time
22 you cite a document you're referring to the whole
23 document. I just want to know, sir -- I understand
24 what you cited. I can read.

25 Why didn't you discuss holding the dew point

1 sensor away from the unnaturally heated frame in
2 Paragraph 69 of your '181 declaration?

3 **A I do not recall.**

4 **Q Thank you.**

5 The same question, why did you not discuss
6 locating the air pocket behind a board/carrier in
7 Paragraph 69 of your '181 declaration?

8 **A I believe that air pocket behind the sensor**
9 **is part of the air pocket that is established by having**
10 **a base and a cover that when mated together establish**
11 **an air pocket around the dew point sensing unit; that**
12 **will be an air pocket behind it as well.**

13 **Q In your corresponding structure in**
14 **Paragraph 69, '181, where do you discuss a**
15 **board/carrier?**

16 **A Board/carrier? I discuss a base and a cover**
17 **and you're -- yeah, I'm not sure what you're getting**
18 **at.**

19 **Q Where in Paragraph 69 of your '181**
20 **declaration do you discuss a board/carrier?**

21 **A I do not discuss it.**

22 **Q Why?**

23 **A This corresponding structure is about**
24 **thermally isolating a dew point sensor, and I**
25 **introduced as structure in my discussion what I believe**

1 **is necessary to achieve -- according to the patent,**
2 **achieve that function.**

3 Q And that's why you didn't discuss
4 board/carrier? That's your reason?

5 A **I did not have an explicit reason not to**
6 **include it.**

7 Q Anything else?

8 A **No.**

9 Q Where in your construction in Paragraph 69
10 of the '181 patent does it disclose where to locate
11 the, quote, housing?

12 A **I do not believe it needs to specify where**
13 **to locate the housing in order to achieve the thermal**
14 **isolation of the dew point sensor.**

15 Q That wasn't my question, sir. I said where
16 in your construction in Paragraph 69 of the '181 do you
17 disclose where to locate the, quote, housing?

18 A **I do not discuss it.**

19 Q Why?

20 A **The description I reference, Figure 7 to 9**
21 **describes the housing itself. We looked at those a**
22 **second ago.**

23 **Where to locate the housing. I do not**
24 **recall why I did not specify where to locate the**
25 **housing in the context of the claim function thermally**

1 isolating said dew point sensing unit from variations
2 in temperature of the display case.

3 Q Let's just look at the '181 patent, okay,
4 sir. Claim 1.

5 A I'm ready.

6 Q Okay. Claim 1, Element A has a frame
7 temperature sensing unit adapted for monitoring
8 temperature of one of the display case door or display
9 case frame and including a carrier having a temperature
10 sensor thereat; right?

11 A Yes.

12 Q Do you understand what "adapted for" means
13 in the context of patent claim analysis?

14 A I'm not aware of a special meaning of
15 "adapted for." I thought modified to achieve that
16 goal.

17 Q You have no understanding of what "adapted
18 for" means in the context of --

19 A I just offered that. I just offered that.
20 It means modified.

21 Q Modified. Okay. Anything else?

22 A That's the understanding I adopted. That
23 means modified for monitoring temperature.

24 Q Just for purposes of discussion, make it
25 easy for you.

1 Just to make it easy, for the record, I'm
2 handing you just blown-up figures of one and two of the
3 '262 patent, Carter. Okay. Just so we don't have to
4 keep flipping back and forth.

5 **A Mm-hmm.**

6 **Q Do you agree that those are Figures 1 and 2**
7 **of the Carter patent?**

8 **A I do.**

9 **Q Okay. And in Figures 1 and 2 of the Carter**
10 **patent, what are you calling the temperature sensing**
11 **unit?**

12 **A What do I call the . . .**

13 **Q What is the temperature sensing unit in**
14 **Carter that you're pointing to?**

15 **A Forty-two.**

16 **Q So 42 and 42 alone is the temperature**
17 **sensing unit in Carter?**

18 **A Forty -- no, there are multiple temperature**
19 **sensing units in Carter. We have 42 for the**
20 **temperature of the refrigeration case itself, and then**
21 **we have two more sensors for relative humidity and air**
22 **temperature.**

23 **Q Anything else?**

24 **A Those are in 44 and 46, right. Those are**
25 **the other two. So there are a total of three sensors;**

1 **42, 44, and 46.**

2 Q As displayed on Figure 2 in the Carter
3 patent; is that correct?

4 A **Yes.**

5 Q Point us to anywhere in your declaration for
6 the '181 IPR where you discuss how one would adapt what
7 you just described 42, 46, and 44 in Carter Figure 2
8 for monitoring temperature of one of the display case
9 door -- display case frame including a carrier having a
10 temperature sensor there at.

11 Where do you walk through that adaptation?

12 A **Thirty-two -- yup. So this whole sensor**
13 **assembly unit is referred to as 32. In 32, you can**
14 **see, for the purposes of measuring surface temperature,**
15 **a cutout -- a circular cutout that separates the**
16 **sensor -- sensor assembly unit 32 from the case**
17 **temperature sensor 42. And you can see a circular**
18 **cutout out of the sensor assembly unit.**

19 Q You agree that the sensor assembly unit
20 shown in Carter's in a door latch; right?

21 A **Yeah, it is in a door latch containing three**
22 **sensors.**

23 Q Where do you, in your declaration, walk
24 through how to adapt this sensor unit in Carter to a
25 refrigerated display case?

1 A I point to this -- a temperature sensor 42
2 for the purpose -- and it measures the surface
3 temperature of the refrigerated case. But I am at a
4 loss what else you would like than a sensor that is
5 located on the refrigerated case surface measuring the
6 surface temperature with a sensor 42 separated from the
7 rest of the sensor assembly unit by an air space.

8 That is the adaptation, adjustment, or
9 modification to achieve that goal of measuring the
10 surface temperature.

11 Q So your testimony is that the sensor unit in
12 Carter does not require any adaptation for use on a
13 refrigerated display case.

14 Is that what I'm hearing?

15 A Well, it needs to be adhered to that
16 surface, right; otherwise, it would drop off. I mean,
17 there's a modification in the sense that you need some
18 kind of thermally conducted glue that allows you to
19 actually measure that particular location.

20 Q Show me where that is in your declaration
21 for the '181 IPR.

22 A In my declaration in Paragraph 83, I argue
23 that -- or I write that, "A POSITA would have known
24 that a surface temperature sensor, such as Carter
25 describes, is to provide analog or digital output

1 **corresponding to the temperature of the surface against**
2 **which the sensor is placed. As shown in Figure 2,**
3 **Carter's illustrated embodiment portrays surface**
4 **temperature sensor 42 placed against and, thus,**
5 **monitoring the temperature of the display case frame."**

6 Q A minute ago you said it would take
7 thermally conducted glue?

8 A Well, in the final assembly of that
9 refrigerated case, you would need to assure that the
10 sensor is in direct contact with that surface.

11 Q Okay. Show me where that is in your
12 declaration. And I want you to find me the term
13 "thermally conductive glue" or whatever you used, any
14 kind of glue.

15 A I do not describe that.

16 Q Okay. Do you think you could take the door
17 latch assembly from Carter and just put it as is on a
18 refrigerated display case?

19 A I consider the embodiment offered by Carter
20 as a way to measure surface temperature as well as
21 relative humidity and air temperature, but this
22 embodiment may not be appropriate for direct
23 application to a refrigerated case display.

24 Q Okay. Show me where you take the embodiment
25 in Carter and explain in detail how to adapt it for use

1 on a refrigerated display case in your sworn testimony
2 for the '181 IPR.

3 I don't want you to talk to me about it. I
4 want you to show me where it is in the declaration.

5 **A I discuss in Ground 1B shown in**
6 **Paragraph 166 the combination of Carter, Beatenbough,**
7 **and King how a sensor disclosed in King would have been**
8 **adapted to measure the temperature of one of the**
9 **display case doors or display case frames.**

10 Q My question was: Show me where you take the
11 embodiment in Carter and explain in detail how to adapt
12 it for use on a refrigerated display case in your sworn
13 declaration for the '181 IPR.

14 **A As far as I recall, I do not have the**
15 **description.**

16 Q And show me where in your '181 declaration
17 you take the embodiment of a dew point sensing unit in
18 Carter and adapt it for monitoring ambient air
19 temperature and relative humidity outside of a display
20 case.

21 **A We're in Ground 1A. We're only discussing**
22 **Carter. Is that correct?**

23 Q Yes.

24 Show me where in your '181 declaration you
25 take the embodiment of a dew point sensing unit in

1 Carter and adapt it for monitoring ambient air
2 temperature and relative humidity outside of a display
3 case.

4 **A Those are the temperatures 44 and 46.**

5 Q Show me where in your declaration you
6 describe the adaptations of Carter to a refrigerated
7 display case.

8 **A There is no adaptation necessary. Carter**
9 **describes a refrigerated case. It is --**

10 Q You believe the unit shown in Figure 1 of
11 Carter is a refrigerated display case?

12 **A It's a refrigerated case.**

13 Q No, I -- refrigerated display case.

14 **A Well, a refrigerated display case is a**
15 **display case that has its contents on display. But**
16 **this is a refrigerated case and it's measuring air**
17 **temperature and relative humidity for the purpose of**
18 **measuring dew point.**

19 Q Does Carter disclose a refrigerated display
20 case?

21 **A Carter discloses refrigerated cases of which**
22 **a display case is a variant.**

23 Q Show me where the term "display case" occurs
24 in Carter.

25 **A I do not believe it does.**

1 Q Is it fair to say you don't show how to
2 adapt the sensor unit in Carter for use on a
3 refrigerated display case?

4 MS. REICHEL: Objection. Form.

5 THE DEPONENT: Let me quote my declaration
6 at Paragraph 81, "Though Carter does not expressly
7 teach putting the contents within the refrigerated case
8 on display, the POSITA would have been motivated to
9 apply Carter's apparatus to the well-known use of a
10 refrigerated display case that store retail food items
11 in an environment where undesirable condensation can
12 occur."

13 Q (By Mr. Jones) You're in Paragraph 81 of
14 your '181 declaration?

15 A **Yes.**

16 Q And which part are you pointing to? I'm
17 sorry.

18 A **That was the first sentence.**

19 Q Okay. So you say it would have happened;
20 right?

21 MS. REICHEL: Objection. Form.

22 THE DEPONENT: Can you be specific about
23 that last question?

24 Q (By Mr. Jones) So you say that Carter
25 doesn't -- you agree that Carter does not expressly

1 teach putting the contents within the refrigerated case
2 on display; right?

3 **A Not quite. He does not limit the use of**
4 **display cases -- excuse me, the use of refrigerated**
5 **cases to being either display or non-display. It's**
6 **silent on that. It's offering an embodiment that has**
7 **an opaque door.**

8 Q You write, "A POSITA would have been
9 motivated to apply Carter's apparatus to the well-known
10 use of refrigerated display cases that store retail
11 food items in an environment where undesirable
12 condensation can occur"; right?

13 **A Yes.**

14 Q Where do you disclose how a POSITA would
15 have done that?

16 I want to see the words in your declaration
17 where you describe to the board how a POSITA would have
18 done that.

19 **A I do not believe I provided that explicit**
20 **description of that modification.**

21 Q Show me where in Carter the word "frame"
22 appears.

23 **A It talks about a cabinet surface 40.**

24 MR. JONES: Objection. Nonresponsive.

25 Q (By Mr. Jones) Sir, where does the word

1 "frame" appear in Carter?

2 **A I do not recall.**

3 Q Show me where Carter discloses doors in a
4 frame.

5 **A I use the customary ordinary meaning of**
6 **"frame" to which a door is attached.**

7 MR. JONES: Objection. Nonresponsive.

8 Q (By Mr. Jones) Show me where Carter
9 discloses doors in a frame.

10 **A I don't think it explicitly discusses doors**
11 **in a frame if you look for that citation.**

12 Q So if you look at Paragraph 80 in your
13 declaration, your annotation of Figure 1 on Page 65 of
14 your '181 declaration.

15 **A Yes.**

16 Q Do you see that word "frame" with all the
17 arrows?

18 **A Yeah.**

19 Q That's your word; right?

20 MS. REICHEL: Objection. Form.

21 THE DEPONENT: It's a common use of the term
22 "frame."

23 Q (By Mr. Jones) But the frame is not --
24 f-r-a-m-e does not appear in Carter, does it?

25 **A I believe that's correct.**

1 Q Okay. And where does "frame/door heater"
2 appear in Carter?

3 A **Thirty-four. Item 34. Thirty-four is the**
4 **heating unit, and all of Carter is about heating the**
5 **ceiling surface of that cabinet.**

6 MR. JONES: Objection. Nonresponsive.

7 Q (By Mr. Jones) Where does the term
8 "frame/door heater" appear in Carter?

9 MS. REICHEL: Objection. Form.

10 THE DEPONENT: I do not recall. I would
11 have to search it, but I do not have the time.

12 Q (By Mr. Jones) Sir, you have the Carter
13 patent in front of you. I want you to take all the
14 time you need to find "frame/door heater" or "frame" or
15 "refrigerated display case" anywhere in Carter.

16 Read it top to bottom.

17 A **So I already said that I think the word**
18 **"frame" is not mentioned.**

19 Q Okay.

20 A **And dis -- and "refrigerated cases" is**
21 **definitely in the patent.**

22 Q In Carter?

23 A **In Carter, I apologize. Yeah, in Carter.**

24 Q "Refrigerated display case"?

25 A **No, "refrigerated case."**

1 Q No, sir, my question was "refrigerated
2 display case."

3 Words have meaning in patents. I'm asking
4 you about where does "refrigerated display case" show
5 up in Carter.

6 MS. REICHEL: Objection. Form.

7 THE DEPONENT: It talks about
8 refrigerator/freezer equipment, apparatus. Find the
9 term "refrigeration/freezer equipment," "refrigeration
10 case," but not refrigerated display case.

11 Q (By Mr. Jones) You agree with me
12 refrigerated display case doesn't appear in Carter?

13 A **I have not found it.**

14 Q Where does case appear in Carter? C-a-s-e.

15 A **Compartment chamber, 26.**

16 Q C-a-s-e, sir.

17 A **Equipment systems cabinets but not case so
18 far.**

19 MR. JONES: Objection. Nonresponsive.

20 Q (By Mr. Jones) Where does the word "case"
21 appear in Carter?

22 A **I did not find it. I found equipment,
23 systems, cabinets.**

24 MR. JONES: Object to everything after "I
25 did not find it" as nonresponsive.

1 Q (By Mr. Jones) You understand, sir, that
2 the field of the invention of the '181 patent is, "This
3 invention relates to frame and/or door heating to
4 remediate condensation buildup in refrigerated display
5 cases."

6 You understood that when you signed your
7 declaration, didn't you?

8 **A I did.**

9 Q And you understand when you signed your
10 declaration in the '847 patent, that the field of
11 invention for that patent says, "This invention relates
12 to frame and/or door heating to remediate condensation
13 buildup in refrigerated display case."

14 Right?

15 **A Yes.**

16 Q So every time you annotate in your '181
17 declaration a figure of Carter and you use the word
18 "frame," that's your language, not the patent's
19 language; right? That word?

20 **A Yes.**

21 Q And every time you write "frame/door heater"
22 in annotating a picture in Carter, a figure from
23 Carter, that's your terminology, not Carter's; right?

24 **A I believe "heating unit" is used.**

25 Q No, "frame/door heater," sir. Those are

1 your words; right?

2 **A I believe so.**

3 Q And every time you write "refrigerated
4 display case" while annotating a figure from Carter,
5 those are your words, not Carter's words; right?

6 **A Right. Carter's words in red.**

7 Q And you agree when you're interpreting a
8 patent, you look at the words of the patent and the
9 words have meaning; right?

10 **A Yes.**

11 Q Let's talk about King. Are you familiar
12 with the King reference?

13 **A Yes, I am.**

14 Q And in the '181 IPR it's Anthony 1005, I
15 believe. You're welcome to get King out and pick
16 through it so you can refresh your memory.

17 King deals with fog sensors for cars; right,
18 sir?

19 MS. REICHEL: Objection. Form.

20 Q (By Mr. Jones) The technical field of King
21 reads, "This invention relates to an automotive
22 windshield fog sensor."

23 Is that correct?

24 **A Mm-hmm.**

25 Q Is that a yes, sir?

1 **A Yes.**

2 Q Do you agree with that?

3 **A Yes, I do.**

4 Q Okay. Cars are different than refrigerated
5 display cases; right?

6 **A In many ways, yes, but in the context of**
7 **maintaining certain conditions, there are some**
8 **similarities.**

9 Q Really?

10 **A Yeah.**

11 Q Tell me every time you've ever seen a live
12 person stored in a refrigerated display case.

13 **A It's about the control of indoor**
14 **environmental conditions.**

15 Q That's not what I asked you, sir. How many
16 times have you seen human beings that are alive stored
17 in a refrigerated display case?

18 **A Infrequently.**

19 Q Have you ever seen it?

20 **A I thought you were joking.**

21 Q No, sir. I'm dead serious.

22 **A Oh, okay.**

23 Q Have you ever seen a human that is alive
24 stored in a refrigerated display case?

25 **A I have not.**

1 Q I'm going to read from Column 1, Line 15 of
2 King. Would you like to read along with me? "A common
3 instance of fogging occurs when a vehicle is initially
4 cold prior to people entering. With people entering
5 the vehicle compartment, the ambient air temperature
6 and humidity increase."

7 Did I read that correctly?

8 A **Where did you read this from? Column 1,**
9 **which line?**

10 Q Column 1, starting at Line 15, the first two
11 sentences.

12 A **"A common instance of fogging occurs when a**
13 **vehicle is initially cold prior to people entering.**
14 **With people entering the vehicle compartment, the**
15 **ambient air temperature and humidity increase. The**
16 **windshield surface temperature remains cold and the air**
17 **from above the surface is also cold."**

18 Q Is that correct?

19 A **Yeah, that's what it says.**

20 Q Okay. Does a common instance of fogging
21 occur with refrigerated display cases when people enter
22 the refrigerated display case and the ambient air
23 temperature and humidity increase?

24 A **But those are the same psychometric and**
25 **thermodynamic principles.**

1 Q That wasn't my question, sir. Is that a
2 problem with refrigerated display cases?

3 MS. REICHEL: Objection. Form.

4 THE DEPONENT: As I outline in my
5 declaration, King is -- excuse me -- in Paragraph 145 I
6 describe how King is within the same field of endeavor
7 as the '181 patent, and that the '181 patent pertains
8 to remediating condensation buildup in HVAC&R systems.
9 And there is a variety of applications that the '181
10 patent anticipates.

11 MR. JONES: Objection. Nonresponsive.

12 Q (By Mr. Jones) Does a common instance of
13 fogging occur with refrigerated display cases when
14 people enter the refrigerated display case and the
15 ambient air temperature and humidity increase?

16 THE DEPONENT: People rarely enter the
17 refrigerated display case.

18 Q (By Mr. Jones) Is that a no?

19 A **That's a no.**

20 Q Okay. In the car described in King, is the
21 hot moist air on the inside of the car or the outside
22 of the car?

23 A **On the inside.**

24 Q And in the '181 and '847 patents, is the hot
25 air -- hot and moist air on the outside or the inside?

1 **A It's on the outside.**

2 **Q It's different; right?**

3 **A It's the same problem, condensation.**

4 **Q It is different, isn't it?**

5 **A Not elementary, no, it's not.**

6 **Q You don't see any difference between hot air**
7 **being inside or hot air being outside?**

8 **A Not much apart from that. The condensation**
9 **is what was meant to be avoided.**

10 **Q Okay. Where do you describe that similarity**
11 **in your declaration?**

12 **A I do.**

13 **Q The declaration for the '181.**

14 **A So in Paragraph 146, I say, "The '181 patent**
15 **expressly confirms that the kind of 'condensation**
16 **control,'" that we're talking about now is -- it**
17 **describes, "are not limited to refrigeration and are**
18 **instead 'utilized in a variety of applications.'"**

19 **So that is what this is about. In the car**
20 **we have condensation on the inside glass surface, and**
21 **in the case of refrigerated display cases we may happen**
22 **to have condensation of the out -- on the outside of**
23 **the surface.**

24 **Q Show me where in your declaration for the**
25 **'181 you discuss why a POSITA would understand that the**

1 situation in the '181 and '847 patents with the hot
2 humid outside the display case is absolutely analogous
3 to the King patent with the hot and humid air inside
4 the car. Where do you describe that?

5 **A In Paragraph 147.**

6 **Q Anywhere else?**

7 **A I say clearly, "A POSITA would have**
8 **understood that King's disclosure of an integrated**
9 **sensor package for use in a system that prevents**
10 **'fog' -- a manifestation of the condensation**
11 **phenomenon -- falls within the '181 patent's broad**
12 **technical field."**

13 **Q Anything else?**

14 **A I would have to study my report.**

15 **Q Well, we're here for your deposition. Where**
16 **else do you discuss this concept?**

17 **A Yeah, this report is -- both reports reach**
18 **almost 400 pages and were written quite a bit of time**
19 **ago, so I would have to study it in detail to answer**
20 **this question definitively.**

21 **Q So you can't just answer it --**

22 **A I would -- like I said, I would have to**
23 **study them in detail to tell you were there anywhere**
24 **else.**

25 **Q Where do you cite for your support for your**

1 statement in Paragraph 147 of your '181 declaration?

2 Where are you citing to?

3 **A I am making -- there's no citation in 147.**

4 Q Those are just your words, that's just your
5 opinion; right?

6 **A I am the expert. I was retained to opine.**

7 Q So we just have to take your word for it?

8 **A I believe that a POSITA would have**
9 **understood that condensation either on the outside**
10 **surface of a glass or the inside surface of a glass is**
11 **equivalent of a problem.**

12 Q And what can somebody look at to verify
13 whether your opinion is correct?

14 Which of your resources cited support that
15 statement, or is it just your ipse dixit, sir?

16 **A My what?**

17 MS. REICHEL: Objection. Form.

18 Q (By Mr. Jones) Your words, your own words
19 unsupported by any citation to any authority?

20 **A Well, there's a long discussion going --**
21 **coming before Paragraph 146 -- 147, including 146, that**
22 **if you would like me to, I'd be happy to recite.**

23 Q I can read 146. Is 146 your citation to
24 support 147? Is that what you're now -- you want to
25 modify your declaration?

1 MS. REICHEL: Objection. Form.

2 THE DEPONENT: Why would I modify it? I
3 don't understand --

4 Q (By Mr. Jones) I'm trying to understand
5 what is your citation for your statement in
6 Paragraph 147 of your '181 declaration?

7 A It is my opinion as an expert that a POSITA
8 would have understood that the problems are equivalent.

9 Q And what do you cite to support your
10 opinion?

11 A Well, the '181 itself cites US 2004
12 published patent application that says -- or that is
13 directed to sensing or predicting when condensation
14 having a given physical state is present or imminent
15 and for suppressing such condensation from the surface
16 such as a vehicle windscreen, eyewear, goggles, helmet,
17 visor, computer monitor screen, windows, electronic
18 equipment. So condensation occurs and the problem of
19 condensation occurs in a wide range of problems, and
20 even the '181 points to that wide range.

21 Q And that's your support for 147?

22 A No. My support for 147 is my opinion as an
23 expert that a person of ordinary skill in the art would
24 have understood that such a sensor could be applied to
25 the detection of moisture on the inside of a surface or

1 the outside of a surface.

2 Q Anything else?

3 A Other than the beginning of 146 in which the
4 '181 patent expressly confirms that condensation
5 control is described -- is not limited to a
6 refrigeration and it's utilized in a variety of
7 applications.

8 I think that's sufficient for me to hold
9 that a person of ordinary skill in the art would have
10 been able to apply a King sensor to the measurement or
11 detection of condensation on a variety of surfaces.

12 Q Anything else?

13 A I do not believe so.

14 Q Please point the board to the specific
15 language in your '181 declaration where you describe
16 how to adapt device in King for use in a refrigerated
17 display case.

18 A In Paragraph 167, I write, "In pursuing the
19 Carter-Beatenbough-King Combination, a POSITA would
20 have contemplated locating a sensor unit according to
21 King's teachings such that the above-discussed glass
22 temperature sensor is placed against and, thus,
23 monitors the temperature of the outer glass pane
24 supported by the frame of Beatenbough's case door."

25 Q Anything else?

1 A I continue, "Given that King discloses this
2 sensor in the context of monitoring the temperature of
3 a glass surface, the POSITA would have naturally
4 brought to -- thought to employ the device similarly in
5 the combination of Beatenbough and Carter.

6 "Additionally, the POSITA would have
7 considered implementing King's surface temperature
8 sensor in this way based on an understanding that the
9 glass pane of a refrigerated display case is a location
10 where condensation is likely to occur."

11 Q Anything else?

12 A That adaptation, I think, is shown in my --
13 in my declaration.

14 Then further down in Paragraph 168, "The
15 visual aid below conceptually demonstrates this aspect
16 of the combination involving Beatenbough and King."

17 And here in that figure I show the
18 refrigerated display case, and I show where King's
19 sensor would be placed.

20 Q Anything else?

21 A I continue in 169, "It would have been an
22 obvious alternative solution to locate a sensor unit
23 like the one King teaches against the display case
24 frame to monitor frame temperature, as well as known in
25 the art and even taught by Carter.

1 **"As a POSITA would have appreciated, a**
2 **frame-mounted deployment would position the sensor unit**
3 **more discreetly without sacrificing its functional**
4 **capabilities.**

5 **"Stated differently, the sensor unit could**
6 **still perform its intended function even if it were**
7 **placed at a location along the frame of the**
8 **refrigerated display case, as in Carter, instead of on**
9 **the glass plane as in King.**

10 **"Particularly in a retail setting, customers**
11 **would be less likely to see or potentially touch the**
12 **sensor unit in such a location."**

13 **So this is about locating the sensor.**

14 Q Anything else?

15 A **I think that's enough for now.**

16 Q No, my question is anything else.

17 A **I believe, at this point, that's it. I**
18 **don't see anything right now.**

19 Q Which of your -- which of your almost 40
20 references do you cite to support your Paragraph 167 in
21 the '181 declaration?

22 A **Paragraph 167?**

23 Q Yeah, that we just went over.

24 A **I offer no citation at 167.**

25 Q So is 167 just your opinion as a POSITA?

1 **A Can you please repeat the entire question?**

2 **Q Is Paragraph 167 just your opinion as a**
3 **POSITA, person of ordinary skill in the art?**

4 **A I think I provide the citations just before,**
5 **right, in the way these sensors are used, deployed, the**
6 **application cases.**

7 **But if you're asking specifically in**
8 **Paragraph 167, that is the opinion I hold as a POSITA,**
9 **yes, that that would have been obvious to do.**

10 **Q Right.**

11 **I mean, in 67 [sic], you say, "A POSITA**
12 **would have contemplated"; right?**

13 **A Yes. A POSITA would have looked at this**
14 **highly integrated dew point or sensing or fog sensing**
15 **device and would have realized, hey, that works well in**
16 **this application.**

17 **Q I appreciate that's your opinion, but that's**
18 **coming from your head, Dr. Henze's head; right?**

19 **A Well, I'll go back to King and confirm**
20 **whether or not there's anything more explicit in King**
21 **about that. It's in 105.**

22 **The patent itself speaks about applications**
23 **such as vehicles, doesn't limit it. But my**
24 **Paragraph 167, that relies on my opinion.**

25 **Q Okay. Is that the same for 168 of the --**

1 Paragraph 168 of the '181 declaration?

2 **A Yeah, I believe a POSITA looking at the art**
3 **available before the priority date would have looked at**
4 **Beatenbough and would have seen this integrated sensor**
5 **and said, I can use that to detect condensation.**

6 Q But that's your opinion; right?

7 **A Yes.**

8 Q You're not using any of your other exhibits
9 for support other than these two figures?

10 **A I believe that's correct.**

11 Q And the same for Paragraph 169, your
12 citation is to your opinion as a POSITA; right?

13 **A Actually, I'm -- I need to go back to**
14 **Element 1 in Ground 1A.**

15 Q Sure.

16 **A I mean, in Paragraph 169, I say, "It would**
17 **have been obvious -- an obvious alternative solution to**
18 **locate a sensor unit like the one King teaches against**
19 **the display case frame to monitor frame temperature, as**
20 **well as known in the art and taught by Carter."**

21 **And I reference to my Element 1A and**
22 **Ground A.**

23 **If I go to Element 1A and Ground A --**

24 Q Where is Element 1A and Ground A? I'm
25 sorry.

1 **A That's Paragraph 82.**

2 Q Okay. Go ahead.

3 **A And then I'm basically referencing Carter,**
4 **which is part of that ground, that the sensor assembly**
5 **32 monitors a surface --**

6 **(Reporter clarification.)**

7 THE DEPONENT: "Using surface temperature
8 sensor 42, sensor assembly unit 32 monitors a surface
9 temperature of the refrigerator or freezer equipment
10 10."

11 Q (By Mr. Jones) Anything else?

12 **A I think that's the reference to Carter that**
13 **I wanted to make, yeah.**

14 Q Where does Carter teach a display case
15 frame? Display case frame. Not a case frame, but a
16 display case frame.

17 **A Carter does not teach a display case frame.**

18 Q And then this last sentence in 169 of your
19 '181 -- last sentence of 169 of your '181 declaration,
20 and then we'll go get lunch.

21 Read that last sentence just to yourself,
22 and let me know when you're ready to discuss it,
23 please.

24 **A I've read it.**

25 Q Where did you get that, "Particularly in a

1 retail setting, customers would be less likely to see
2 or potentially touch/damage the sensor unit in such a
3 location"?

4 Where did you come up with that, sir?

5 **A I think if a sensor is obstructing the view**
6 **of the contents of the displayed goods, it's much more**
7 **visible than if it is inconspicuously located on the**
8 **frame. That's where this is from.**

9 Q Are you an expert in, like, customer
10 behavior in a retail setting?

11 **A Well, we're talking about --**

12 Q My question is: Are you an expert in
13 customer behavior in a retail setting?

14 **A No, I'm not.**

15 Q What is your support for the statement,
16 "Particularly in a retail setting, customers would be
17 less likely to see or potentially touch/damage the
18 sensor unit in such a location"?

19 **A It is my opinion. It is my opinion.**

20 Q That is just your words?

21 **A This is my opinion, yes. If I see a sensor**
22 **and I cannot see my ice cream because the sensor is in**
23 **the way, I'm more likely to play, twiddle, or remove**
24 **the sensor than if it's hidden outside my view.**

25 Q That's you individually; right?

1 **A I personally don't think it's a far stretch.**

2 Q Okay. It's not a far stretch in your
3 opinion.

4 Did you cite any studies or anything to
5 support that statement, the last sentence in
6 Paragraph 169 of the '181 declaration?

7 **A I did not.**

8 Q That's just you -- conjecture; right?

9 **A No, that's me having an opinion as a person**
10 **who's been opening refrigerator or refrigerated cases**
11 **and equipment and recognizing that the location of that**
12 **small hemispherical sensor would encourage people to**
13 **notice it, to tamper with it, rather than in a location**
14 **where it's not visible.**

15 Q What about having gone grocery shopping your
16 whole life, sir, makes you a POSITA in customer
17 behavior in a retail setting?

18 **A It does not.**

19 Q This is just your speculation, right, the
20 last sentence?

21 **A It's my opinion, mm-hmm.**

22 Q Based on what?

23 **A I think the physics are fairly obvious that**
24 **if we're standing in front of a refrigerated display**
25 **case and I have a sensor roughly 1 to 2 centimeters in**

1 diameter, a little knob that is visible to a person
 2 because it's infringing upon the view area, that that
 3 sensor that is also protruding from the glass surface
 4 will be more -- is more likely to be tampered with than
 5 a sensor at the top of the frame or the bottom of the
 6 frame where it may be located but I'm not looking for
 7 it because I can still see my ice cream and groceries.

8 Q In connection with these IPRs, did you talk
 9 to anyone, other than your lawyers, other than
 10 Anthony's lawyers, to determine whether this last
 11 sentence in Paragraph 169 of your '181 declaration was
 12 right or anybody agreed with it or anything like that?

13 A No.

14 Q That's just Dr. Henze on what he thinks;
 15 right?

16 A Well, I offered my opinion to you just a
 17 second ago.

18 Q Okay. I think that's clear to the board.

19 MR. JONES: Let's go to lunch, please.

20 (Recess from 12:17 p.m. until 1:15 p.m.)

21 MR. JONES: Back on the record.

22 Q (By Mr. Jones) Welcome back, sir, are you
 23 ready to proceed?

24 A I am.

25 Q Did you have a chance to get lunch and relax

1 a little bit?

2 **A I did. Thank you for providing lunch.**

3 **Q You're welcome.**

4 I know you're a teacher and a professor, and
5 I'm sure you're very good at that.

6 Could you just help me understand something.

7 You've worked in labs for a lot of your
8 career; is that correct?

9 **A Labs were around me a lot, yeah. I mean,**
10 **30 years of being at a university, yeah, there are a**
11 **lot of laboratories; wet labs, dry labs, yes.**

12 **Q Have you ever built apparatuses, apparati in**
13 **your career?**

14 **A Do you want to specify what type of**
15 **apparati?**

16 **Q Sure. You're a professor of many things;**
17 **right?**

18 **A Well, I'm a mechanical engineer dealing with**
19 **HVAC&R systems in the building context, buildings,**
20 **district energy systems, refrigeration systems, data**
21 **centers, cooling plants.**

22 **Q Sure.**

23 Have you ever designed such systems?

24 **A I have designed systems within the context**
25 **of HVAC&R, yes.**

1 Q Okay. And have you ever actually built
2 anything like that, you know, put it together or put
3 together a mockup in a laboratory or an office
4 environment?

5 A Yes, I mean, I have built -- we have a
6 full-scale HVAC laboratory at the University of
7 Colorado. I've built scale versions of building
8 systems for educational purposes that include systems
9 that are taken from the commercial building context,
10 just smaller scale so that we can use it in the
11 classroom setting.

12 Q And you've supervised doctoral students or
13 master students who have done similar kinds of
14 endeavors?

15 A Yes.

16 Q We talked earlier about a cool mirror sensor
17 for determining a relative humidity?

18 A Chilled mirror.

19 Q Chilled. Thank you.

20 If I wanted to -- if you wanted to in the
21 context of this case buy a chilled mirror sensor like
22 the ones we've been discussing, where would you begin
23 to look? Are there any sources, any catalogs?

24 A Yeah, I mean, building automation and
25 controls manufacturers such as Honeywell, Johnson

1 **Controls, Siemens, Delta Controls, they offer a wide**
2 **range of sensing and control equipment, sensors in**
3 **particular, yeah.**

4 Q And that might include chilled mirror
5 sensors?

6 A Mm-hmm.

7 Q Is that a yes?

8 A Yes.

9 Q And that's at least where you, as a
10 professional, would go to look for such equipment if
11 you were going to incorporate it into a system you were
12 designing?

13 A I would -- yes, I would go to manufactures
14 of control and sensor equipment that I would -- that
15 are commonly involved in furnishing commercial
16 buildings and -- yeah, systems in commercial buildings.

17 Q And these are things, these chilled mirror
18 sensors, that you can buy kind of off the rack, right,
19 like, out of a catalog and have them shipped to you?

20 A You can, yeah.

21 Q And the companies you described just in your
22 prior testimony would have catalogs that might list the
23 items that they have for sale?

24 A Definitely. They have a wide range of
25 temperature sensors, humidity sensors, pressure

1 **sensors. So I would do a little bit of a research to**
2 **find, you know, a couple of manufacturers and see what**
3 **their specifications are, how much they cost.**

4 Q Okay. But if I wanted to -- if I, Charlie
5 Jones, wanted to find a chilled mirror sensor, I could
6 certainly at least consult those kinds of catalogs as a
7 starting point?

8 A Mm-hmm.

9 Q Is that a yes?

10 A **I believe so, yes.**

11 Q Okay. Thank you.

12 I want to try and -- we've talked a lot
13 about your '818 [sic] declaration today --

14 A **'181.**

15 Q '181. Thank you, sir. We've talked a lot
16 about your '181 today; right?

17 A **We did, yes.**

18 Q And you would agree with me there's some
19 similarity, generally speaking, between your '181
20 declaration and your '847 declaration?

21 A **I mean, it pertains to two very related**
22 **patents with the same title, the same description, so,**
23 **yes.**

24 Q From a common application; right?

25 A Mm-hmm.

1 Q I just want to see if I can truncate some of
2 this deposition by cross-referencing; okay?

3 A **Okay.**

4 Q If we could look -- I'm going to get out the
5 '181 and we're going to -- your '181 declaration and
6 I'm going to put the '847 declaration next to it and
7 just ask you some correlating questions. Does that
8 make sense?

9 A **Okay. So I need to have both of my**
10 **declarations next to each other, if possible.**

11 MR. JONES: Counselor, are you okay?

12 MS. REICHEL: Yeah, I'm just grabbing the
13 binder, and I'm just wondering if he wants to pull out
14 the '847 declaration --

15 MR. ZIEMIAN: I have another binder here
16 that he can put that in.

17 MR. JONES: I would like the record to
18 reflect that Mr. Ziemian is super helpful.

19 MR. ZIEMIAN: I anticipated that, see.

20 Q (By Mr. Jones) So you have your '181
21 declaration and your '847 declaration in front of you,
22 sir?

23 A **I do, next to each other.**

24 Q Let me just ask some foundational questions.
25 Does the '818 declaration --

1 **A '181.**

2 Q Thank you, sir. I have a little issue with
3 mixing numbers up.

4 **A No worries.**

5 Q Does your '181 declaration, that we've been
6 talking about all day, set forth all of your opinions
7 and the bases therefore in connection with the '181
8 IPR?

9 **A Yes.**

10 Q Does your '847 declaration set forth all of
11 your opinions and the bases therefore with respect to
12 the '847 IPR?

13 **A Yes.**

14 Q Thank you.

15 If you could, please, look at Paragraph 123
16 in your '818 declaration.

17 MR. ZIEMIAN: '181.

18 MR. JONES: Strike all that.

19 Q (By Mr. Jones) Could you please, sir, turn
20 to Paragraph 123 in your '181 declaration. These are
21 the four equations we have talked about earlier?

22 **A Yes, I see those.**

23 Q And if you could, turn to the corresponding
24 Paragraph 85 in your '847 declaration.

25 **A Yup.**

1 Q You have both of those in front of you?

2 A Yes, I do.

3 Q Would you agree with me that the four
4 equations that we discussed earlier in Paragraph 123 of
5 the '181 declaration are the same equations that you
6 have set forth in Paragraph 85 of the '847 declaration?

7 A Yes.

8 Q And if I asked you all of the questions
9 again that I asked about these same four equations in
10 your '181 declaration, would you give me the same
11 answers if I asked you those questions about the same
12 equations in the same manner in the '847 declaration?

13 A I think I would.

14 Q We've talked a lot today about your
15 interpretation of a few references that you contend are
16 prior art in these IPRs; right?

17 A Yes.

18 Q Particularly your interpretation and
19 understanding of the disclosures in the Carter patent;
20 right?

21 A Correct.

22 Q And we talked about the Carter patent a lot,
23 but we've talked about it in the context of the '181
24 IPR; correct?

25 A Yes.

1 Q Would your testimony regarding your
2 understanding and interpretation of the disclosures in
3 Carter change if I asked you those same questions in
4 the context of the '847 patent?

5 A You asked a lot of questions this morning so
6 it's hard to answer that.

7 Q Well, I'm not asking you about -- I want to
8 be clear, in this spirit. I want to be clear, I'm not
9 asking you questions about how Carter would apply to
10 the '847 patent. I'm just asking your understanding of
11 Carter. Does that change whether I'm asking you
12 questions about Carter in the context of '181 or
13 questions about Carter in the context of the '847?

14 A I don't believe so.

15 Q The same question for King. Does your
16 understanding and interpretation of King change from
17 the '181 patent to the '847 patent?

18 A The way I use the 84 -- excuse me, the King
19 reference in my testimony here in the '847 draws on a
20 few different elements that I can point to, but,
21 otherwise, there's no difference in interpretation what
22 King is and does.

23 Q Okay. And that's all I want to know. You
24 don't have a separate understanding and interpretation
25 of King for the '181 than you do for the '847; is that

1 fair?

2 **A I don't believe I have.**

3 Q And you don't have a separate understanding
4 and interpretation of Carter for the '181 patent than
5 you do for the '847 patent; is that fair?

6 **A I believe so.**

7 Q And any other prior art reference that
8 you've relied on in either IPR, do you interpret and
9 understand that prior art reference in and of itself
10 differently from between the '181 patent and the '847
11 patent?

12 **A "Interpret" is very vague. I'd like to look**
13 **at the places that you had in mind --**

14 Q Sure.

15 **A In its totality, I can't answer this**
16 **question right now. If I interpreted them differently,**
17 **that is just --**

18 Q I want to --

19 **A -- sitting in front of 400 pages, it's not**
20 **that easy.**

21 Q I want to be clear, I'm not asking you how
22 you apply them to the patents. I'm asking if your
23 interpretation of the prior art, the alleged prior art
24 reference changes from patent to patent?

25 **A I do not believe so.**

1 Q And when I say "from patent to patent," I
2 mean the '181 to the '847. Can we agree on that?

3 A Yes.

4 Q We talked about King a little bit earlier,
5 and I'd like to hand you what is a blowup of Figure 1
6 and Figures 2 in King. Can we agree that that's what
7 you have before you?

8 A Yes.

9 Q And you're free to check the King reference
10 and make sure that I have it right.

11 A Well, I bet I'll need it in a second so I'll
12 go to it now. It looks like it. that looks right to
13 me.

14 King is 5? Yes, King is 5.

15 Q So would -- take your time but would you
16 agree with me that I've handed you a single sheet with
17 Figures 1 and 2 from the King patent?

18 A Mm-hmm.

19 Q Is that a yes?

20 A Yes.

21 Q I'm sorry, Doctor, I don't mean to be rude.
22 I'm just trying to get verbal responses.

23 A Yes, yes, yes.

24 Q I just wanted to apologize.

25 A This looks like the 1 and 2 from the King

1 reference.

2 Q Does Figure 2 of King show an air pocket?

3 A An air pocket is -- yes, there is an air
4 pocket, right, around the sensor units 24, 22, and 20,
5 but let me just make sure that in the grounds that I
6 discuss King -- in the '847 declaration I discuss King
7 at great length and describe the components that make
8 up King. Air pocket is I think pretty visible.

9 I don't think I point to air pockets in '847
10 because none of the claim language that I recall right
11 now, unless I'm missing it, is pointing to that. Now,
12 Ground 1C utilizes King in the '847, and that is on
13 Pages 122 following. It talks about the thermally
14 isolating temperature sensing units. And I don't see
15 the air pockets in here.

16 Insulating air pockets. I do discuss this
17 in my declaration for the '181 in Paragraph 182. And I
18 offer an annotated figure just above 183.

19 Q So let's look at this annotated figure on
20 Paragraph 182, Page 133 of your '181 declaration.

21 (Reporter clarification.)

22 Q (By Mr. Jones) Let's start over. I'm
23 looking at the figure, sir, in Paragraph 182 on
24 Page 133 of your '181 declaration. Are we looking at
25 the same figure?

1 **A We are, yes.**

2 Q And there is a large area shaded in purple.
3 Do you see that?

4 **A I do.**

5 Q Does the area shaded in purple indicate the
6 insulated air pocket in King's Figure 2?

7 **A There is actually two, right? There's a**
8 **large cavity that's labeled "insulated air pocket" and**
9 **then behind the circuit board there's a smaller**
10 **insulated air pocket. You can see it twice in that**
11 **annotation.**

12 Q Okay. Okay. Would you look at your '181
13 declaration, please, sir, Paragraph 103?

14 **A 103?**

15 Q 103, please.

16 **A That places us in Ground 1A for the '181**
17 **using only the Carter reference.**

18 Q The second sentence of your Paragraph 103 in
19 your '181 declaration reads, "A housing for locating
20 the sensing units, Carter's door latch cover simply
21 provides, quote, added protection from outside
22 elements, close quote, and, open quote, helps localize
23 the measurements, ellipse, to generally produce more
24 accurate temperature readings, period."

25 Did I read that correctly?

1 **A You did.**

2 **Q The, quote, added protection from outside**
3 **elements, which outside elements are you referring to?**

4 **A Well, people handling the refrigeration**
5 **equipment. It's part of the equipment that's utilized**
6 **by a lot of people opening and closing it. There might**
7 **be water spillage. There may be -- yeah, any kind of**
8 **damage, mechanical damage that occur.**

9 **Q Anything else?**

10 **A Well, this particular added protection**
11 **refers to the mechanical protection I just mentioned**
12 **and it could also -- it also involves thermal**
13 **protection because by enclosing the temperature sensors**
14 **42, 44, and 46 in this assembly and this door latch**
15 **cover assembly 20, by integrating it in here, we are**
16 **protecting it from other influences that could be**
17 **thermal in nature, a piece of equipment that radiates**
18 **against the sensor.**

19 **So these sensors are very sensitive to**
20 **radiant or stray radiation; and, basically, hiding the**
21 **sensors within -- or not hiding but keeping the sensors**
22 **within the protected latch cover protects them from**
23 **other surfaces that might be colder and maybe in**
24 **radiative exchange with these sensors.**

25 **Q Would, as used in Paragraph 103 of your**

1 '181, the added protection from outside elements, would
2 the outside elements potentially include drafts from an
3 HVAC unit?

4 **A Sure. Yeah. I mean, we want air motion.**
5 **We want to measure the ambient temperature in that**
6 **latch cover, but we want to, you know, protect it from**
7 **excessive air velocities, yeah.**

8 **Q Air currents?**

9 **A Yes.**

10 **Q Is that fair?**

11 **A Yes. Mm-hmm.**

12 **Q Would a -- would a protective shield having**
13 **air gaps protect the sensing units from outside**
14 **elements?**

15 **A Would a protective shield having air gaps?**
16 **I think something like that is described right here in**
17 **Figure 2; right?**

18 **Q I don't know. You tell me.**

19 **A Yeah, it's a protective cover with air gaps.**
20 **It's not sealed. You do want air flow in here.**

21 **Q How much air flow?**

22 **A It's hard -- hard to specify exactly how**
23 **much air flow. You want to ensure that your -- in the**
24 **Carter reference that the two sensors for dry-bulb**
25 **temperature and relative humidity measure a**

1 **representative portion of that air. So you want -- you**
2 **don't want a stale air pocket to be measured, so you**
3 **want air flow.**

4 **But you might have other disturbances that**
5 **you'd rather not measure, like a window opening**
6 **temporarily or someone walking by. So you want enough**
7 **exchange so you are measuring a representative portion**
8 **of the indoor ambient air.**

9 **Q Would protective shield and cover with**
10 **opposite end openings protect from outside elements?**

11 **A We're in the context still of Carter or are**
12 **you now referring to King? I'm not sure.**

13 **Q I'm asking you about the disclosure and what**
14 **you wrote in 103 of the '181 declaration.**

15 **A Would you kindly repeat?**

16 **Q Sure.**

17 **Would a sensor unit housing that includes**
18 **opposite end openings provide added protection from**
19 **outside elements?**

20 **A I mean, the housing provides protection.**
21 **I'm not sure if it adds added protection. That's a**
22 **qualifier that I would like to remove.**

23 **Q You'd like to edit your declaration?**

24 **A No, no, but I'm editing your question.**

25 **Q Well, I'm using, respectfully, the words**

1 that you put in your declaration, sir.

2 **A Yeah, but you used my words in a question of**
3 **yours. And I'm saying, using your question, I would**
4 **not agree that a cover that has openings on opposing**
5 **ends offers added protection. It adds protection.**

6 **Q You say, "Carter's door latch cover assembly**
7 **provides, quote, added protection from outside**
8 **elements"; right?**

9 **A Yeah, that is a quote from Carter.**

10 **Q Okay. Does a dew point sensing unit housing**
11 **that includes opposite end openings provide added**
12 **protection from outside elements?**

13 **A I believe, yes, the sensors disclosed in the**
14 **'181 are offering protection from the elements.**

15 **Q And what did you do to verify that?**

16 **A Well, I studied the patent and the prior**
17 **art.**

18 **Q Right. But what did you do to actually**
19 **verify any of this?**

20 **A Are you referring to experimentation where I**
21 **take a door cover and subject it to a varying set of**
22 **environmental conditions?**

23 **Q Correct.**

24 **A No, I did not carry out such experiments.**

25 **Q Did you, in the context of formulating your**

1 opinions in the '181 declaration and the '847
2 declaration, do any experimentation involving dew point
3 sensing units with housings that included opposite end
4 openings?

5 **A The beginning of the sentence was did I do**
6 **what specifically with those?**

7 Q Did you do any experimentation --

8 **A I did not. No, I did not do any**
9 **experimentation.**

10 Q Let's just ask it more broadly.
11 Did you do any experimentation in connection
12 with your expert opinions in the '847 or '181 IPRs?

13 **A I did not.**

14 Q Did you do any mock-ups in connection with
15 rendering your opinions in the '181 and '847 IPRs?

16 **A I did not.**

17 Q Did you inspect any physical devices in
18 connection with rendering your opinions in the '181 or
19 '847 IPRs?

20 **A I deal with sensor development on a regular**
21 **basis. That's my profession. I develop sensor**
22 **networks.**

23 Q Respectfully, sir, that was not my question.
24 In context of rendering your opinions for
25 the '181 and '847 IPRs, did you inspect any physical

1 devices?

2 **A I did not.**

3 Q Did you inspect any of the petitioner's
4 devices in connection with rendering your opinions in
5 the '181 and '847 IPRs?

6 **A I did not.**

7 Q How would you modify Carter's door latch
8 cover assembly to have opposite end openings to
9 establish ambient air flow?

10 **A Well, if I can point you to the figure above**
11 **Paragraph 104, the annotated Figure 2, I would use the**
12 **door latch cover assembly 20, and I would drill a few**
13 **holes in there, on the bottom preferably.**

14 Q Show me where you explain that in your
15 declaration for the '181 or '847.

16 **A You would like me to point in my declaration**
17 **where I described where I would drill holes in this**
18 **cover?**

19 Q Or that you would drill holes at all.

20 Let me ask it this way: Point me to the
21 specific disclosure in either one of your declarations
22 that we've been talking about all day where you show
23 how a POSITA would modify Carter's door latch assembly
24 to have opposite end openings to establish ambient air
25 flow through said dew point sensing unit housing.

1 **A Can you remind me which claim element this**
2 **is recited?**

3 **Q I'm just asking you where you put that in**
4 **your -- I'm not talking about any specific claim**
5 **element. I just want to know where you disclose this**
6 **in either of your declarations.**

7 So let me ask you the question again so it's
8 clear.

9 Point me to the specific disclosure in
10 either one of your declarations that we've been talking
11 about all day where you show how a POSITA would modify
12 Carter's door latch assembly to have opposite end
13 openings to establish ambient air flow through said dew
14 point sensing unit.

15 **A I discuss the air pockets. I discuss, yeah,**
16 **the insulating air pockets extensively. I discuss**
17 **latch cover 20 being the housing and forming the**
18 **insulated air pockets.**

19 But the modification to add opposing holes
20 in that door latch cover assembly, I don't discuss, but
21 they are found in the figure. There are holes in the
22 figure that -- Figure 2, you can see in the door latch
23 cover that would allow for air flow. You can see two
24 elongated holes.

25 **Q What are you pointing to?**

1 **A Figure 2, Page 87, I'm pointing to a hole**
 2 **in -- there are two holes in the door latch cover**
 3 **assembly right here and right here.**

4 Q And where in your -- sir, where in your
 5 declaration do you describe or identify those holes
 6 which you just pointed to as being the opposite end
 7 openings to establish ambient air flow?

8 What I think you're doing is trying to make
 9 something up after the fact, and I want to see where in
 10 your declaration you point to those two holes
 11 specifically being the opposite end openings to
 12 establish ambient air flow.

13 MS. REICHEL: Objection. Form.

14 Q (By Mr. Jones) Where in your declaration do
 15 you point to --

16 **A Can I find it --**

17 Q Hold on.

18 Where in your declaration do you point to
 19 anything in Carter Figure 2 as being the opposite end
 20 openings to establish ambient air flow?

21 **A I write in Paragraph 110 --**

22 Q Of which declaration?

23 **A The '181.**

24 Q Go ahead.

25 **A Okay. I say, "As the POSITA would have**

1 understood, the areas, are pockets, within the
2 housing's hollow space are filled with air. That is,
3 they're air pockets. This is so because the housing is
4 not sealed, and the interior space is not a vacuum.
5 For example, Carter's Figure 1 shows the housing's
6 front has an opening (shaded orange) for allowing
7 ingress of ambient area and, thus, exposing the air
8 temperature and humidity sensors to the same."

9 And that's on the discussion pertaining to
10 Figure 1 right here.

11 Q But that's a single opening; right?

12 A I would agree.

13 Q Those aren't opposite end openings; right?

14 Okay. Where else do you contend that you
15 disclose in either of your declarations anything in
16 Carter that talks about a housing unit including
17 opposite openings to establish ambient air flow?

18 A I discuss -- repeat -- a housing unit that?

19 Q Where are you?

20 A I'm trying to repeat your question.

21 A housing unit that? Where in my
22 declaration did I discuss a housing unit that?

23 Q Where else in either of your declarations do
24 you contend that you disclose a housing unit including
25 opposite end openings to establish ambient air flow?

1 Anything in Carter that makes that
2 disclosure. Let me just . . .

3 Where else do you contend you disclose in
4 either of your declarations anything in Carter that
5 talks about a housing unit including opposite end
6 openings to establish ambient air flow?

7 **A I cannot find additional discussion of that.**

8 Q Okay. If you could grab Carter for me,
9 please, sir. And back to Paragraph 103 in the '181.

10 **A Grab King you said?**

11 Q No, no, Carter. I'm sorry. Never mind. I
12 think it's clear. Sorry.

13 Does the term "frame" have a meaning to a
14 person of ordinary skill in the art with respect to
15 refrigerated display cases?

16 **A I think I adopted frame with its ordinary
17 and customary meaning.**

18 Q And what is that?

19 **A There are many versions of frames.**

20 Q Okay.

21 **A Picture frames, frame works. But the way I
22 use frame in my declaration here is to describe the
23 structure that holds the door of the refrigeration
24 equipment.**

25 Q And what's in the door -- are the doors in

1 refrigerated display cases opaque?

2 **A They can be.**

3 Q They can be?

4 **A They can be.**

5 Q How would you display goods in an opaque
6 display case?

7 **A Could you repeat that? Can --**

8 Q Sure.

9 **A Can doors in refrigerated cases or**
10 **refrigerated display cases?**

11 Q Let me start over. That's fair. I'm
12 talking about refrigerated display cases --

13 **A Okay.**

14 Q -- of the kinds discussed in the '181 and
15 '847 patents. Do refrigerated display cases have
16 opaque doors?

17 **A Commonly transparent doors.**

18 Q Transparent doors made out of some sort
19 of --

20 **A Glass.**

21 Q -- plexiglass, glass, some sort of
22 transparent material, glass like?

23 **A Safety glass, yeah.**

24 Q Is that fair?

25 Does Carter disclose a door with glass in

1 it?

2 **A** **Carter discloses refrigeration equipment,**
3 **and one variant of refrigeration equipment are**
4 **refrigerated display cases that have doors that have**
5 **glass panes in them for viewing.**

6 Q Does Carter disclose doors with glass?

7 **A** **I do not believe so.**

8 Q The door in Carter -- let's look at just --
9 let's go to Carter.

10 Let's just look at -- sorry. Let's look at
11 Carter Figure 1, please, sir. Just the patent
12 Figure 1, sorry.

13 **A** **That's four; right? Mm-hmm.**

14 Q Do you have Figure 1 of Carter in front of
15 you?

16 **A** **I do.**

17 Q And the door in Figure 1 of Carter is
18 denoted by numeral 12; right?

19 **A** **Yes.**

20 Q Okay. And that door doesn't have glass in
21 it; right?

22 **A** **Does not seem to, yeah.**

23 Q To your understanding as a POSITA, would it
24 make sense that the door 12 in Figure 1 of Carter is
25 insulated?

1 **A Yes, the whole case needs to be insulated to**
2 **not gain too much heat.**

3 **Q To have the maximum thermodynamic**
4 **efficiency; right?**

5 **A Thermal efficiency, yeah.**

6 **Q Thermal efficiency, fair enough.**

7 Is the door in Carter Figure Number 1, 12,
8 likely to be more insulated than or less insulated than
9 a door in a refrigerated display case that's made of
10 glass?

11 **A Well, the resistance of a double-paned**
12 **window that would be used with an air cavity to provide**
13 **a view would likely have a lower R value of -- the**
14 **resistance would have a lower value than the opaque**
15 **window.**

16 **Q So a glass in a refrigerated display case**
17 **would be less insulated than the door 12 in Carter**
18 **Figure 1; right?**

19 **A Yes, however, this is one version of a**
20 **refrigerated case. Many lab refrigeration equipment**
21 **pieces and units have glass doors.**

22 **Q I'm just asking about the explicit**
23 **disclosures of Carter; okay?**

24 **A You are referring to one unit, and this is**
25 **one embodiment that happens to show a door that has no**

1 **glass but it is -- it is --**

2 Q Nowhere does the disclosure for glass doors
3 appear in Carter; right?

4 A **We visited that, yes.**

5 Q You agree with me still?

6 A **Yes.**

7 Q If a glass door has a lower R value than a
8 solid door in a refrigerator, does that present
9 additional challenges for controlling condensation?

10 A **Additional considerations, yes.**

11 Q What do you mean by "additional
12 considerations"?

13 A **If I have a refrigerator -- if I have**
14 **refrigeration equipment like the one shown here, one --**
15 **and two versions of it, one with a glass door or glass**
16 **view area, double pane, argon filled, something high**
17 **quality, and one with an opaque wall, then it is likely**
18 **that the glass surface is slightly cooler than the rest**
19 **of the insulated frame.**

20 Q So in any given environment, that cooler
21 glass surface would be like -- more likely to form
22 condensations than the solid door; right?

23 A **Would come -- would be more at risk of**
24 **coming closer to the dew point, yes.**

25 Q And thus creating condensation.

1 And when you said "here" in your prior
2 answer, you were talking about Figure 1 in Carter;
3 right?

4 **A I was.**

5 Q So there are additional technical challenges
6 to overcome with respect to controlling condensation in
7 a glass-fronted display case than a solid door that's
8 shown in Figure 1 in Carter; right?

9 **A No.**

10 MS. REICHEL: Objection. Form.

11 THE DEPONENT: No, I disagree. There are
12 just considerations, and anyone designing these systems
13 knows the difference in the R value, the resistance
14 value between a -- the panel of the frame of the door,
15 and this could be easily accommodated by recognizing --
16 you can easily calculate what the difference in surface
17 temperature would be, all else being the same, and you
18 could accommodate for the glass very easily. There's
19 not an additional complexity involved.

20 Q (By Mr. Jones) Just considerations?

21 **A I would say it's a consideration, yeah. I**
22 **mean, if the -- if the resistance of the glass,**
23 **double-paned glass is 80 percent of that of the opaque**
24 **door, then I could do a simple back-of-the-envelope**
25 **calculation to recognize what are the conditions under**

1 **which possibly that glass might experience**
2 **condensation.**

3 Q You didn't do any of those simple
4 back-of-the-envelope calculations in your declarations
5 in these two cases, did you?

6 A **No, I didn't.**

7 Q True or false statement, should condensation
8 develop along the refrigerator or freezer equipment, it
9 would most likely tend to develop along the sealing
10 surface? True or false statement?

11 A **I think it's true.**

12 Q You think it's true?

13 A **I believe it's true, yes.**

14 Q Isn't Carter really concerned with
15 condensation on a sealing surface?

16 A **Carter in Column 1, Line 45 says, "Should**
17 **condensation develop and/or refreeze along any**
18 **freezer/refrigeration sealing areas such as a gasket,**
19 **the gasket may lose its ability to remain flexible in**
20 **order to seal surfaces completely."**

21 **So that, then, leads to my answer, yes,**
22 **Carter is concerned about condensation on sealing**
23 **surfaces.**

24 Q Thank you.

25 And that statement you just read, is that

1 true, to your understanding as a POSITA?

2 **A Yeah.**

3 Q Yes?

4 **A Yes. Yes.**

5 Q Okay. Thank you.

6 **A Yes.**

7 Q Yeah is just ambiguous. I know you weren't
8 trying to be ambiguous.

9 **A I was not trying to be ambiguous, yes.**

10 Q I'm just trying to make sure everybody is
11 clear here.

12 Where -- let me see -- if you look at --
13 let's look at the '181 patent, please, sir. Figure 1.

14 **A It's in front of me.**

15 Q Okay. Thank you. I just got to get to the
16 description.

17 **A Yeah, same here.**

18 Q Okay. '181 patent, Figure 1. Let me know
19 when you have the -- Column 5 of the '181 patent
20 available to you.

21 **A Mm-hmm.**

22 Q You have Column 5 too?

23 **A I do.**

24 Q Okay. Column 5, Line 17 says, "Doors 25 and
25 a frame 27."

1 Right?

2 A Line 17, yes, having a frame and -- doors 25
3 and frame 27, mm-hmm.

4 Q So we can agree on Figure 1 of the '181
5 patent that "27" denotes a frame?

6 A Yes.

7 Q Point me to where in your report are your --
8 strike all that.

9 Please point us to in your declaration for
10 the '181 patent where you expressly describe where
11 anything in Carter is analogous to Figure 1, 27 frame
12 in the '181.

13 A Okay. That would be in my declaration,
14 Paragraph 80.

15 Q The '181 declaration?

16 A Mm-hmm, yes.

17 Q Okay. Go ahead.

18 A I write, "Carter's Figure 1 illustrates
19 exemplary refrigerator or freezer equipment 10 in the
20 form of a case with a door, 12, having installed door
21 latch assembly 14 attached thereto and a sealing
22 surface 24, that serves to retain and maintain an
23 operating temperature within a compartment chamber 26.
24 The sealing surface 24 is part of a frame against which
25 the door 12 seals when held shut by the door latch

1 **assembly 14."**

2 Q Okay. Where's your reference to Carter
3 Fig 1, 27 -- strike that.

4 Where's your reference in that Paragraph 80
5 of your '181 declaration to Figure 1, Number 27 of the
6 '181 patent?

7 **A Okay.**

8 Q Do you need to be somewhere, sir?

9 **A No, no, no, no. It's just -- the day has**
10 **been long.**

11 Q I understand. It's been long for everyone.
12 Do you need a break?

13 **A That would be nice, pretty soon, yeah.**

14 Q Okay. Could we just finish out these
15 questions?

16 **A Yes.**

17 Q So let me ask you again. Where in either
18 one of your declarations, the '181 or the '847, do you
19 explain what in Carter is analogous to Figure 1, 27
20 frame in the '181 patent?

21 **A I'm -- we've been there before. I'm using**
22 **"frame" in the customary and ordinary meaning, and**
23 **Carter has a door and that door does not float in**
24 **space. It is attached to a structure that I declare is**
25 **a frame, or it has a frame.**

1 Q But I'm asking specific with respect to
2 '181, Figure 1, Item 27. Where do you address that in
3 your '181 or '847 declarations?

4 A I'm not sure what addressing you would
5 expect me to do. The fact that that figure in the
6 patents has a frame and Carter has a frame, I mean,
7 there are three doors connected to a frame in the '181
8 patent, and in the Carter patent there is one door
9 connected to one frame. It's just the multitude of
10 doors is different. I'm -- I'm somewhat confused as to
11 where you're going.

12 Q I'm just trying to figure out what you
13 contend is equivalent to Figure 1, Item 27 in '181 in
14 Carter.

15 MS. REICHEL: Objection. Form.

16 THE DEPONENT: I mean, in '181, a frame is
17 specifically called out. But as I mentioned earlier, I
18 have not assumed a specific definition of "frame." I
19 just need a frame and have, therefore, defined as the
20 cabinet -- the cabinet as the frame in which the door
21 is held.

22 Q (By Mr. Jones) So every -- you see the
23 annotated Figure 1 on Page 65 of your '181 declaration?

24 A I do.

25 Q Everything you point to as a frame in that

1 annotated declaration is equivalent to Figure 1,
2 Item 27 in the '181 patent; is that right?

3 MS. REICHEL: Objection to form.

4 THE DEPONENT: No, both have a frame. This
5 frame is flat, nearly two dimensional in the '181
6 patent. And what I refer to as the frame serves the
7 same purpose of holding a door, but it is the structure
8 of the cabinet -- of the refrigeration cabinet.

9 Q (By Mr. Jones) Does the frame in 27 hold
10 the door or hold the glass? Figure 1, '181.

11 A Well, because this is a case of a door that
12 has glass panels, these doors have a frame that holds
13 the glass in place.

14 Q So does --

15 A In the case of Carter, the frame holds -- in
16 the case of Carter where there's no glass surface
17 shown, the frame holds the door, like you at home have
18 doors that have no glass that have a doorframe.

19 Q It's your contention that the purposes of
20 comparing Carter to the '181 patent, just any frame
21 works; right?

22 A No, not any frame works. But I -- I use an
23 ordinary and customary meaning of the word "frame" that
24 has a range of interpretations. In this case, the door
25 needs a frame; otherwise, it was floating in space.

1 **In the '181 patent, there's a frame to hold**
2 **the glass, which the Carter patent doesn't have.**

3 **Still, these are -- these are frames.**

4 Q How many types of frames can you think of?

5 A **Many.**

6 Q Let's go. Let me help you. Car frame?

7 A **Holds the doors. I would say car frame.**

8 Q Bicycle frame hold doors?

9 A **No.**

10 Q Picture frame hold doors?

11 A **No, it's not required.**

12 Q Does a human frame hold doors?

13 A **A door needs a frame to be mounted against**
14 **if you want it to be functional; wouldn't you agree?**

15 Q Not my deposition, sir.

16 Do you think all doors must have frames?

17 A **Well, in order to open and close, I believe**
18 **so.**

19 Q Okay. How many other kinds of frames can
20 you think of?

21 Does the human body have a frame?

22 A **Skeleton. I'm not sure that's a -- that's a**
23 **bit of an extended use of the word "frame."**

24 Q Does time have a frame?

25 A **Yes. A house has frame, timber-framed**

1 **homes.**

2 Q So how are we supposed to know what the
3 extent of your use of the word "frame" in the context
4 of Carter is because Carter doesn't say, does it?

5 **A Correct, we've established that, yeah.**

6 Q So how do we know what the extent of your
7 use of the word "frame" is with respect to Carter?

8 MS. REICHEL: Objection. Form.

9 THE DEPONENT: Well, I offered it in my
10 Paragraph 80 that the sealing surface 24 identified is
11 part of a frame against which the door 12 sealed when
12 shut.

13 Q (By Mr. Jones) So that's the only kind of
14 frame that Carter discloses, your Paragraph 80 in the
15 '181?

16 **A Unless I reviewed all of Carter. I'm not**
17 **aware of other mentions, though.**

18 Q Take your time and review Carter, please. I
19 want to know all of the kinds of frames that you
20 contend Carter discloses. It's important.

21 **A No, in the context of Carter, my use of the**
22 **word "frame" was to describe the structural assembly**
23 **that holds the door.**

24 Q That holds the door shown in Figure 1 in
25 Carter?

1 **A Yes.**

2 Q Okay.

3 MR. JONES: Let's go off the record and
4 we'll take a break.

5 (Recess from 2:22 p.m. until 2:41 p.m.)

6 Q (By Mr. Jones) Welcome back, sir.
7 Are you ready to proceed?

8 **A I am.**

9 Q Great.

10 If we turn to Paragraph 31 of your '181
11 declaration, please? That's 31.

12 You can review Paragraph 31 of the '181
13 declaration, and let me know when you've had a chance
14 to do so, please.

15 **A I've reviewed it.**

16 Q You would agree with me that Paragraph 31 of
17 your '181 declaration sets out your definition of
18 "person of order skill in the art" with respect to the
19 '181 patent?

20 **A Yes.**

21 Q Is that your definition -- strike all that.
22 Paragraph 31 of the '181 where you define
23 "POSITA," is that your definition or is that the
24 lawyer's definition?

25 **A No, that's my definition.**

1 Q Yours and yours alone?

2 A **Well, we had conversations.**

3 MS. REICHEL: And I'd just instruct you not
4 to reveal the content of the conversations.

5 Q (By Mr. Jones) Just to be clear, throughout
6 this deposition, I do not want to know what you talked
7 with your lawyers about in specific.

8 Did you formulate your definition of
9 "POSITA" in Paragraph 31 of the '181 declaration
10 yourself?

11 A **I did.**

12 Q It's all yours by yourself?

13 A **The elements of it, what fields of
14 engineering, and the years of experience, and whether
15 that is acquired through a graduate degree or through
16 industry employment, and the experience within HVAC&R,
17 yes.**

18 Q And if I'm not mistaken, the '847
19 declaration has the very same definition of "POSITA";
20 am I right?

21 A **Yes.**

22 Q I hope so.

23 A **Unless there's a misprint.**

24 Q That's the same Paragraph 31 in the '847
25 declaration.

1 **A Thirty-one again?**

2 **Q Yes, sir.**

3 **Again, your definition?**

4 **A Yes, they are the same. They are the same.**

5 **Q What is an HVAC&R system?**

6 **A The term "HVAC&R" is an industry term to**
7 **describe all systems, all engineered systems for the**
8 **purposes of heating, ventilating, air conditioning, and**
9 **refrigeration.**

10 **And they list or they include a number of**
11 **subsystems and components that I cannot list, but it's**
12 **an industry term to describe the application of**
13 **engineering to provide either human comfort conditions,**
14 **that's the air conditioning that's focused on humans,**
15 **refrigeration is more for product cooling.**

16 **Q Is it fair to say that HVAC&R covers a broad**
17 **set of technologies?**

18 **A Yes, it's a broad set.**

19 **Q Do the '181 and '847 patents deal with**
20 **ventilation?**

21 **A Not explicitly, no.**

22 **Q Do they deal with -- how about implicitly?**

23 **A Well, they're placed most commonly in**
24 **ventilated systems; right. We're controlling indoor**
25 **conditions. We're controlling the refrigerated**

1 compartment to be at the right temperature and humidity
2 levels for what we're trying to keep and store and not
3 allow it to spoil.

4 So there's no -- in the systems explained --
5 the systems explained in -- or disclosed in '181 and
6 '847, these are refrigeration systems that fall under
7 the umbrella of HVAC&R, but they are not designed to
8 provide heating.

9 They do heat at the back of the unit. They
10 all give off heat, that's part of the vapor compression
11 cycle, but not for the purpose of heating.

12 Q So we agree that HVAC&R is a broad field;
13 right?

14 A Yes.

15 Q And under that broad HVAC&R field, there
16 could be any plethora of inventions; right?

17 MS. REICHEL: Objection to form.

18 Q (By Mr. Jones) Would you agree with me,
19 sir, that there are probably thousands and thousands of
20 patents whose inventions fall within the field of
21 HVAC&R?

22 MS. REICHEL: Objection. Form.

23 THE DEPONENT: I haven't counted them but I
24 presume so. It's a field with a rich history and
25 beginning with Willis Carrier and the invention of air

1 conditioning and the development of the South of the
2 United States, yes, over the last 100 years.

3 We have a professional organization, ASHRAE,
4 American Society of Heating, Refrigerating, and Air
5 Conditioning Engineers, that meets twice a year with
6 55,000 members. So, yes, there's a lot of activity,
7 lot of development, and invention.

8 Q (By Mr. Jones) Are all of the patents whose
9 inventions fall under the HVAC&R umbrella analogous art
10 to the '818 patent?

11 MS. REICHEL: Objection. Form.

12 THE COURT REPORTER: You said '818. Do you
13 mean '181?

14 MR. JONES: '181. I apologize.

15 THE DEPONENT: So this is a hypothetical.
16 You want me to consider all of the thousands of
17 inventions that may have been arrived at and ask if
18 they're all -- they're all within the field of HVAC&R.
19 And . . .

20 Q (By Mr. Jones) Yeah, are all of those
21 patents analogous to the '818 -- '181?

22 MS. REICHEL: Objection. Form.

23 Q (By Mr. Jones) Let's just back this up.

24 Let's look at Paragraph 145 of your '181
25 declaration. 145 of the '181 declaration, please, sir.

1 Take a second to read Paragraph 145 of the
2 '181.

3 **A 145?**

4 Q Yes, sir.

5 **A I've read it, yes.**

6 Q And you maintain that your sworn testimony
7 that a POSITA would have recognized King as analogous
8 prior art to the '181; right?

9 **A King as applied to condensation control in**
10 **vehicles that have heating, ventilation, and air**
11 **conditioning, and refrigeration cycles all in the**
12 **vehicle.**

13 Q What does "analogous" mean as you use it in
14 heading two on Paragraph 107 [sic] of your '181
15 declaration?

16 **A I understand that "analogous" implies that**
17 **the reference is within the same field of endeavor as**
18 **the patent and/or has reasonable pertinence to one or**
19 **more of the problems purportedly solved by the patent's**
20 **inventors, quoting from my own Paragraph 144.**

21 Q And you maintain that HVAC&R is a pertinent
22 field; right? Field of invention? Field of endeavor?

23 **A Field of endeavor, yeah, absolutely.**

24 Q Okay. So are all patents that are in the
25 field of endeavor of HVAC&R analogous prior art to the

1 '181 patent?

2 MS. REICHEL: Objection to form.

3 THE DEPONENT: I haven't done that analysis.

4 I would need to do this on a case-by-case basis.

5 Q (By Mr. Jones) So then it's fair to say
6 that just because a patent is in the same field of
7 endeavor of HVAC&R, that fact alone does not make it
8 analogous to the '181 patent, does it?

9 A In my declaration I describe how King is
10 both within the field of endeavor as well as pertinent
11 to the problem that was tried -- that was attempted to
12 be solved by the '181.

13 Q That wasn't my question, sir. Just because
14 a patent falls in a field of endeavor of HVAC&R, does
15 that fact alone make it analogous to the '181 patent?

16 A Can you repeat one more time, please?

17 Q Just because --

18 A Just because.

19 Q -- a patent falls into the field of endeavor
20 of HVAC&R, does that fact alone make it analogous to
21 the '181 patent?

22 A I would say yes.

23 Q And just because a patent falls into the
24 field of endeavor of HVAC&R, does that fact alone make
25 the patent analogous to the '847 patent?

1 A So the way I would like to answer this
2 question is, the '181 and the '847 are trying to solve
3 condensation problems. That is squarely in the HVAC&R
4 field. As a person of ordinary skill in the art, I
5 would have looked to solutions that are solving this
6 condensation problem.

7 Q Sir, just because a patent falls into the
8 field of endeavor of HVAC&R, does that fact alone make
9 the patent analogous to the '847 patent?

10 A I don't know. It's a broad field and King
11 and the '181 are trying to solve condensation problems.
12 Both condensation problems -- condensation problems are
13 very common in HVAC&R. I don't know how to answer your
14 question.

15 Q I'm going to ask you one more time. It's a
16 straightforward question, sir. It's a yes-or-no
17 question.

18 Just because a patent falls into the field
19 of endeavor of HVAC&R, does that fact alone make that
20 patent analogous to the '847 patent?

21 MS. REICHEL: Objection. Form.

22 THE DEPONENT: As I write in 144, the same
23 field of endeavor as the patent and/or reasonable
24 pertinence, I point to both.

25 Q (By Mr. Jones) I'm just asking you about

1 one thing. If a patent falls into HVAC&R field of
2 endeavor, does that fact in and of itself make that
3 patent analogous to the '847 patent?

4 MS. REICHEL: Objection. Form.

5 THE DEPONENT: I would say yes.

6 Q (By Mr. Jones) Can you tell me every patent
7 that falls into field of endeavor of HVAC&R? Go ahead.
8 List them all.

9 A Are you mocking me here?

10 Q No, sir, I'm asking you --

11 A I think that --

12 Q -- to answer my question.

13 A I think that is a question that is loaded
14 and you know it is unanswerable.

15 Q Okay. Why is it unanswerable?

16 A It is impossible for me to know the totality
17 of all the inventions that fall into this field and be
18 asked to list them all.

19 Q Yet you believe every one of those patents
20 is analogous to the '818 and '847 simply because they
21 fall into the field of HVAC&R, don't you?

22 MS. REICHEL: Objection to form.

23 THE DEPONENT: I use the term "analogous" to
24 mean related, relevant, and so I as a POSITA would look
25 at inventions that fall into that range.

1 MR. JONES: Objection.

2 THE DEPONENT: I can't look at all of them.

3 MR. JONES: Objection. Nonresponsive.

4 Q (By Mr. Jones) You believe every patent in
5 the HVAC&R field of endeavor, every single one is
6 analogous to the '818 and '847; right?

7 MS. REICHEL: Objection to form.

8 THE DEPONENT: No, I believe there needs to
9 be connection to the problem being solved. HVAC&R, we
10 discussed, is a wide field. This is about remediating
11 condensation.

12 Q (By Mr. Jones) So describe all of the
13 connections to the problem being solved that are
14 required to make the patent analogous to the '818 and
15 '847?

16 MS. REICHEL: Objection to form.

17 Q (By Mr. Jones) I would like a comprehensive
18 list, please, sir.

19 MS. REICHEL: Same objection.

20 THE DEPONENT: Can you repeat the request
21 for your comprehensive list one more time?

22 Q (By Mr. Jones) Sure.

23 Please describe to me all of the connections
24 to the problem being solved --

25 A I'm taking notes because you have the

1 **benefit of reading. I have to memorize it all.**

2 Q You are welcome to, would you like to read?

3 A **Yeah.**

4 Q Describe all of the connections to the
5 problem being solved that are required to make a patent
6 analogous to the '818 -- sorry.

7 Describe all of the connections to the
8 problem being solved that are required to make a patent
9 analogous to the '181 and '847 patents?

10 MS. REICHEL: Objection to form.

11 THE DEPONENT: It has to deal with
12 condensation problems.

13 Q (By Mr. Jones) Anything else?

14 A **The condensation in HVAC&R systems.**

15 Q Anything else?

16 A **I believe strategies and methods to manage
17 and solve condensation problems in HVAC&R systems would
18 be a sufficient definition of all the connections to
19 the problem that need -- that are required to be
20 solved.**

21 Q Anything else?

22 A **I think that combination of condensation in
23 HVAC&R would give me enough focus to look.**

24 Q Is it your sworn testimony that every single
25 patent that discloses strategies and methods to manage

1 and solve condensation problems in HVAC&R systems is
2 analogous to the '181 and '847 patents?

3 MS. REICHEL: Objection to form.

4 THE DEPONENT: I would say condensation
5 specifically in the context to refrigeration equipment,
6 freezers, refrigerators, refrigeration equipment.

7 Q (By Mr. Jones) So now is it your sworn
8 testimony that every single patent that discloses
9 strategies and methods to manage condensation
10 specifically in the context of refrigeration equipment,
11 freezers, refrigerators, and refrigeration equipment is
12 analogous to the '181 and '847 patents?

13 MS. REICHEL: Objection. Form.

14 THE DEPONENT: I believe so.

15 Q (By Mr. Jones) And I don't mean to be
16 flippant, sir, but clearly as we sit here today, you
17 have not analyzed all patents that disclose strategies
18 and methods to manage condensation specifically in the
19 context of refrigeration equipment, freezers,
20 refrigerators, and refrigerator equipment, you haven't
21 done that; right?

22 A I've looked at a lot of them. That's part
23 of -- that's the priority I analyzed.

24 Q You cite a handful of patents; right?

25 MS. REICHEL: Objection. Form.

1 THE DEPONENT: Yes, it's a selection,
2 correct, yeah.

3 Q (By Mr. Jones) Are you able to say the
4 patents you haven't even read are analogous to the '181
5 and '847?

6 A Repeat that one more time.

7 Q Are you able to say under oath that patents
8 you have not read are analogous to the '181 and '847
9 patents?

10 A That's a hypothetical. I can't answer
11 because I haven't read them.

12 Q Give me one -- okay.

13 Let's look at the '181 patent. And we
14 looked at this earlier, sir, and -- I'm looking for the
15 field of invention portion of the patent. Field of
16 invention Column 1 of the '181.

17 Do you see that?

18 A Yes.

19 Q Give me one reason that the PTAB wants to
20 know what the field of invention of the '181 patent is
21 that it should not consider the field of invention
22 disclosure in Column 1 of the '181 patent?

23 MS. REICHEL: Objection. Form.

24 THE DEPONENT: I didn't make this analysis
25 in my report. I'm not prepared to give this

1 hypothetical.

2 Q (By Mr. Jones) So you have no opinion;
3 right?

4 A Are you asking yet another hypothetical
5 question?

6 Q Yeah, you're an expert, I get to ask you
7 hypothetical questions. That's how it works. Can you
8 answer my question?

9 A Repeat it, please.

10 Q Sure.
11 Give me one reason that the PTAB should
12 disregard the field of invention disclosure in Column 1
13 of the '181 patent.

14 MS. REICHEL: Objection. Form.

15 THE DEPONENT: I wouldn't discard the field
16 of invention that's listed by the inventor of the '181.

17 Q (By Mr. Jones) Give me one reason the PTAB
18 should disregard the field of invention listed in
19 Column 1 of the '847 patent.

20 MS. REICHEL: Objection. Form.

21 THE DEPONENT: I presume the same holds
22 there, but I will be happy to look at it.

23 Q (By Mr. Jones) Please do.

24 A You're asking me whether I can give you one
25 reason why the PTAB should disregard the inventor's

1 **listed field of invention. I don't see one.**

2 Q Do you think if a person who wants to
3 understand the field of invention of any given patent
4 should consider the entire field of invention
5 disclosure in that patent?

6 A **Yes.**

7 Q I mean, that makes sense; right? Does that
8 make sense?

9 A **To consider the field of invention, yes.**

10 Q But the entire disclosure, not just part of
11 it?

12 A **Yeah, but the field of invention is listed**
13 **by the inventor in very specific terms, and I'm free to**
14 **see connections to other of that areas.**

15 Q Sure. But the inventor uses specific terms
16 in the field of invention to accurately describe the
17 field of invention right?

18 MS. REICHEL: Objection. Form.

19 THE DEPONENT: They're free to do so, yes.

20 Q (BY Mr. Jones) And in understanding the
21 inventor's understanding and disclosure of his or her
22 field of invention, it's proper to consider all of the
23 words in the field of invention disclosure, isn't it?

24 A **I believe so, yes.**

25 Q I have here an Anthony energy controller.

1 You're free to look at this. I'm not going to mark it
2 as an exhibit, and I'm not going to ask you specific
3 questions about it. Have you seen one of these before?

4 **A In the picture.**

5 Q Okay. And you've seen -- you're familiar
6 clearly, sir, with the kinds of devices claimed in the
7 '181 and '847 patents. We've been talking about them
8 all day?

9 **A Yup.**

10 Q Have you ever designed such a device for use
11 on refrigerated display cases?

12 **A I have not.**

13 Q Have you ever designed a refrigerated
14 display case?

15 **A I have not.**

16 Q Have you ever designed the doors or frame
17 units of a refrigerated display case?

18 **A I have not.**

19 Q Have you ever worked on refrigerated display
20 cases?

21 **A No, I have not.**

22 Q Have you ever written -- you disclosed,
23 sir -- and you're welcome to turn to the back of your
24 declarations. They are the same. Your CV, incredibly
25 impressive. I just want to say that. Like I said

1 before, you're probably the smartest guy in the
2 building.

3 You list dozens and dozens and dozens of
4 papers there that you've written or coauthored?

5 **A Yes.**

6 Q Have you ever written, alone or with others,
7 any paper that ever touched on refrigerated display
8 cases?

9 **A No, I have not.**

10 Q Have you ever written, alone or with others,
11 any paper of any kind that discuss control of
12 condensation in refrigerated display cases?

13 **A In the HVAC&R field generally, yes,**
14 **condensation control in buildings, in rating cooling**
15 **systems, yes. In the context of refrigerated display**
16 **cases, no.**

17 Q Have you ever, alone or with others, written
18 any paper of any kind that discusses control of
19 condensation in refrigerated cases of the kind
20 disclosed in Carter?

21 **A No, I have not.**

22 Q Have you ever obtained any grants for work
23 on refrigerated cases or refrigerated display cases of
24 the kinds disclosed in Carter, the '181, and/or the
25 '847?

1 **A I have not.**

2 Q Have you ever -- you supervise undergraduate
3 and graduate students as part of your work, sir?

4 **A Yes.**

5 Q Have you ever supervised a student in
6 university of any kind that worked on refrigerated
7 cases or refrigerated display cases?

8 **A I have not.**

9 Q You worked at Johnson Controls for a while;
10 right?

11 **A I did.**

12 Q Did Johnson Controls make products related
13 to control of condensation in refrigerated cases?

14 **A Johnson Controls makes a very large -- wide**
15 **range of sensing and control systems. And the PENN**
16 **products are used -- the PENN family of products,**
17 **P-E-N-N, that Johnson Controls makes are used in**
18 **refrigeration systems.**

19 Q In refrigerated cases or large refrigeration
20 systems?

21 **A Refrigeration systems, yes.**

22 Q Respectfully, I'm talking about specifically
23 the kinds of things at issue in these IPRs,
24 refrigerated cases and refrigerated display cases.

25 Did Johnson Controls make controls for

1 control of condensation in those kinds of devices?

2 **A I do not know. I don't recall that. I**
3 **don't know. I would need to check that out.**

4 **Q In your work at Johnson Controls, did you**
5 **work on -- I think we've established that you didn't**
6 **work on any condensation controls for refrigerated**
7 **cases?**

8 **A I did not, no. I had other work.**

9 **Q Or refrigerated display cases?**

10 **A Mm-hmm.**

11 **Q Is that a "yes"?**

12 **A Yes, I did not.**

13 **Q Could you explain to me just very briefly,**
14 **in a nutshell, the work you did at Johnson Controls?**

15 **A At Johnson Controls, my responsibility**
16 **involved identifying energy savings opportunities in**
17 **portfolios of buildings, to analyze these buildings**
18 **using building simulation software packages to propose**
19 **to building owners packages of interventions or energy**
20 **conservation measures to estimate the cost of these**
21 **interventions, and to offer a financing package so that**
22 **the savings would refinance the investment.**

23 **The business unit -- model or business unit**
24 **that I refer to is known as energy savings performance**
25 **contracting.**

1 Q Nothing to do with refrigerated cases?

2 A In that context, we did a wide range of
3 technical modifications within the domain of HVAC&R
4 research. So we replaced chillers, we replaced
5 refrigeration systems that were old, that were leaking.
6 We replaced boilers, envelope systems, control systems,
7 so wide range. So we were technology agnostic. The
8 point was to save as much as possible.

9 Q Sure. Did you work on the design of
10 refrigerated cases?

11 A I think we've established that the answer is
12 no.

13 Q Ever; right?

14 A Mm-hmm; correct.

15 Q I just want to try and wrap this up.
16 If you could, sir, turn to the '181 patent.
17 You have a list of references that you --

18 A The '181 declaration, yes.

19 Q Yes, sir, I apologize. Your '181
20 declaration, Paragraph 23, Pages 30, 31, and 32.

21 Are you there, sir?

22 A I'm there.

23 Q Did you consider -- in the context of
24 forming your opinions for the '181 declaration, did you
25 consider any references not listed in Paragraph 23 of

1 your '181 declaration?

2 **A Yes, we -- I did, but those did not end up**
3 **in that list here.**

4 **Q Why not?**

5 **A I made the determination that those are the**
6 **most relevant pieces of prior art.**

7 **Q Are you relying for the purposes of your**
8 **opinions in your '181 declaration on references not**
9 **disclosed in the '181 declaration?**

10 **A I don't believe so.**

11 **Q Again --**

12 **A No.**

13 **Q You're not?**

14 **A Mm-hmm.**

15 **Q Is that correct?**

16 **A Yes.**

17 **Q Exhibit 1015 in the '181 declaration, do you**
18 **see that?**

19 **A Yes, it's ACT2 convenience store controller**
20 **made by Johnson Controls.**

21 **I actually worked in that same year for**
22 **them.**

23 **Q Have you inspected an ACT2-CS convenience**
24 **store controller?**

25 **A Inspected in the sense of open it up and**

1 **made sure that it's functional?**

2 Q Yeah.

3 A **No, I don't -- I don't have -- I did not do**
4 **that.**

5 Q When was the last time you held in your
6 hands or on a bench in front of you an ACT2-CS
7 convenience store controllers made by Johnson Controls?

8 A **I do not recall.**

9 Q Have you ever?

10 A **I do not recall. I may have. I've seen a**
11 **lot of equipment when I worked there.**

12 Q Sure, when you worked there.

13 But in connection with rendering your
14 opinions in this case, did you have one?

15 A **No, no. I mean, this device was**
16 **developed -- this publication is 26 years old.**

17 Q Where did you get the publication that is
18 EX1015?

19 A **Where did I get this publication?**

20 **I don't recall. That was the outcome -- I**
21 **didn't have it in my own records from the time I was at**
22 **Johnson Controls, so it was -- it is the result of a**
23 **document search or a broader search.**

24 Q Did you run any prior art searches with
25 respect to these two IPRs for the '181 and the '847

1 patents?

2 **A Prior art search, I was assisted by counsel**
3 **in doing that.**

4 Q I understand counsel may have done them.
5 Did you yourself, Doctor, do any prior art
6 searches?

7 **A No.**

8 Q Did you supply any of the materials listed
9 in Paragraph 23 of the '181 declaration yourself or did
10 these all come from counsel?

11 **A Let me think here.**

12 **I provided the Exhibit 1039, the American**
13 **Society of Heating, Refrigerating, and Air Conditioning**
14 **Engineers Handbook of Refrigeration.**

15 Q Okay. That's an off-the-shelf book. I can
16 go buy one; right?

17 **A Mm-hmm. It's a little hard to get the 2002**
18 **version, but that's what I have. I have the**
19 **whole . . .**

20 Q Just because you have a library, right, of
21 references?

22 **A Yes. They are updated every four year.**

23 Q Appreciate that.

24 Other than Exhibit 1039, did you personally
25 bring to the fold any of the references set forth in

1 Paragraph 23 of the '181 declaration?

2 **A I don't believe I have.**

3 Q Now, Paragraph 23 of the '181 declaration
4 discloses a number of patents and patent publications;
5 right?

6 **A Mm-hmm.**

7 Q I want to take those off the table. I'm not
8 asking about those.

9 For the non-patent documents listed in the
10 table --

11 **A Tell me again which one do you want to**
12 **remove from . . .**

13 Q Any U.S. patent document, a U.S. patent
14 publication or a U.S. patent.

15 **A Take all of these off?**

16 Q My question is not about this. Okay.

17 Can we agree that those are patent documents
18 for the purposes of these next few questions?

19 **A Yes.**

20 Q Other than the patent documents listed in
21 the table in Paragraph 23 in the '181 declaration, can
22 you swear today as to the truth of the matters asserted
23 in any of these other references?

24 **A Except for anything that's U.S. public --**
25 **can I swear to the truth?**

1 Q Swear to the truth of the matters asserted
2 in each one of these documents?

3 A **No, these are large documents. That won't**
4 **be possible.**

5 Q Okay. Let's look at the similar questions
6 for the --

7 A **Oh, by the way, one more, I provided**
8 **Exhibit 1031, the psychometric chart.**

9 Q What is ASHRAE?

10 A **That's the acronym used in Exhibit 1039, the**
11 **American Society of Heating, Refrigerating, and Air**
12 **Conditioning Engineers. It's the society I mentioned**
13 **earlier with 55,000 members that deals with HVAC&R**
14 **topics.**

15 Q So you brought 1031 into the fold?

16 A **Yes.**

17 Q Let's look at the similar table in the '847
18 declaration. That's the same Paragraph 23. And you're
19 welcome to compare them side by side.

20 A **So compare them . . .**

21 Q And I'm going to ask for the '847
22 declaration, Paragraph 23, I'm assuming you brought
23 Exhibit 1031. That came from you; right?

24 A **Mm-hmm. And 1039.**

25 Q And 1039.

1 Which other exhibits listed on the chart in
2 Paragraph 23 of the '847 declaration came from you?

3 **A I don't recall any others at this point.**

4 Q Other than the patent documents, the U.S.
5 Patents and Patents Publications listed in the chart at
6 Paragraph 23 of the '847 declaration, can you swear to
7 the truth of the statements in all of the other
8 documents, as you sit here today?

9 **A I cannot. That's not possible. The truth**
10 **of every statement.**

11 Q Can you swear to the truth of any of the
12 statements, as you sit here today?

13 **A Yes.**

14 Q Which ones?

15 **A Well, upon inspection; right? I mean, we'd**
16 **go -- have to go through each of those exhibits, the**
17 **ones that are remaining after excluding. But, you**
18 **know, for example, there is a sensor listed here in**
19 **Exhibit 1030 that has certain dimensions. The truth of**
20 **those dimensions would require me to verify with high**
21 **precision instruments whether or not that sensor has**
22 **listed thickness and width and depth, and I haven't**
23 **done that so I can't do that.**

24 Q Do you have access to the sensor described
25 in EX 1030 of the '847 declaration?

1 **A Do I have access? Not readily, no.**

2 Q What do you mean "not readily"? What does
3 that mean?

4 **A Meaning it's not sitting in my house.**

5 Q When was the last time you saw the sensor
6 described in EX 1030?

7 **A I relied on that exhibit, not the sensor**
8 **itself.**

9 Q Can you recall ever having seen the actual
10 device described in EX 1030?

11 **A No, I do not recall.**

12 Q Do you know anyone that works at my client,
13 Control Tech?

14 **A No.**

15 Q Had you heard of Control Tech before this
16 matter?

17 **A I have but I've forgotten in which context.**
18 **So it did -- it did ring a bell but it's not that I**
19 **have any personal connections there, that I am aware**
20 **of. I might know a former student who is working there**
21 **now, that can happen.**

22 Q But nothing comes to mind?

23 **A Nothing comes to mind.**

24 Q On the '847, Paragraph 23, there's
25 Exhibit 1081 and 1091, and that's various sections of

1 the manual for Altech controls E --

2 A Say it again, where now? Exhibit which?

3 Q 1018 and 1019.

4 A Okay.

5 Q Those are sections of a manual for the
6 Altech controls EPRT Eagle controls; is that right?

7 A Mm-hmm.

8 Q What is an Altech control EPRT Eagle
9 control?

10 A Could you -- since you may have went through
11 the effort of printing all of them, do you mind
12 presenting me with that exhibit, please?

13 MR. JONES: Do we have that exhibit?

14 MR. ZIEMIAN: Yeah. 1018, I think it is in
15 one of your binders because they go through -- see if
16 that one goes through 18, and if not, I'll get --

17 THE DEPONENT: It goes to 15.

18 MR. ZIEMIAN: Okay. One second.

19 THE DEPONENT: Hang on. I may have
20 misspoken. Yeah, I have it. It's right here.

21 Q (By Mr. Jones) So which controller is that
22 in 1018 and 19?

23 A It's a refrigeration system unit controller.

24 Q Have you held one of those controllers?

25 A I have not.

1 Q What did you do to verify that the
2 statements in Exhibit 1018 and 1019 are true?

3 A **I did not independently verify the**
4 **statements in this document.**

5 Q Exhibit 1020, what did you do to verify that
6 the statements in Exhibit 1020 are true?

7 A **Yeah, it was not asked of me, so I did not**
8 **independently verify the specifications for all of**
9 **these components on this printed circuit board or these**
10 **IO panels, these communication panels, these**
11 **motherboards, I have not independently verified.**

12 Q What did you do to verify that the
13 statements in Exhibit 1021 are true?

14 Just for the record, I'm still in the '847
15 declaration.

16 A **1021. It's mislabeled. Twenty-one says 22,**
17 **so that's why I'm stumped here. It happens.**

18 **Here's the 1021. It's listed under Tab 20**
19 **instead of 21. There was a disconnect -- just one --**
20 **just one tab off.**

21 Q So my question is about Exhibit 1022. What
22 did you do to verify that the statements in
23 Exhibit 1022 are true?

24 A **I did not perform any independent**
25 **verification of the statements in Exhibit 1022.**

1 Q What did you do to verify that the factual
2 statements in Exhibit 1023 are true?

3 A Well, I read this analysis on sensor
4 uncertainty, and it's an area I know a little bit
5 about, so I was able to follow their method, determine
6 whether or not I found their uncertainty quantification
7 method correct, which it was. And it's published as an
8 ASHRAE paper -- or it was actually an ASHRAE paper but
9 appears as an NREL report.

10 And I didn't see anything that, you know,
11 any of the equations used for -- you know, the
12 Kline-McClintock equation here of uncertainty
13 propagation, those are standard.

14 Parameter values of the empirical
15 relationships I didn't verify. But, you know, in the
16 procedure and the approach taken, I've reviewed and,
17 you know, verified, and so did the reviewers of this
18 paper and report.

19 Q What did you do independently, yourself,
20 sir, to verify that the factual statements in
21 Exhibit 1024 in the '847 declaration are true?

22 A That's an Oak Ridge National Lab
23 publication. Again, I did not independently verify
24 that the report of a national lab is correct.

25 Q Okay. What did you -- back to 1023, what

1 did you, sir, independently you, do to verify that the
2 factual statements in 1023 are correct?

3 **A I relied on my understanding of uncertainty**
4 **quantification, as I just said. I saw that the authors**
5 **used the right approach, that the method taken was**
6 **correct, but the values of individual parameters I did**
7 **not verify.**

8 Q I can go through each one, but --

9 **A It seems like it.**

10 Q -- did you -- for all of the exhibits that
11 aren't patent documents listed on chart -- Paragraph 23
12 in the '847 declaration, did you do anything yourself
13 to independently verify that the factual statements in
14 these documents are correct? Do you recall undertaking
15 that process?

16 **A So 1028, this remote sensing paper, the**
17 **basic framework for online temperature estimation, a**
18 **paper published in the Journal of Materials Processing**
19 **Technology that was published, I did not, in addition**
20 **to the review process, verify the statements made in**
21 **here.**

22 Q And you didn't conduct that review process?

23 **A No, I was not involved in that review of**
24 **that paper. That's 1992, '91. I wasn't --**

25 Q Did you -- do you recall specifically for

1 any of the non-patent references listed in the chart in
2 Paragraph 23 of the '847 declaration undertake to
3 independently verify the factual statements in these
4 references?

5 **A I would not know how that would be possible.**
6 **I mean, my ASHRAE Handbook of Fundamentals is hundreds**
7 **of pages, is the outcome of 1039. It's the outcome of**
8 **hundreds of volunteer engineers publishing a consensus**
9 **document, and I did not deem that necessary.**

10 Q I don't care if you deemed it necessary.
11 Did you actually do it, for any of these references,
12 verify that each of the factual statements are true?

13 **A I did not.**

14 Q And the same question for Paragraph 23 of
15 the '181 declaration. Did you undertake any process to
16 verify that the factual statements in any of the
17 documents listed in this chart, other than the patent
18 documents, are actually true?

19 **A Yeah, those are missing here. It's okay.**
20 **Those are in the '847, they're here?**

21 MR. ZIEMIAN: I have another binder that I
22 can get if you want to look at it.

23 THE DEPONENT: Yeah.

24 Q (By Mr. Jones) I'm just asking did you
25 undertake a process --

1 **A I did not.**

2 Q Hold on. Sorry.

3 Did you undertake a process to verify that
4 any of the factual statements in any of the non-patent
5 materials that you cite in Paragraphs 23 of your '181
6 and '847 declarations are factually true?

7 **A I really am trying to answer. I just don't**
8 **know how, for example, I would verify the psychometric**
9 **chart, 10 to 31.**

10 Q That's fair, sir, that you don't know how.
11 I'm just asking did you actually undertake such a
12 process?

13 **A I did not.**

14 Q Thank you.

15 MR. JONES: Let's go off the record, please.

16 (Recess from 3:35 p.m. until 3:46 p.m.)

17 MR. JONES: Back on the record, please.

18 Q (By Mr. Jones) Doctor, are you ready to
19 proceed?

20 **A I am.**

21 Q Are you advocating for the petitioner in
22 this matter?

23 **A No, I'm not.**

24 Q Do you want the petitioner to win in this
25 matter?

1 **A I'm -- I was retained to form an opinion,**
2 **and what will happen, will happen.**

3 **Q Okay. So you do want the petitioner to win**
4 **or you don't?**

5 **A I'm indifferent.**

6 MR. JONES: Pass the witness.

7 MS. REICHEL: I have no questions. We can
8 go off the record.

9 (The deposition concluded at 3:47 p.m. on
10 Thursday, December 11, 2025.)

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1 I, GREGOR P. HENZE, PH.D., P.E., do hereby
2 certify that I have read the foregoing transcript and
3 that the same and accompanying amendment sheets, if
4 any, constitute a true and complete record of my
5 testimony.

6

7

8

Signature of Deponent

9

10

() No amendments
() Amendments attached

11

12

13

Acknowledged before me this ____ day of
_____, 2026.

14

Notary Public: _____

15

My commission expires _____

16

Seal:

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1 STATE OF COLORADO)

2)ss. REPORTER'S CERTIFICATE

3 COUNTY OF DENVER)

4 I, Shelly Findley, do hereby certify that I am a
5 Professional Shorthand Reporter and Notary Public
6 within the State of Colorado; that previous to the
7 commencement of the examination, the deponent was duly
8 sworn to testify to the truth.

9 I further certify that this deposition was taken in
10 shorthand by me at the time and place herein set forth,
11 that it was thereafter reduced to typewritten form, and
12 that the foregoing constitutes a true and correct
13 transcript.

14 I further certify that I am not related to,
15 employed by, nor of counsel for any of the parties or
16 attorneys herein, nor otherwise interested in the
17 result of the within action.

18 In witness whereof, I have affixed my signature
19 this 15th day of December, 2025.

20

21 My commission expires October 7, 2027.

22

23

24

25

Shelly Findley
Shelly Findley, Court Reporter
Notary ID: 984025312

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